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MIAMI UNIVERSITY
Minutes of the Academic and Student Affairs Committee Meeting
Marcum Conference Center, Oxford, Ohio
Thursday, May 16, 2024

Committee Chair Ryan Burgess called the meeting to order at 9:00 a.m., with sufficient members present to constitute a quorum. The meeting was held in the Marcum Conference Center on the Oxford campus. Roll was called; attending with Chair Burgess were committee members; Trustees Debbie Feldman, Zachary Haines, Beth McNellie, Lisa Peterson, and Mary Schell; National Trustee Jeff Pegues; and Student Trustees Jack Fazio and Nick McNeil. Also attending were; Trustee Steve Anderson; and National Trustee Mark Sullivan. No committee members were absent.

In addition to the Trustees, attending for all or part of the meeting were President Crawford; Provost Liz Mullenix; Senior Vice Presidents Jayne Brownell and David Creamer; Vice Presidents Cristina Alcalde, Rachel Beech, Ande Durojaiye, Sue McDowell, Jessica Rivinius, David Seidl, Amy Shoemaker, and Randi Thomas; along with Dean of the Graduate School Mike Crowder, Senior Director of Executive Communications Ashlea Jones, Associate Vice President for Institutional Research Padma Patil, and Ted Pickerill, Chief of Staff and Secretary to the Board of Trustees. Also present to present to the Committee were; Assistant Vice President for Health and Wellness Steve Large, Director of Student Wellness Rebecca Young, Miami student and HAWKS Peer Health Educator Stephanie Selvaggio, Assistant Vice President and Director of Admission Bethany Perkins, and Dean of the College of Engineering and Computing Beena Sukumaran; along with many others in attendance to assist or observe.

Public Business Session

Welcome and Approval of the Prior Meeting's Minutes

Trustee Burgess welcomed everyone to the meeting, including Trustee Lisa Peterson, Student Trustee Peyton Morrow and Vice President Rachel Beech who were all attending their first Academic and Student Affairs meeting.

Approval of the Prior Minutes

Trustee Schell moved, Trustee Haines seconded and by unanimous voice vote, with all voting in favor and none opposed, the minutes of the prior meeting were approved.

Reports

The Committee previously received a written report from University Senate; there were no questions regarding the report.

Student Life

Senior Vice President's Update

Senior Vice President Jayne Brownell relayed the following:

As another year comes to a close, I was talking to a colleague in Student Life who observed that it has felt like we are living on the edge of change the past few years, but especially this year. Local, national, and world events feel unsettled, our students have different interests and needs than just a few years ago, and higher education is facing new challenges. Activism, war, political polarization, mental health, affordability- there is a long list of things that make these times feel uncertain. And yet we know that history goes in cycles. When I was in graduate school and thought about the student activism of the 1960s and 70s from the perspective of a student affairs professional, I remember feeling a sense of relief not to be working in those times– and yet here I am, in another challenging time on college campuses.

But it is also true that every season of change is an opportunity to think creatively and to improve. While hard, it can also be a time of hope and possibility. Miami, including Student Life, has been managing the events and needs of the present, but also looking forward to the future.

Over the last month, I had the pleasure of chairing a workgroup as part of the MiamiTHRIVE initiative that looked at what is core and distinctive about student life at Miami that is worth preserving through change. I want to share the key highlights of our conversation so that you understand what drives our Division of Student Life, but I think is also true of Miami as a whole. Most importantly, we put students first in everything that we do. This value has persisted at Miami for decades and should remain our core in the future. It ensures that we are creating an environment, in and out of the classroom, where our students will learn, grow, thrive, and succeed. That core value is demonstrated in other central aspects of the Miami student experience:

- Every student, regardless of their identities, experiences, or perspectives, is valued. We work to prioritize each student's sense of belonging at Miami, knowing that is necessary for their well-being, persistence, and success.
- Relationships matter. We are a caring community that values mutually beneficial relationships between and among students, faculty, and staff. Miami is a large university that feels and behaves like a small college in our ability to support students and build a close-knit community.
- The student experience is immersive, with learning happening in every part of their Miami experience. Students are active participants in creating a vibrant community, which helps them learn to be active, responsible citizens and leaders. We also know that engaged students are more likely to persist and graduate.
- With privilege comes responsibility. In this environment that respects student autonomy and self-efficacy, each person is responsible for making their own personal and academic decisions at Miami. At the same time, this is a community, and each individual is

expected to make choices that benefit the community and leave Miami a better place than they found it.

Those values and principles are great ones for us to continue to steer by, and will take us into the future in clear ways that distinguish us from our peers. In terms of some highlights from this year, we've talked to you a lot about student mental health and well-being, and today you'll hear a report from Rebecca Young about the work of the Office of Student Wellness, highlighting the work of our peer educators in particular. I'll talk more about that in a bit. This has been a great year for our health and wellness area. You know about the nearly $1M grant we received from the State of Ohio for new initiatives related to student mental health. So far this year that has allowed us to add staff and increase training, and for the first time in my time at Miami, we had a spring semester with no wait list in the Student Counseling Service, which is an amazing milestone. We believe that part of that success can be attributed to the addition of a care coordinator on staff this year. Nancy works with students who need more frequent or specialized care than a college counseling center is designed to serve. Her social work and clinical background allows her to work with students to identify care that is accessible financially and practically, and helps them navigate those systems. She also actively manages and prioritizes any waitlists to help students with the most need be seen first. That hands on care has helped us both be more efficient and connect students with better care.

We also launched our mental health incubator fund this semester, which is a fund that was set aside to entertain ideas from all parts of campus to contribute to students' mental well-being. As I talked about in February, proposals for less than $2500 are reviewed immediately, but in April, we held an event similar to Hawk Tank, where 6 teams pitched proposals of up to $30k for new initiatives related to student mental health. Five of those ideas received some funding, including sensory spaces in the library, a speaker and workshops to support LGBTQ+ students and friends, mental health support for students in the Miami Heritage Program, and training related to supporting the mental health of indigenous students. There will be a similar program for a second round of funding in late September.

We also have a couple of big milestones coming up to highlight. You know that we recently marked the 10 year anniversary of the Armstrong Student Center, which was also the start of the Miami Activities and Programming (MAP) board. This year also marks the 50th anniversary of the Associated Student Government. We'll be hosting celebrations and reunions for both of those milestones during Alumni Weekend in June. I'm happy to take any questions you may have before I introduce Rebecca and the Office of Student Wellness.

Student Wellness

Director of Student Wellness Rebecca Young provided an update on Student Wellness support and initiatives. She explained Peer Education which is an evidence-based process whereby well-trained, motivated students undertake informal or organized educational activities with their peers, aimed at developing their knowledge, attitudes, beliefs, and skills enabling them to be responsible for and to protect their own health. She was joined by Miami student and HAWKS Peer Health Educators Stephanie Selvaggio.

They explained the philosophy of the program – FIRE:

- Freedom: Respect that each person has inherent freedom to choose and make decisions for themselves.
- Information: Present factual, relevant information that influences students to think critically about their choices and possibly challenges their beliefs.
- Reflect: Ask students to reflect on their values, choices, and protective actions they will take.
- Engage: Strive to engage students in the learning process, helping them see the relevance and importance of their choices.

Programing focus areas include:

- Bystander intervention
- Substance use
- Mental health promotion
- Sexual health
- Sexual assault prevention
- Nutrition and healthy behaviors
- General wellness

They also spoke of partnerships with the City of Oxford, Fraternity and Sorority Life, Athletics, and Academic Affairs. Some partnership activities include HAWKS Walks, Greeks Step Up!, sexual assault prevention programming, and first-year experience courses.

University Communications and Marketing (UCM)

Vice President's Update

Vice President Jessica Rivinius updated the Committee on recent communications and marketing initiatives. She discussed operational improvements and highlighted several UCM teams, including; Graphic Design, News, and Social Media.

Operational improvements include;

- Project management improvements
  - New project management tool
  - Ability to resources plan
  - Linked to key industry partners
- Transparent budget model
- Cross-team committees
- Career pathway planning

She next featured the Graphic Design team and the displays created for the College of Engineering and Computing (CEC). Within Marketing, she spotlighted graduate applications which have improved not only in total numbers, but also in the pace at which they are received.

In the area of News, she stated that the number of published articles increased, with over one million reads this year. In Social Media, Tik Tok followers have grown from approximately 4,500 to nearly 85,000 year-over-year.

Return on Investment

VP Rivinius began with a short history of advertising spend and strategy. Including targeting students earlier in high school, the partnership with Carnegie Dartlets, and the development and implementation of personas/archetypes for segmentation (Darts).

She next reviewed results for two out-of-state targeted areas, and explained that Miami's annual advertising spend, since 2020 is up, to an average of $1.3M annually, but still lags the average of $4 M for similarly-sized Midwestern public universities.:

Primary Market: Chicago
- Applications increased 20.2%
- Admits increased 17.1%
- Confirms increased 15.2%

Tertiary Market: Connecticut
- Applications increased 20.5%
- Admits increased 16.4%
- Confirms increased 17.0%

Next, VP Rivinius relayed the current adverting spend, and strategy for the current year and for the upcoming year:

Strategies for FY2024 include:
- Increased marketing spend to saturate markets; saturate Ohio
- Increased spend on traditional and digital advertising
- Unified brand and enrollment strategy (awareness, saturation)
- Created new high-impact content
- Increased parent/family outreach

Strategies planned for FY2025 include:
- Continue to saturate markets, expand geographies (South, West)
- Continue increased spend level of traditional and digital advertising
- Implement MiamiTHRIVE recommendations
- Further audience segmentation
- Improve international marketing
- Sustain/Increase airport buys

She then summarized the overall, FY2022 – 2024, digital adverting results in 19 states and surrounding metropolitan areas, and the traditional advertising efforts for 6 states and 13 surrounding areas:

- Applications have increased in every state where Miami has advertised except Colorado
- Since 2022, applications are up more than 20% in 12 of 19 states
- Still examining advertising influence on yield
- Positive trends suggest expanding continuing level of saturation and expanding geographic reach

Finally, VP Rivinius featured several projects in progress, including; Web Transition, ROI-heavy web highlights, Pride Points Materials, and a Miami Blog.

Enrollment Management and Student Success

Vice President's Update

Vice President Rachel Beech relayed the following:

I know everyone is waiting to learn where we have landed for the fall 2024 class. So, before I begin the rest of my remarks and before we dive into the details, here is the headline for fall 2024. We are up, year over year not only from Fall 2023, but also Fall 2022.

Confirmations are up year-over-year 8% in combined Oxford and Pathway programs 4,570 vs. 4,230 last year.

These numbers are a direct result of the hard work of the teams in Enrollment Management and Student Success and our partners across campus. I want to shout out the Admissions, Enrollment Operations, Financial Aid, University Communications and Marketing and our Academic Division colleagues for their work bringing in the fall 2024 class. We will share more details in our Enrollment Report in just a few minutes.

As you know, the work of the Enrollment Management and Student Success team supports students from first postcard through first job offer. This spring semester, the team has focused on creating opportunities and maneuvering through systemic barriers that impact retention and graduation rates. In the last few months, the team in EMSS have seen success in:

- Celebrating newly admitted students by emphasizing what makes Miami, Miami, resulting in participation at Admissions yield and future student events up over 20% from the Spring of 2023;
- Hosting a series of events in the Center for Career Exploration and Success which support students in transforming their Miami education to a career, including the CAS Networking Event, Career Academy trip to Washington DC and hosting Adam Savage of Mythbusters to share the importance of perseverance over the course of your career;

- Developing a collaboration between the Student Success Center, One Stop, Registrar, Student Financial Assistance and the academic divisions to reforming practice around registration holds to lessen their impact on enrollment;
- Building on a collaborative, systems level approach to Early Alert and identification of un and under-enrolled students, alongside a highly personalized case management system, to create conditions for increasing first to second year retention, with early signs that the fall 2023 first to second year retention rate will exceed 90%.

More than any other year, this spring the conversation in EMSS and across the country has been focused on surrounding the FAFSA. The delays in the release of FAFSA to families and then to campuses, and the continual issues and errors in the data have made our yield season the most challenging since Fall 2020.

While we have met the goal of exceeding the Fall 2023 committed student numbers, there were many points along the cycle where we were unsure that we would be sharing good news at this meeting. The team made an intentional decision to focus on how students were experiencing the delays and to work to ease concerns about what these system delays would mean for families.

Throughout the last few months, Miami made it a priority to update admitted students with whatever information we had at that moment in time. Bethany Perkins along with the rest of the Admissions team developed communications that focused on the ethos of care for students that is a strength of Miami, assuring families that they are worth waiting for and that we would give them the time they need to make the right decision. These messages received positive feedback from students and families, resulting in the numbers we will present.

The burden of this major system change fell on the Student Financial Assistance team, along with their partners in EM Operations and Research and Analytics. All three areas worked in close concert to go above and beyond to find solutions, allowing Miami to be the first public university in Ohio to have both initial and corrected aid offers out to admitted students.

The materials sent ahead of the board meeting pulled data on confirmations and yield from May 6, 9 days before the extended May 15 deadline for the Fall 2024 cycle. You've already seen the headline, and the Enrollment Update will share the details. The dramatic change is due to the efforts of the EMSS team and our campus partners in a constricted timeline. Individuals from across the university jumped in to:

- Make phone calls and send text messages to eligible waitlisted students to offer them admission to Miami;
- Reached out to thousands highly engaged admitted students to answer their questions;
- Focus on ways to leverage merit-aid reconsideration requests that also allowed the university to support specific academic programs where there is room for growth
- Added additional communications from members of the campus community welcoming our newest RedHawks, including one from President Crawford

Bethany will provide more information on these items during the enrollment presentation. While we are past the deadline and are happy with where we have landed, we are not going to

close our doors to students who needed additional time to choose Miami. Through the next few weeks, we will continue to work with individuals who have shared that they are weighing their options, especially those in-state with later commitment deadlines. Our hope is that in extending this grace period will continue to demonstrate that Miami is focused on the student's experience and help those families to feel confident in their decision.

I am very proud of the EMSS team for focusing on the student experience throughout this challenging cycle and are inspired by their commitment to Miami and our students. It's been quite the first month, and I am grateful for the insights I have gained from the team about what makes Miami special.

This concludes my report, and I will be happy to answer any questions before we transition to the detailed enrollment update.

Enrollment Update

Assistant Vice President and Director of Admission Bethany Perkins provided an enrollment update stating applications were up in all academic divisions and applicant types (resident, non-resident – domestic and international). Admissions were also up overall, except for an intentional reduction in the Farmer School of Business to manage enrollment limits, and in the College of Creative Arts (CCA) where applicants who have not completed the full application portfolio are not being admitted. She later stated that despite the reduced admissions into the CCA, confirmations held steady and were up by two over last year.

She updated the Committee on the challenges of delayed FAFSA information, and the need to extend the confirmation deadline to May 15. She stated that Miami delivered email and video updates to families regularly leading up to each aid offer release, and that the final aid release was made on Friday, May 3. She praised the efforts of the Student Financial Aid team in addressing the issues caused by the FAFSA delay, which necessitated long nights, lost weekends, and canceled vacations for many.

AVP Perkins then discussed confirmations, which are also up in all academic divisions (with the exception of the intentional reduction in the Farmer School of Business) and applicant types (resident, non-resident – domestic and international). Confirmations to Oxford are up year-over-year from 4,124 to 4,357, and Pathways are up from 106 to 213, a combined increase of 8% over last year.

She relayed that yield is up year over year from 14.5% to 14.7%, arresting a decade-long reduction. She then reviewed applications, admission, and confirms by national regions. The review showed strong improvement in the Southern Region.

This enrollment cycle yield and anti-melt initiatives include:

- "Just Ask" Campaign
- Warm Welcome from the President
- Regular aid evaluation and reconsideration

- Admission representative outreach to targeted students
- Divisional and/or departmental outreach
- Waitlist reconsideration

Finally, she discussed the Pathways program, explaining also acts as a waitlist for direct Oxford admission. The target number for Pathways is 175, and as confirmation exceed this level, top Pathways students will instead be admitted directly to Oxford to keep the Pathways cohort near 175.

Academic Affairs

Provost's Update

Provost Mullenix provided an overview of revisions to the academic portfolio. She stated that in 2019 there were 163 bachelor degrees available, in 2024 there are 116 (16 are in the process of final teach out, and when completed, total eliminations will exceed 60). She then listed the programs eliminated in the past three years, and the elimination/consolidation of low-enrolled majors.

She also informed the Committee of the new programs created since 2019 to better meet student demand, they include bachelor programs, some of which include; Cybersecurity, Business Analytics, Emerging Technology in Business and Design, and Robotics Engineering. They also include graduate master degrees, as well, some of which include; Biomedical Engineering, Computer Science, Physician Associate, and Nurse Practitioner. She stated the emphasis is on STEM, business, data science, and applied fields.

Provost Mullenix then discussed the Maimi Academic Program Incubator (MAPI). She stated that all programs are now vetted through MAPI, allowing decisions to be data informed with market research. The emphasis is on career outcomes and market feasibility, with enrollment projections.

Finally, she reviewed Miami Plan specific course reductions since 2121.

Resolutions

Provost Mullenix then presented three resolutions for new degrees, along with a resolution to eliminate the Comparative Religion Department, and to accept and forward the biannual Completion Plan to the State. The new degrees are:

- Masters in Mechanical and Smart Manufacturing Degree
- Bachelor Degree in Applied Mathematics
- Bachelor of Philosophy Degree

There was discussion by the Committee that the quantity of material is such that a greater time for review of proposed new degrees is required. It was determined that going forward the material would be shared with the Committee once approved by University Senate. The

associated new degree fiscal impact statement was also discussed and that going forward Academic Affairs should develop it in coordination with Finance and Business Services.

The consensus of the Committee was to proceed with the degrees currently on the agenda, but in the future greater time must be provided for review and a more robust fiscal impact statement provided. The three new degree resolutions, along with the Comparative Religion and Completion Plan resolutions, were then considered in a single vote. With a motion from Trustee Schell, and a second from Trustee McNellie, all Committee members by voice vote voted unanimously in favor of approval by the full Board.

College of Engineering and Computing

Dean Beena Sukumaran provided an update on the College of Engineering and Computing. She began by stating the vison and goals of the College. She then provided an infrastructure update. She spoke of the transformation in Benton Hall of the former Deans' Suite into a First Year Lab. She also spoke of the newly dedicated McVey Data Science Building, which includes a Cybersecurity lab, an additional Computer lab, and two dedicated CSE Classrooms. She also relayed that the MME department has created a revised curriculum featuring topics such as advanced manufacturing, automation and digital engineering, and that efforts are underway to create a unifying smart factory lab experience, which will lead students thorough the myriad operations and setups at work in a smart factory.

Dean Sukumaran then discussed modernizing the curriculum, and the revamping of first-year courses CEC111/112 to help increase belongingness and engineering identity. She also relayed how Boldy Creative funding allowed the creation of new programs and initiatives, such as the bachelor degrees in Robotics, and Cyber Security. Master degrees have also been revamped, including the creation of non-thesis degrees. She explained that the non-thesis option requires only one year of study instead of two, making them a more attractive option for students entering the workforce, rather than pursuing a PhD.

She also spoke of the challenges to recruiting new students, with 16 universities offering engineering in Ohio, potential students have many options to choose from. To help inform students of engineering and Miami's program, they have developed a K-12 outreach program with students in the Tri-State area. For this year, confirmations are up year-over-tear from 430 to 510. Graduate student confirmations are also up from 90 to 151.

The College is enhancing industry relations to increase employment opportunities for graduates. Other initiatives to promote workforce development include certificates, summer internships, courses to support workforce needs, graduate certificates, and Co-Op programs.

Dean Sukumaran informed the Committee of efforts to increase research funding. Year-to-date funding levels have surpassed last year, and are near the CEC record year of 2022, which was $4.6M. Three of Miami's top seven departments for research dollars are in CEC.

Finally, she discussed the financial challenges to the College. Nationally, engineering degrees are among the most expensive to deliver. Fundraising is one method to help meet this

challenge, and FY2023 was the largest fundraising year ever for the College, with $5.3M raised, and with $28.3M raised to date in the current campaign. Another method to meet the need is through an engineering fee, and a request has been submitted to the State of Ohio for permission to raise Miami's engineering fee. She also made the Committee aware of how a change to the shared services cost distribution in the RCM model has increased the cost to CEC by approximately $3M per year.

Adjourn

With no other business to come before the Committee, following a motion by Trustee Schell, and a second by Trustee McNellie, by voice vote the Committee unanimously voted to adjourn, with all voting in favor and none opposed.

Written Updates

- SL – Student Life Newsletter
- SL - Student Engagement
- SL - Residence Life/Living Learning Communities
- SL - Center for Student Diversity and Inclusion
- UCM – UCM Newsletter
- EMSS – Center for Career Exploration and Success
- EMSS - Student Success Center
- AA - Academic Advising

Theodore O. Pickerill II
Secretary to the Board of Trustees

EXECUTIVE COMMITTEE of UNIVERSITY SENATE

Liz Mullenix, , Chair & Provost, University Senate
Tracy Haynes, Chair, Senate Executive Committee
Rosemary Pennington , Chair Elect, Senate Executive Committee
Tom Poetter, Past Chair, Senate Executive Committee
University Senate Website: hps://www.miamioh.edu/academic affairs/university senate

May 07, 2024

To: Board of Trustees, Academic and Student Affairs Committee
From: Tracy Haynes, Chair, Senate Executive Committee
RE: University Senate Report to Board of Trustees May 15, 2024 Meeting

Executive Committee of University Senate membership:

- Tracy Haynes (Biology), Chair
- Rosemary Pennington,(Media, Journalism, & Film), Chair Elect
- Tom Poetter, (Educational Leadership), Past Chair
- Nathan French,(CAS), At Large Member
- Troy Travis, Staff Member
- Nyah Smith, (Student Body President), Undergraduate
- Nelchi Prashali, graduate student
- Liz Mullenix, Chair & Provost, University Senate
- Brooke Flinders, (Associate Provost), Secretary of University Senate
- Tammy Paerson, (Assistant for Admin Services), Recording Secretary

The following summarizes items of University Senate Business conducted since the Executive Committee submitted a report to the Board of Trustees on February 12, 2024.

- **New Business, Special Reports and Updates delivered to University Senate:**
  - **February 12, 2024**
    - SR 24-08 Call for a Sense of the Senate, Nathan French, Associate Professor, Department of Comparative Religion, and James C. Hanges, Professor and Chair, Department of Comparative Religion
    - SR 24-09 MME - Mechanical and Smart Manufacturing Engineering, Master of Engineering, Kumar Singh, Professor and Department Chair
    - Ryan Center, Jenny Darroch, Dean of Farmers School of Business
    - Update on Management of Conflicts of Interest in Projects with External Funding, Susan McDowell, Vice President for Research and Innovation
  - **February 26, 2024**
    - LEC Miami Plan Update - Leighton Peterson, Director of Liberal Education and Associate Professor of Anthropology
    - Advanced Manufacturing Hub at Vora Technology Park - Ande Durojaiye, Vice President of Regional Campus, and Dean of the College of Liberal Arts and Applied Science
    - Summary Of Senate Retreat Focus Group Input: Mark Kra, Partner for Bain and Company
  - **March 11, 2024**
    - SR 24- 10 Recording Two Minute Speeches Before Senate, Nathan French,

Associate Professor, Department of Comparative Religion, and Rosemary Pennington, Associate Professor and Journalism Area Coordinator - Media, Journalism, and Film
- AHonors College, Zeb Baker, Executive Director of the University Honors Program
- Center for Global Mental Health in Sports, Amity Noltemeyer, Interim Dean of EHS, and Matt Moore, Chair and Associate Professor of Family Science and Social

- **April 01, 2024**
  - SR 24- 11 MTH – Applied Mathematics – Bachelor of Science, Ebrahim Sarabi, Associate Professor of Mathematics, and Alim Sukhtayev, Associate Professor of Mathematics
  - Miami University Fund Policy, Joan Walker, Senior Director of Compliance and Gift Processing and Brad Bundy, Vice President, University Advancement
  - MiamiTHRIVE Committee Selection, Brent Shock, Special Assistant to President

- **April 15, 2024**
  - SR 24- 12 WST - Individualized Studies, Bachelor of Philosophy, Nicholas Money, Director of Western Program and Professor of Biology
  - SR 24-13 Registration Policy Proposal, Michael Crowder, Associate Provost and Dean of the Graduate School
  - SR 24-14 Doctoral Time Limits Policy Proposal, Michael Crowder, Associate Provost and Dean of the Graduate School
  - Fiscal Priorities, Melissa Chase, Chair and Professor of Sport Leadership and Management, Michele Frank, Associate Professor of Accountancy, and Jen Green, Clinical Professor of Psychology
  - Process Coordinator Update: Department of Comparative Religion Elimination, Terri Barr, Professor of Marketing

- **April 29, 2024**
  - SR 24- 15 EHS TCPL cap increase, Amity Noltemeyer, Interim Dean and Professor
  - SR 24-16 Senate Attendance Policy, Tracy Haynes, Chair of University Senate Executive Committee
  - SR 24-17 Administration of Graduate Awards: Time Limits, Jason Abbitt, Associate Dean of the Graduate School
  - SR 24-18 Administration of Graduate Awards: Time Limits, Jason Abbitt, Associate Dean of the Graduate School SR 24-xx Sense of the Senate: Department of Comparative Religion Elimination Process Coordinator Recommendations, Terri Barr, Professor of Marketing Senator Attendance Policy

- **May 06, 2024**
  - SR 24- 19 Vote to Allow SEC to continue committee filling, Brooke Flinders, Secretary, University Senate
  - Midterm Policy, *Ad hoc* Committee and Replacement Policy, Amy Bergerson, Associate Provost and Dean for Undergraduate Education
  - Miami Mission Statement-Amy Bergerson, Associate Provost and Dean for Undergraduate Education, and Gwen Fears, Assistant VP for Student Life - Assessment, Planning, and Transition
  - SG Overview, Nyah Smith, President of Associated Student Government
  - Grad Students, Nelchi Prashali, and Katie Stahlhut

● **Approved Minors, Revisions to existing degrees, name changes and University Policies received and approved on the University Senate consent calendars:**

- **February 04, 2024**
  - Revisions to Existing Majors - KNH – Public Health - Bachelor of Science in Kinesiology, Nutrition and Health
  - Revisions to Existing Majors - MME - Mechanical Engineering- Master of Science
  - Revisions to Existing Majors - THE – Theatre - Bachelor of Arts in Theatre
  - Revision to Existing Minor - THE – Theatre Minor
  - New Certificate - ACC/FIN - Deals Graduate Certificate

- **February 26, 2024**
  - New Certificates -ECE/CPB - Paper Engineering Certificate for Electrical Engineers
  - New Certificates - SLM - Self-Designed Graduate Certificate in Sport
  - Revisions to Existing Majors - BUS - Business Administration- Master of Business Administration
  - Revisions to Existing Majors - CAS - Biomedical Science - Master of Medical Science
  - Revisions to Existing Majors -HM - Biochemistry- Bachelor of Arts
  - Revisions to Existing Majors - CHM - Chemistry- Bachelor of Arts
  - Revisions to Existing Majors- CHM - Biochemistry- Bachelor of Science
  - Revisions to Existing Majors- CHM - Chemistry- Bachelor of Science
  - Revisions to Existing Majors- EDL - Educational Leadership- Doctor of Philosophy
  - Revision to Existing Minor- MUS - Music Performance Minor
  - Revision to Existing Certificate - FSW - Child Life Specialist Graduate Certificate

- **March 11, 2024**
  - Revisions to Existing Majors -ACC – Accountancy - Master of Accountancy
  - Revisions to Existing Majors - JCS - Criminal Justice - Associate in Applied Science

- **April 01, 2024**
  - Revisions to Existing Majors - TCE – Primary Education PK-5, Bachelor of Science in Education
  - Revisions to Existing Majors- TCE – Literacy and Language, Master of Education
  - Revisions to Existing Majors- PHY – Physics, Bachelor of Science
  - Revisions to Existing Minor- PHY – Physics Minor
  - Revision to Existing Minor- FRI - Classical Studies Minor
  - Revision to Existing Certificate - BUS – Business in the Global Market Certificate

- **April 15, 2024**
  - New Minor -SBS - Applied Social Science Minor
  - Revisions to Existing Majors - ARC - Architecture, Bachelor of Arts in Architecture
  - Revisions to Existing Majors - CHM – Chemistry, Doctor of Philosophy
  - Revisions to Existing Majors -CHM – Chemistry, Master of Science
  - Revisions to Existing Majors - CIT - Cybersecurity & Networking, Bachelor of Science in Information Technology
  - Revisions to Existing Majors- CIT - Information Technology, Bachelor of Science in Information Technology
  - Revisions to Existing Majors - CPB - Biomedical Engineering, Bachelor of Science in Engineering

- Revisions to Existing Majors- EDP – Learning Technologies, Master of Education
- Revisions to Existing Majors- EDP - School Psychology, Master of Science, Specialist in Education
- Revisions to Existing Majors - ENG – English, Doctor of Philosophy
- Revisions to Existing Majors- EDP – ENG – English, Master of Arts
- Revisions to Existing Majors- GEO – Geography and Sustainable Development – Master of Arts
- Revisions to Existing Majors - SBS - Psychological Science, Bachelor of Arts
- Revisions to Existing Co-Majors- IES – Environmental Science Co-Major
- Revision to Existing Minor-PHL - Ethics, Society, and Culture Minor

○ **April 29, 2024**

- New Minor -GIC - International Studies Minor
- Revisions to Existing Majors - TCE - World Language Education, Bachelor of Science in Education
- Revisions to Existing Majors -MME - Mechanical Engineering, Bachelor of Science in Engineering
- Revisions to Existing Majors - SPO - Spanish, Bachelor of Arts
- Revisions to Existing Minor -SPO - Spanish Minor
- Revision to Existing Minor- EDL - Community, Leadership, and Social Change Minor

○ **May 06, 2024**

- Revisions to Existing Majors - CAS/MBI – Public Health, Bachelor of Arts
- Revisions to Existing Minor -GRE - Russian Minor
- Revision to Existing Minor- MTH - Mathematics Minor
- New Co-Major - FSW – Child Life Specialist Co-Major

● **Senate Resolutions**

- SR 24-08 Call for a Sense of the Senate, Nathan French, Associate Professor, Department of Comparative Religion, and James C. Hanges, Professor and Chair, Department of Comparative Religion
- SR 24-09 MME - Mechanical and Smart Manufacturing Engineering, Master of Engineering, Kumar Singh, Professor and Department Chair
- SR 24- 10 Recording Two Minute Speeches Before Senate, Nathan French, Associate Professor, Department of Comparative Religion, and Rosemary Pennington, Associate Professor and Journalism Area Coordinator - Media, Journalism, and Film
- SR 24- 11 MTH – Applied Mathematics – Bachelor of Science, Ebrahim Sarabi, Associate Professor of Mathematics, and Alim Sukhtayev, Associate Professor of Mathematics
- SR 24- 12 WST - Individualized Studies, Bachelor of Philosophy, Nicholas Money, Director of Western Program and Professor of Biology
- SR 24-13 Registration Policy Proposal, Michael Crowder, Associate Provost and Dean of the Graduate School
- SR 24-14 Doctoral Time Limits Policy Proposal, Michael Crowder, Associate Provost and Dean of the Graduate School
- SR 24- 15 EHS TCPL cap increase, Amity Noltemeyer, Interim Dean and Professor
- SR 24-16 Senate Attendance Policy, Tracy Haynes, Chair of University Senate Executive Committee
- SR 24-17 Administration of Graduate Awards: Time Limits, Jason Abbitt, Associate

Dean of the Graduate School

■ SR 24-18 Administration of Graduate Awards: Time Limits, Jason Abbitt, Associate Dean of the Graduate School SR 24-xx Sense of the Senate: Department of Comparative Religion Elimination Process Coordinator Recommendations, Terri Barr, Professor of Marketing Senator Attendance Policy

■ SR 24- 19 Vote to Allow SEC to continue committee filling, Brooke Flinders, Secretary, University Senate

SR 24-08
Sense of the Senate: Department of Comparative Religion Elimination
February 12, 2024

BE IT HEREBY RESOLVED that University Senate approves changes to the Sense of the Senate: Department of Comparative Religion Elimination as outlined below:

Whereas we, as representatives of the Miami Community, have an unwavering commitment to liberal arts undergraduate education;

Whereas Miami University's founding charter commits Miami to "the instruction of youth in all the various branches of the liberal arts and sciences, for the promotion of good education, virtue, religion and morality, and for conferring all the literary honours granted in similar institutions" (from Miami's founding charter (**"An Act to Establish the Miami University,"** February 17, 1809, referenced in **Miami University Policy Manual**, 3339.01);

Whereas we recognize the historic and ongoing contributions of the faculty of the Department of Comparative Religion to teaching, learning, service, and life at Miami University;

Whereas we recognize that Miami University's Department of Comparative Religion, founded in 1927, is one of the two oldest departments dedicated to the study of religion among public universities in the United States;

Whereas we recognize the continuing and essential importance of the interdisciplinary academic study of religion to this institution, state, and nation;

Whereas we understand that higher educational institutions across the United States face historic challenges;

Whereas we understand that Miami University is not immune to these historical challenges;

Whereas we understand the decision to close an academic department will have a meaningful effect on the careers of faculty who have devoted their work to its maintenance and its fields of study and is therefore not undertaken lightly;

Whereas we recognize that the faculty in the Department of Comparative Religion are acting to preserve the academic study of religion at Miami, in a time of rising antisemitism, Islamophobia, threats to national security, and debates over our constitutional rights and liberties, especially religious freedom, in the United States;

Whereas we affirm that University Senate is the legislative body of the University in matters involving educational programs, requirements, and standards – including matters of curriculum, programs, and course offerings – as delegated by the University's Board of Trustees;

BE IT RESOLVED

We, the members of the Miami University Senate, recommend to the Office of the Provost, pursuant to Section 8, Appendix A (SR 14-01) of the University Senate By-Laws, to accept the plans for the Department of Comparative Religion proposed by the faculty of the Department, to commit to the continued existence of the academic study of religion at Miami in our curriculum and research, to commit to the reassignment of the Department's faculty in alignment with extant policy, and to proceed with the assignment of a process coordinator to to explore possible futures for the Department, inclusive of elimination, consolidation, or partition. Senate strongly recommends retention of our valuable employees currently serving in Comparative Religion, tenured, TCPL and staff.

SR 24-09

MME - Mechanical and Smart Manufacturing Engineering, Master of Engineering

February 12, 2024

BE IT HEREBY RESOLVED that University Senate endorses the proposed program, MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering

AND FURTHERMORE, that the endorsement by University Senate of the proposed degree will be forwarded to the Miami University Board of Trustees for consideration.

SR 24-10
Recording Two Minute Speeches Before Senate
March 11, 2024

BE IT HEREBY RESOLVED that University Senate approves changes to the Standing Rules, Meeting Procedures of University Senate as outlined below:

3. Any member of the University community should be permitted to address Senate for a maximum of two minutes before the formal business of the Senate meeting begins - up to a maximum of five (5) two-minute addresses per meeting. Speakers who wish to address Senate must inform the Chair and Secretary of University Senate prior to the beginning of the announced meeting. The addresses will be given prior to the opening of the Senate meeting and are therefore not considered official business of the Senate. However, the Chair will open the meeting by informing the Senate of the speaker(s) that addressed the Senate so that the name(s) will appear in the minutes. Transcripts of the address, if provided by the speaker(s), will be made available to the Senate as an appendix to the meeting minutes. If the speaker(s) desire(s) a transcript of the address be recorded in the appendix, a copy of the transcript of the address must be provided at least one hour before the start of the Senate. The transcript will be checked during the address by the Chair and any modifications noted for the record. If the Senate Executive Committee deems an address is unrelated to the University, neither the speaker(s) name(s) nor the transcript will be included in the appendix to the minutes. If Senators take exception with the omissions of the name(s) or transcript once noted in a regular Senate meeting, Senators may email the Senate Executive Committee after the regular Senate meeting in which the omission is noted with an objection to that omission. The Senate Executive Committee will take up the matter at the next Senate Executive Committee meeting and will invite the objecting Senator(s) to attend the Senate Executive Committee meeting and discuss the omission.

SR 24-11

MTH - Applied Mathematics - Bachelor of Science

April 01, 2024

BE IT HEREBY RESOLVED that University Senate endorses the proposed program, MTH - Applied Mathematics - Bachelor of Science

AND FURTHERMORE, that the endorsement by University Senate of the proposed degree will be forwarded to the Miami University Board of Trustees for consideration.

SR 24-12

WST - Individual Studies, Bachelor of Philosophy

April 01, 2024

BE IT HEREBY RESOLVED that University Senate endorses the proposed program, WST - Individual Studies, Bachelor of Philosophy.

AND FURTHERMORE, that the endorsement by University Senate of the proposed degree will be forwarded to the Miami University Board of Trustees for consideration.

SR 24-13
Registration Policy Proposal
April 15, 2024

BE IT HEREBY RESOLVED that University Senate approves changes to the Registration Policy Proposal as outlined below:

Rationale: It came to our attention that the undergraduate policy library, but not the graduate policy library, includes language about attending classes only if a student is properly registered. Although it is implied elsewhere in policies, we believe it is important to have this language explicitly and consistently stated across both policies and therefore are proposing to add it under "Registration Procedures."

Additionally, current Miami University policies do not specify whether undergraduate students can enroll in a graduate certificate program while in undergraduate status. Previously this has been allowed on a case-by-case basis for stand-alone certificates, but it is important to have a policy that explicitly addresses the requirements and conditions of these types of programs. Furthermore, current policies are silent on how many credit hours (if any) can be transferred into a graduate certificate program from another institution. After consulting with Graduate Council for ideas, this policy revision proposal suggests allowing undergraduate students to take a stand-alone graduate certificate under certain conditions (i.e., junior or senior standing, 3.0 cumulative gpa or higher, permission from the graduate certificate director), and also specifies up to 3 credit hours of transfer credit can be considered for a graduate certificate.

In the process of looking at the above-mentioned possible revisions, we also noticed a number of other minor updates that would improve the clarity and accuracy of the policy. These include: (a) changing all instances of "his or her" to the more inclusive "their," (b) updating contact information and addresses for the OneStop, (c) removing information about the Graduate Summer Scholarship (which is not relevant here and remains stated in another policy), (d) clarifying current procedures for petitions and requesting transfer credit approval, (e) changing "Bannerweb" to "Banner Self Service", (f) updating links, and (g) updating the university withdrawal and military withdrawal information to be consistent with current policies and practices. These changes are also incorporated in this revision proposal.

Covered Parties: Graduate students.

Defined Terms: N/A

Proposed New or Revised Policy (Clean Version):
(Note to Graduate Council: This is a lengthy policy, so it might be easiest when you review this to start with the "Marked Up" version on page 12)

Graduate Credit

All courses numbered 500 and above count for graduate credit. If a graduate student wants to take a 400/500-level course for graduate credit, they must be sure to register for the 500-level section. The course requirements for granting graduate credit should be provided in the course syllabus.

Fall or Spring Semester

The minimum registration for full-time students graduate assistants, and dissertation scholars, is nine (9) graduate credit hours per semester. The maximum registration for a regular semester is eighteen (18) total credit hours per semester (including undergraduate credits). Some exceptions to the 18-hour maximum may be granted; petitions for excess hours should be sent to the Graduate School through the Graduate Student Petition Form (available on the Graduate School webpage).

Winter term registration

Graduate students may enroll in up to six (6) total credit hours during winter term. However, tuition waivers do not automatically apply to winter term enrollments. Enrollment in winter term is a fee-paying activity unless students receive prior approval from the academic dean of the division offering the course.

Summer Course Load

To be considered a full-time student during the summer term, a student must comply with their departmental guidelines for full-time summer status.

The maximum for summer registration will be eight (8) credit hours during a six (6) week summer term, twelve (12) hours during overlapping summer terms, or 1.5 credit hours per week (and proportionately less for periods less than one week).

Graduate Course Load for Part-Time

Part-time Students

Students enrolled in a minimum of one (1) and a maximum of eight (8) graduate credit hours per semester are considered part-time students. Tuition and fees are charged on a per credit hour basis for part-time students.

Course Load for Students Employed Full-Time

Students employed full-time are strongly encouraged to keep their enrollment at six (6) credit hours or less during a semester.

Registration Procedures

Students may register for graduate classes online through Banner Self Service, except for special classes such as individualized studies and internships. Students should manually register for these classes at the One Stop. Students are responsible for class registration, payment, and attendance. No student shall be admitted to or receive credit for a course in which they are not properly registered and paid. Registration must be completed following the policies listed here.

Changes of Registration

Courses may be added, dropped, or changed only in the prescribed time stated in the University academic calendar.

Adding a Course

In the academic year, no student may enter a course (class or laboratory) after the close of the first week of instruction. The instructor may make exceptions with the approval of the department chair. Any instructor may refuse to accept a student after the opening of any course if, in their judgment, too much subject matter has already been covered.

Withdrawing from a Course

Withdrawing from a course is a formal administrative procedure; merely ceasing to attend class is not the same as withdrawing from a course. Before withdrawing from a course, a student should consult with their instructor and academic adviser. A student may withdraw from a course after the first twenty (20) percent of the course and, ordinarily, before the end of sixty (60) percent of the course (see the academic calendar). A grade of W will appear on the student's official record. Refunds follow University policy, available via the Office of the Bursar's website at OneStop Refunds.

- After the first twenty (20) percent of a course through the end of the first sixty (60) percent, a student may withdraw from a course with a signature from the instructor.

- After sixty (60) percent of the course is complete, a student may no longer withdraw from a course, unless a petition is approved by the Graduate Council. The petition must include approval from the course instructor and the student's graduate program director or department chair. The petition must also describe and document the extenuating circumstances (extraordinary circumstances usually beyond the student's control) that form the grounds of the petition. If the petition for withdrawal is approved, the student will be withdrawn from the course with a grade of W. If the petition is not approved, the student will be expected to remain in the course (see the policy "Grades and Scholarship" section "Scholastic Regulations"). The withdrawal deadline is 5:00 p.m. on the last Friday of the term's classes.
- Only in rare circumstances will a petition to withdraw from a course after sixty (60) percent of the course is complete be approved for reasons of academic performance alone.
- When possible, a student should continue to attend class until the Graduate Council has acted on their petition. Non-attendance does not void financial responsibility or a grade of F.

If a student is found responsible of academic dishonesty in a class, and withdraws from the class, the student will receive the grade of F for the class and a notation of academic dishonesty will be posted directly beneath the class on the student's academic record.

Repeated Courses

A student may repeat any course for which no credit has been granted. A student may repeat only once for credit a course in which credit has previously been earned. All grades are counted in the cumulative average, but the credit hours earned in the course will count only once toward graduation. This rule does not apply to those courses designated by a department as being repeatable, nor does it supersede the policy "Registration" section "Credit/No-Credit Courses" on repetition of credit/no-credit courses. A student may, with the instructor's permission, audit a course in which hours have previously been received toward graduation (see the policy "Registration" section "Auditing Courses").

Withdrawal from the University

Official Withdrawal

Officially withdrawing from the University is a formal administrative procedure; merely ceasing to attend classes will not be considered an official withdrawal from the University.

A student seeking to withdraw from the University must submit a formal request to the University through the submission of an online form available on the One Stop website. An international student in a nonimmigrant status should also obtain permission from International Student & Scholar Services.

Students must submit their official withdrawal form for the requested term prior to the published withdrawal deadline for that term. Students may refer to the Academic Calendar on the OneStop website for guidance on the important academic dates, including withdrawal deadlines. In addition, students who receive financial aid are advised to contact their lenders and insurance agents to determine continued eligibility for loan deferments and insurance coverage.

1. If a student officially withdraws before the deadline to drop a class without a grade of a semester or term as published in the Academic Calendar, no grades will be recorded, excluding sprint courses completed or not yet begun prior to the date of withdrawal from the University. Courses in which a final grade has been assigned remain on the academic record.
2. If a student officially withdraws from the University at any point after the deadline to drop a class without a grade through the official withdrawal deadlinne of a semester or term as stated on the Academic Calendar, the Office of the University Registrar shall assign a grade of W in each course for which the student is registered, excluding sprint courses completed or not yet begun prior to the date of withdrawal from the University. Courses in which a final grade has been assigned remain on the academic record.
3. After the official withdrawal deadline as passed, a student may submit a petition to Graduate Council to request withdrawal from the University. Petitions should be based on documented, extenuating, nonacademic reasons and must be submitted during the federal financial aid compliance year.

Official withdrawals are noted on a student's academic record (transcript). Refunds follow University policy, available via the One Stop website.

Unofficial Withdrawal

If a student leaves the University without formally withdrawing resulting in failing and/or non-completion grades recorded for all classes in the semester or term, registrations in subsequent semesters or terms may be cancelled. The student may submit a petition to the Graduate School to request consideration of a change in their record if the petition is submitted during the federal financial aid compliance year.

Military Withdrawal

If a student obtains a military withdrawal, the provisions of the Policy for the Enrolled Students Who Are Called to Active Duty in the Armed Services section apply.

Refund Policies

Instructional Fee, General Fee, Out-of-State Tuition, Miami Metro, Off-Campus Information Services Fee, and Residence Hall Fee: If the withdrawal occurs during the semester or term and the fees have been paid, and a refund of fees is due per the University refund schedule, a refund will be sent to the student. If fees have not been paid or if other miscellaneous charges have not been paid, the amount of the refund will be reduced by the amount outstanding.

Meal Plan Fees

If the withdrawal occurs during the semester or term and the fees have been paid, a prorated refund will be given. Proration is calculated on a daily basis for the period after the effective withdrawal date. If fees have not been paid or if other miscellaneous charges have not been paid, the amount of the refund will be reduced by the amount outstanding.

Notes

It is the student's responsibility to initiate the withdrawal at the Office of the University Registrar and to provide documentation of the call to active duty in the armed services. The effective date of withdrawal will be the date the student submits the withdrawal form to the Office of the University Registrar. The University may be required to provide any refunds to a funding agent other than the student, such as student financial aid programs. Grades will be recorded in accordance with the current academic policy or deadlines (W grades). A notation of official withdrawal will

be recorded on the student's academic record. Under certain conditions a student may receive credit for courses being taken at the time of their withdrawal if 80 percent of the term has elapsed. Students interested in this provision should consult the Office of the University Registrar.

The concept for a refund policy involving students called to active duty in the armed forces was presented to the Board of Trustees in September of 1990; the document can be reviewed by contacting the Office of the President.

Credit/No-Credit Courses

Students may take courses on a credit/no credit basis if the department gives its permission. To receive credit ("CR1") in a graduate-level course, students must earn at least a "B" in the course. A maximum of one fourth of the minimum hours required for their graduate degree, excluding thesis or dissertation hours, may be taken on a credit/no credit basis.

Individualized Study Credit Hours

A student may take individualized study units for graduate-level credit by enrolling in courses such as the following:

- Independent Reading
- Special Topics
- Special Studies
- Independent Study
- Special Problems
- Reading and Directed Research
- Directed Study and Research

These courses, however, must represent work at the graduate level. If individualized learning will include attending a lower-level undergraduate course (those numbered 499 and lower), a student must complete additional supervised study or research beyond the regular coursework to receive graduate credit. The additional study or research must be designed to meet graduate level learning outcomes – simply adding work is not sufficient to receive graduate credit. Please contact the Graduate

School for further information on learning outcomes required to award graduate credit.

To register for individualized study, students should obtain an independent study permit from their department office and have a faculty sponsor or adviser sign on the form. Submit this form in person to the One Stop at Nellie Craig Walker Hall, or email to onestop@miamioh.edu. Registration for independent study at the graduate level should be completed before Change of Schedule ends. Independent study courses may not be added after the deadline for withdrawing from a course with a grade of W (after completion of 60% of the term). Graduate students are limited to five (5) hours of independent study a semester and ten (10) hours for an academic year.

Audit Courses

Lecture and recitation courses may be audited without credit with the consent of the instructor, and will not be counted under any rules establishing maximum registration or enrollment status.

The requirements for auditing a course are established by the instructor and may include active participation by the student. An instructor may drop an auditing student at any time during the semester if the student is not fulfilling the audit requirements of a course. Full fees are assessed for auditing a course. A course can be changed from credit to audit or audit to credit during the first sixty (60) percent of the course (see the academic calendar).

Transfer Credit

If a student earned credit for graduate-level courses at another accredited graduate school, he or she may be able to apply that credit toward the graduate degree and/or graduate certificate. To apply credits to the degree, a student must have achieved the following:

- Received a “B” or better grade for the credits to be transferred.
- Taken the courses within five (5) years of the projected graduation date for the master’s and Specialist in Education (Ed.S.) degrees, and within ten (10) years of the projected graduation date for the doctorate degree. Note that these time limits do not refer to the age of the credit at the time of transfer.

Students who received “pass” or “credit” evaluations for coursework can make a request to the Petitions Committee of their academic division that those courses be applied to their degree. No extension or correspondence work can be applied toward a graduate degree.

Master’s degree candidates may transfer a maximum of one-third of the number of credit hours required for the degree. For example, if a program requires thirty (30) credit hours for the degree, students can transfer a maximum of ten (10) hours. Ed.S. candidates may transfer a maximum of ten (10) credits earned after receiving a master’s degree and before being admitted to an Ed.S. program. Doctoral students may transfer a maximum of twelve (12) credit hours. Students may transfer a maximum of three (3) credit hours towards a graduate certificate.

In order for the credits to be applied to a student’s Miami record, the student must submit a Graduate Credit Transfer form (available on the Graduate School’s webpage), which involves uploading an official transcript from the outside institution. The form is routed to the student’s academic department, who then indicate whether they approve accepting the credit/credits and would like them to be applied to the student’s record. to the form is then routed to the Graduate School. Upon approval, the Graduate School will notify the Office of the Registrar and the credits will be added to the student’s official record.

Undergraduate Classes

Students needing to take undergraduate courses as prerequisites for a graduate degree program, to receive state teacher licensure, or for other reasons, who have already been admitted to Miami’s Graduate School, need to register for the class(es) in the normal manner. Students that have not yet been admitted should contact the Graduate School for admission information. Undergraduate courses do not count toward the minimum required credits for graduate registration for a graduate award holder unless the student has the approval of the Graduate School.

Graduate Students Dual Enrollment in Undergraduate Degree Programs

Current students who have previously earned a bachelor’s degree, shall not, without the permission of the department chair(s), academic divisional dean(s), graduate school dean, and provost, be allowed to enrolled in another degree program at the undergraduate level. Per the Combined Bachelor’s/Master’s Degree policy,

combined students are considered undergraduate students and are not addressed in this policy.

Registration Problems

When students go on leave, have changes in personal information, or do not fulfill certain requirements for registration (such as paying fees on time), special procedures should be followed. These are described below.

Student Status Reactivation

Occasionally students may sit out a semester. To reactive their student status, they should fill out and submit the Application for Re-Enrollment found on the Re-Enrollment webpage.

Students will be notified via e-mail when they have been reactivated.

Students who have not registered for two consecutive academic years will need to re-apply for admission to the Graduate School. Continuing Graduate Status students must reapply after a 5-year absence or no registration in that 5-year period.

Graduate degree programs that have been eliminated for ten or more years may not be pursued, and degrees in programs eliminated for ten or more years may not be conferred.

Registration Holds

Students may be prevented from registering for classes if they have not completed requirements such as medical and academic records or if they have not settled their Bursar's account. For procedures on removing a specific registration hold, contact the office associated with the hold preventing registration. Students may view holds in Banner Self Service to determine why the hold has been placed and then contact the appropriate office. Typically, it will be either the Graduate School at (513) 529-3734 or the OneStop.

Combined Bachelor's/Master's Degree

Departments and programs offering a master's degree have the option of offering a combined bachelors and master's degree program. See the specific department/program of interest for program and admission details.

- Admission Requirements: Miami students can express interest and apply in a combined degree program anytime during their undergraduate career. To matriculate in the combined program, the Miami undergraduates must have Junior or Senior standing and have a GPA of 3.00 or greater or meet the GPA requirement set by the combined degree program. Students must complete the Graduate School application for the desired program. Standard application and admission procedures shall be used. Both full- and part-time students may participate in the combined degree program at a department's discretion. Regular time-limits for completing the master's degree apply to students in a combined degree program.
- Double Counting Graduate Hours: Departments or programs with a combined degree option may allow students to double-count up to 9 hours of graduate course work toward their undergraduate degree. With permission of the appropriate advisor(s) and dean(s) or their designee(s), these students may count the graduate courses toward their major, minor, electives, and university requirements.
- A minimum of 145 credit hours is required for the combined degree program; 115 semester hour minimum for a bachelor's degree and 30 credit hour minimum for a master's degree.
- Student Classification: Students in a combined degree program will remain undergraduates until either (a) they complete all undergraduate degree requirements and receive their undergraduate degree, or (b) they request the Graduate School change their status from undergraduate to graduate (the student must have completed a minimum of 124 or 128 total graduate and undergraduate credit hours, depending on their catalog year, to make this request). Once the student meets one of these two criteria, they will be classified as a graduate student. A student must be classified as a graduate student in at least their final semester before the graduate degree is awarded and cannot take all of their graduate credit hours with undergraduate status.
- Graduation: Students must have graduate student status by the first day of the semester in which they receive their graduate degree (e.g., they must have graduate student status by the first day of spring semester if they will be receiving their graduate degree in May). They may not receive both the undergraduate and graduate degrees on the same date (degrees are conferred four times per year (i.e., January, May, August, December).
- Withdrawal: Students may withdraw from the combined degree program by completing a withdrawal form at the Graduate School. The student must note on the withdrawal form that the student is withdrawing only from the master's program and wishes to retain their status in the undergraduate program. The student must also notify the department of their decision to withdraw from the master's program.

Permission for Undergraduate Students to Enroll in Graduate Courses

Undergraduate students who have earned Junior or Senior standing and have a GPA of 3.00 or greater and having matriculated undergraduate status, may request permission to enroll in 500 or 600 level graduate courses. Students must obtain permission from the instructor, the department chair, and the Dean of the Graduate School. Students may double-count up to 9 hours of graduate course work toward their undergraduate degree. With permission of the appropriate advisor(s) and dean(s) or their designee(s), these students may count the graduate courses toward their major, minor, electives, and university requirements. Graduate courses taken in this manner will be treated as graduate level CGS (non-degree) courses. A maximum of 9 hours of graduate level continuing graduate status courses may count toward a graduate degree program at Miami (see Miami Bulletin).

Permission for Undergraduate Students to Enroll in Free-Standing Graduate Certificates

Undergraduate students who have earned Junior or Senior standing and have a GPA of 3.00 or greater and having matriculated undergraduate status, may request permission to enroll in a free-standing graduate certificate (i.e., a certificate approved to be offered independent from a graduate degree program). Students must obtain permission from the graduate certificate director and the Dean of the Graduate School. Students may double-count up to 9 hours of graduate course work toward their undergraduate degree. With permission of the appropriate advisor(s) and dean(s) or their designee(s), these students may count the graduate courses toward their major, minor, electives, and university requirements.

Proposed Revised Policy (Marked Up Version):

Graduate Credit

All courses numbered 500 and above count for graduate credit. If a graduate student wants to take a 400/500-level course for graduate credit, ~~he or she~~they must be sure to register for the 500-level ~~component~~section. The course requirements for granting graduate credit should be provided in the course syllabus.

Fall or Spring Semester

The minimum registration for full-time students graduate assistants, and dissertation scholars, is nine (9) graduate credit hours per semester. The maximum registration for a regular semester is eighteen (18) total credit hours per semester (including undergraduate credits). Some exceptions to the 18-hour maximum may be granted; petitions for excess hours should be sent to the Graduate School through the Graduate Student Petition Form (available on the Graduate School webpage). ~~If the request is granted, students will retain their eligibility for a Graduate Summer Scholarship.~~

Winter term registration

Graduate students may enroll in up to six (6) total credit hours during winter term. However, tuition waivers do not automatically apply to winter term enrollments. Enrollment in winter term is a fee-paying activity unless students receive prior approval from the academic dean of the division offering the course.

Summer Course Load

To be considered a full-time student during the summer term, a student must comply with ~~his or her~~their departmental guidelines for full-time summer status. ~~See the policy "Types of Awards" section "Graduate Summer Scholarships".~~

~~Graduate Summer Scholarships¶~~

The maximum for summer registration will be eight (8) credit hours during a six (6) week summer term, twelve (12) hours during overlapping summer terms, or 1.5 credit hours per week (and proportionately less for periods less than one week).

Graduate Course Load for Part-Time

Part-time Students

Students enrolled in a minimum of one (1) and a maximum of eight (8) graduate credit hours per semester are considered part-time students. Tuition and fees are charged on a per credit hour basis for part-time students.

Course Load for Students Employed Full-Time

Students employed full-time are strongly encouraged to keep their enrollment at six (6) credit hours or less during a semester.

Registration Procedures

Students may register for graduate classes online through ~~BannerWeb~~Banner Self Service, except for special classes such as individualized studies and internships. Students should manually register for these classes at the One Stop. Students are responsible for class registration, payment, and attendance. No student shall be admitted to or receive credit for a course in which they are not properly registered and paid. Registration must be completed following the policies listed here.

Changes of Registration

Courses may be added, dropped, or changed only in the prescribed time stated in the University academic calendar. ~~Forms for reporting such changes may be obtained from the One Stop, and VOALC Student Services Office, and no change is official until the change of schedule form or registration transaction is deposited and processed in those offices.~~

Adding a Course

In the academic year, no student may enter a course (class or laboratory) after the close of the first week of instruction. The instructor may make exceptions with the approval of the department chair. Any instructor may refuse to accept a student after the opening of any course if, in ~~his or her~~their judgment, too much subject matter has already been covered.

Withdrawing from a Course

Withdrawing from a course is a formal administrative procedure; merely ceasing to attend class is not the same as withdrawing from a course. Before withdrawing from a course, a student should consult with ~~his or her~~their instructor and academic adviser. A student may withdraw from a course after the first twenty (20) percent of the course and, ordinarily, before the end of sixty (60) percent of the course (see the academic calendar). A grade of W will appear on the student's official record. Refunds follow University policy, available via the Office of the Bursar's website at OneStop Refunds.

- After the first twenty (20) percent of a course through the end of the first sixty (60) percent, a student may withdraw from a course with a signature from the instructor.
- After sixty (60) percent of the course is complete, a student may no longer withdraw from a course, unless a petition is approved by the Graduate Council. The petition must include ~~the signatures of~~ approval from the course instructor and the student's ~~academic or divisional adviser~~graduate program director or department chair. The petition must also describe and document the extenuating circumstances (extraordinary circumstances usually beyond the student's control) that form the grounds of the petition. If the petition for withdrawal is approved, the student will be withdrawn from the course with a grade of W. If the petition is not approved, the student will be expected to remain in the course (see the policy "Grades and Scholarship" section "Scholastic Regulations"). The withdrawal deadline is 5:00 p.m. on the last Friday of the term's classes.
- Only in rare circumstances will a petition to withdraw from a course after sixty (60) percent of the course is complete be approved for reasons of academic performance alone.
- When possible, a student should continue to attend class until the Graduate Council has acted on their petition. Non-attendance does not void financial responsibility or a grade of F.

If a student is found responsible of academic dishonesty in a class, and withdraws from the class, the student will receive the grade of F for the class and a notation of academic dishonesty will be posted directly beneath the class on the student's academic record.

Repeated Courses

A student may repeat any course for which no credit has been granted. A student may repeat only once for credit a course in which credit has previously been earned. All grades are counted in the cumulative average, but the credit hours earned in the course will count only once toward graduation. This rule does not apply to those courses designated by a department as being repeatable, nor does it supersede the policy "Registration" section "Credit/No-Credit Courses" on repetition of credit/no-credit courses. A student may, with the instructor's permission, audit a course in which hours have previously been received toward graduation (see the policy "Registration" section "Auditing Courses").

Withdrawal from the University

Official Withdrawal

Officially withdrawing from the University is a formal administrative procedure; merely ceasing to attend classes will not be considered an official withdrawal from the University.

A student seeking to withdraw from the University must submit a formal request to the University through the submission of an online form available on the One Stop website. An international student in a nonimmigrant status should also obtain permission from International Student & Scholar Services.

Students must submit their official withdrawal form for the requested term prior to the published withdrawal deadline for that term. Students may refer to the Academic Calendar on the OneStop website for guidance on the important academic dates, including withdrawal deadlines. In addition, students who receive financial aid are advised to contact their lenders and insurance agents to determine continued eligibility for loan deferments and insurance coverage.

1. If a student officially withdraws before the deadline to drop a class without a grade of a semester or term as published in the Academic Calendar, no grades will be recorded, excluding sprint courses completed or not yet begun prior to the date of withdrawal from the University. Courses in which a final grade has been assigned remain on the academic record.

2. If a student officially withdraws from the University at any point after the deadline to drop a class without a grade through the official withdrawal deadline of a semester or term as stated on the Academic Calendar, the Office of the University Registrar shall assign a grade of W in each course for which the student is registered, excluding sprint courses completed or not yet begun prior to the date of withdrawal from the University. Courses in which a final grade has been assigned remain on the academic record.

3. After the official withdrawal deadline as passed, a student may submit a petition to Graduate Council to request withdrawal from the University. Petitions should be based on documented, extenuating, nonacademic reasons and must be submitted during the federal financial aid compliance year.

Official withdrawals are noted on a student's academic record (transcript). Refunds follow University policy, available via the One Stop website.

~~A student withdrawing from the University is required to file the online Student Withdrawal and Cancellation Form. The withdrawal deadline for fall or spring semester is 5:00 p.m. on the last Friday of the semester preceding final exam week. The withdrawal deadline for summer or winter term is 5:00 p.m. of the last meeting day of the course. Official withdrawals are noted on a student's academic record (transcript). Refunds follow University policy, available via the Office of the Bursar website.~~ ¶

~~Students should refer to the Academic Calendar on the One Stop website for specific academic deadline dates. Students considering withdrawal from the University are strongly encouraged to contact their lenders and insurance agents to determine continued eligibility for loan deferments and insurance coverage.~~¶

1. ~~If a student officially withdraws during the first 20 percent of any semester or term, no grades will be recorded, excluding sprint courses completed or not yet begun prior to the date of withdrawal from the University. Courses in which a final grade has been assigned remain on the academic record.~~¶
2. ~~If a student officially withdraws from the University at any point after 20 percent and through the last class day of a semester or term, the Office of the University Registrar shall assign a grade of W in each course for which the student is registered, excluding sprint courses completed or not yet begun prior to the date of withdrawal from the University. Courses in which a final grade has been assigned remain on the academic record.~~¶
3. ~~If a student officially withdraws from the University after 60 percent of a semester or summer term (excludes winter term), and if the student wishes to re-enroll, the student must submit a petition for re-enrollment to the Interdivisional Committee of Advisors. The petition must include a description of the extenuating circumstances (extraordinary circumstances usually beyond the student's control) that form the grounds of the petition.~~¶
4. ~~If a student obtains a medical withdrawal certified by the Medical Director of Student Health Service or Director of Student Counseling Service, the student will be allowed to withdraw from the University without grades (see the "Voluntary Medical Withdrawal" section). If a student obtains a military withdrawal, the provisions of the section of this policy titled "Withdrawal from the University" apply.~~¶

Unofficial Withdrawal

If a student leaves the University without formally withdrawing resulting in failing and/or non-completion grades recorded for all classes in the semester or term, registrations in subsequent semesters or terms may be cancelled. The student may submit a petition to the Graduate School ~~the Interdivisional Committee of Advisors~~ to request consideration of a change in ~~his or her~~their record if the petition is submitted during the federal financial aid compliance year.

Military Withdrawal

If a student obtains a military withdrawal, the provisions of the Policy for the Enrolled Students Who Are Called to Active Duty in the Armed Services section apply.

~~Refund Policy for Enrolled Students Who are Called to Active Duty in the Armed Services~~¶

~~The following policies and procedures will assist enrolled students who may be called to active duty in the armed forces. Further inquiries may be made to the Office of the University Registrar, 118 CAB, (513) 529-8703.~~¶

~~Student, spouse or as member of the Reserves or National Guard~~¶

~~A student who is called, or whose spouse or is called, to active duty in his or her status as a member of the Reserves or the National Guard will be eligible for a refund of certain fees, provided:~~¶

1. ~~The active duty begins during the semester of current enrollment;~~¶
2. ~~The student officially withdraws from classes;~~¶
3. ~~The student provides documentation to the Office of the University Registrar that the withdrawal is due to a call to active military duty;~~¶
4. ~~No academic credit has been granted for the current semester of enrollment.~~¶

Refund Policies

Instructional Fee, General Fee, Out-of-State Tuition, Miami Metro, Off-Campus Information Services Fee, and Residence Hall Fee: If the withdrawal occurs during the semester or term and the fees have been paid, and a refund of fees is due per

the University refund schedule, a refund will be sent to the student. If fees have not been paid or if other miscellaneous charges have not been paid, the amount of the refund will be reduced by the amount outstanding.

Meal Plan Fees

If the withdrawal occurs during the semester or term and the fees have been paid, a prorated refund will be given. Proration is calculated on a daily basis for the period after the effective withdrawal date. If fees have not been paid or if other miscellaneous charges have not been paid, the amount of the refund will be reduced by the amount outstanding.

Notes

It is the student's responsibility to initiate the withdrawal at the Office of the University Registrar and to provide documentation of the call to active duty in the armed services. The effective date of withdrawal will be the date the student submits the withdrawal form to the Office of the University Registrar. The University may be required to provide any refunds to a funding agent other than the student, such as student financial aid programs. Grades will be recorded in accordance with the current academic policy or deadlines (W grades). A notation of official withdrawal will be recorded on the student's academic record. Under certain conditions a student may receive credit for courses being taken at the time of ~~his or her~~their withdrawal if 80 percent of the term has elapsed. Students interested in this provision should consult the Office of the University Registrar.

The concept for a refund policy involving students called to active duty in the armed forces was presented to the Board of Trustees in September of 1990; the document can be reviewed by contacting the Office of the President.

Credit/No-Credit Courses

Students may take courses on a credit/no credit basis if the department gives its permission. To receive credit ("CR1") in a graduate-level course, students must earn at least a "B" in the course. A maximum of one fourth of the minimum hours required for their graduate degree, excluding thesis or dissertation hours, may be taken on a credit/no credit basis.

Individualized Study Credit Hours

A student may take individualized study units for graduate-level credit by enrolling in courses such as the following:

- Independent Reading
- Special Topics
- Special Studies
- Independent Study
- Special Problems
- Reading and Directed Research
- Directed Study and Research

These courses, however, must represent work at the graduate level. If individualized learning will include attending a lower-level undergraduate course (those numbered 499 and lower), a student must complete additional supervised study or research beyond the regular coursework to receive graduate credit. The additional study or research must be designed to meet graduate level learning outcomes – simply adding work is not sufficient to receive graduate credit. Please contact the Graduate School for further information on learning outcomes required to award graduate credit.

To register for individualized study, students should obtain an independent study permit from their department office and have a faculty sponsor or adviser sign on the form. Submit this form in person to the One Stop at ~~the Campus Avenue Building~~Nellie Craig Walker Hall, or email to onestop@miamioh.edu. Registration for independent study at the graduate level should be completed before Change of Schedule ends. Independent study courses may not be added after the deadline for withdrawing from a course with a grade of W (after completion of 60% of the term). Graduate students are limited to five (5) hours of independent study a semester and ten (10) hours for an academic year.

Audit Courses

Lecture and recitation courses may be audited without credit with the consent of the instructor, and will not be counted under any rules establishing maximum registration or enrollment status.

The requirements for auditing a course are established by the instructor and may include active participation by the student. An instructor may drop an auditing student at any time during the semester if the student is not fulfilling the audit requirements of a course. Full fees are assessed for auditing a course. A course can be changed from credit to audit or audit to credit during the first sixty (60) percent of the course (see the academic calendar).

Transfer Credit

If a student earned credit for graduate-level courses at another accredited graduate school, he or she may be able to apply that credit toward the graduate degree and/or graduate certificate. To apply credits to the degree, a student must have achieved the following:

- Received a "B" or better grade for the credits to be transferred.
- Taken the courses within five (5) years of the projected graduation date for the master's and Specialist in Education (Ed.S.) degrees, and within ten (10) years of the projected graduation date for the doctorate degree. Note that these time limits do not refer to the age of the credit at the time of transfer.

Students who received "pass" or "credit" evaluations for coursework can make a request to the Petitions Committee of their academic division that those courses be applied to their degree. No extension or correspondence work can be applied toward a graduate degree.

Master's degree candidates may transfer a maximum of one-third of the number of credit hours required for the degree. For example, if a program requires thirty (30) credit hours for the degree, students can transfer a maximum of ten (10) hours. Ed.S. candidates may transfer a maximum of ten (10) credits earned after receiving a master's degree and before being admitted to an Ed.S. program. Doctoral students may transfer a maximum of twelve (12) credit hours. Students may transfer a maximum of three (3) credit hours towards a graduate certificate.

In order for the credits to be applied to a student's Miami record, the student must submit a Graduate Credit Transfer form (available on the Graduate School's webpage), which involves uploading an official transcript from the outside institution. The form is routed to the student's academic department, who then indicate whether they approve ~~must prepare a short memo stating that they are~~ accepting the credit/credits and would like them to be applied to the student's record. ~~This memo~~

and an original transcript from the outside institution must be sent toto the form is then routed to the Graduate School. Upon approval, the Graduate School will notify the Office of the Registrar and the credits will be added to the student's official record.

Undergraduate Classes

Students needing to take undergraduate courses as prerequisites for a graduate degree program, to receive state teacher licensure, or for other reasons, who have already been admitted to Miami's Graduate School, need to register for the class(es) in the normal manner. Students that have not yet been admitted should contact the Graduate School for admission information. Undergraduate courses do not count toward the minimum required credits for graduate registration for a graduate award holder unless the student has the approval of the Graduate School.

Graduate Students Dual Enrollment in Undergraduate Degree Programs
Current students who have previously earned a bachelor's degree, shall not, without the permission of the department chair(s), academic divisional dean(s), graduate school dean, and provost, be allowed to enrolled in another degree program at the undergraduate level. Per the Combined Bachelor's/Master's Degree policy, combined students are considered undergraduate students and are not addressed in this policy.

Registration Problems

When students go on leave, have changes in personal information, or do not fulfill certain requirements for registration (such as paying fees on time), special procedures should be followed. These are described below.

Student Status Reactivation

Occasionally students may sit out a semester. To reactive their student status, they should fill out and submit the Application for Re-Enrollment found on the Re-Enrollment at the following websitewebpage.: Your Records (Reenrollment Application)

Students will be notified via e-mail when they have been reactivated.

Students who have not registered for two consecutive academic years will need to re-apply for admission to the Graduate School. Continuing Graduate Status students must reapply after a 5-year absence or no registration in that 5-year period.

Graduate degree programs that have been eliminated for ten or more years may not be pursued, and degrees in programs eliminated for ten or more years may not be conferred.

Registration Holds

Students may be prevented from registering for classes if they have not completed requirements such as medical and academic records or if they have not settled their Bursar's account. For procedures on removing a specific registration hold, contact the office associated with the hold preventing registration. Students may view holds in ~~BannerWeb~~ Banner Self Service to determine why the hold has been placed and then contact the appropriate office. Typically, it will be either the Graduate School at (513) 529-3734 or the OneStop.

Combined Bachelor's/Master's Degree

Departments and programs offering a master's degree have the option of offering a combined bachelors and master's degree program. See the specific department/program of interest for program and admission details.

- Admission Requirements: Miami students can express interest and apply in a combined degree program anytime during their undergraduate career. To matriculate in the combined program, the Miami undergraduates must have Junior or Senior standing and have a GPA of 3.00 or greater or meet the GPA requirement set by the combined degree program. Students must complete the Graduate School application for the desired program. Standard application and admission procedures shall be used. Both full- and part-time students may participate in the combined degree program at a department's discretion. Regular time-limits for completing the master's degree apply to students in a combined degree program.
- Double Counting Graduate Hours: Departments or programs with a combined degree option may allow students to double-count up to 9 hours of graduate course work toward their undergraduate degree. With permission of the appropriate advisor(s) and dean(s) or their designee(s), these students may count the graduate courses toward their major, minor, electives, and university requirements.

- A minimum of 145 credit hours is required for the combined degree program; 115 semester hour minimum for a bachelor's degree and 30 credit hour minimum for a master's degree.
- Student Classification: Students in a combined degree program will remain undergraduates until either (a) they complete all undergraduate degree requirements and receive their undergraduate degree, or (b) they request the Graduate School change their status from undergraduate to graduate (the student must have completed a minimum of 124 or 128 total graduate and undergraduate credit hours, depending on their catalog year, to make this request). Once the student meets one of these two criteria, they will be classified as a graduate student. A student must be classified as a graduate student in at least their final semester before the graduate degree is awarded and cannot take all of their graduate credit hours with undergraduate status.
- Graduation: Students must have graduate student status by the first day of the semester in which they receive their graduate degree (e.g., they must have graduate student status by the first day of spring semester if they will be receiving their graduate degree in May). They may not receive both the undergraduate and graduate degrees on the same date (degrees are conferred four times per year (i.e., January, May, August, December).
- Withdrawal: Students may withdraw from the combined degree program by completing a withdrawal form at the Graduate School. The student must note on the withdrawal form that the student is withdrawing only from the master's program and wishes to retain their status in the undergraduate program. The student must also notify the department of their decision to withdraw from the master's program.

Permission for Undergraduate Students to Enroll in Graduate Courses

Undergraduate students who have earned Junior or Senior standing and have a GPA of 3.00 or greater and having matriculated undergraduate status, may request permission to enroll in 500 or 600 level graduate courses. Students must obtain permission from the instructor, the department chair, and the Dean of the Graduate School. Students may double-count up to 9 hours of graduate course work toward their undergraduate degree. With permission of the appropriate advisor(s) and dean(s) or their designee(s), these students may count the graduate courses toward their major, minor, electives, and university requirements. Graduate courses taken in this manner will be treated as graduate level CGS (non-degree) courses. A

maximum of 9 hours of graduate level continuing graduate status courses may count toward a graduate degree program at Miami (see Miami Bulletin).

Permission for Undergraduate Students to Enroll in Free-Standing Graduate Certificates

Undergraduate students who have earned Junior or Senior standing and have a GPA of 3.00 or greater and having matriculated undergraduate status, may request permission to enroll in a free-standing graduate certificate (i.e., a certificate approved to be offered independent from a graduate degree program). Students must obtain permission from the graduate certificate director and the Dean of the Graduate School. Students may double-count up to 9 hours of graduate course work toward their undergraduate degree. With permission of the appropriate advisor(s) and dean(s) or their designee(s), these students may count the graduate courses toward their major, minor, electives, and university requirements.

Effective Date: August 26, 2024

Responsible Parties: The Graduate School

Implementation Procedures and Timeline: The policy library will be updated in August, and the Graduate School will update any relevant pages on our website accordingly (e.g., to reflect the changes related to graduate certificates). The Graduate School will also work with other relevant offices and individuals to ensure timely and effective implementation.

Additional Resources and Procedures:
N/A

SR 24-14
Doctoral Time Limits Policy Proposal
April 15, 2024

BE IT HEREBY RESOLVED that University Senate approves changes to the Doctoral Time Limits Policy Proposal as outlined below:

Rationale: In the policy library, there is currently a slightly different way in which time limits to degree completion are defined for doctoral students versus master's students. Doctoral students are required to complete degree requirements within 10 years of the first course in their doctoral program, and master's degree students are required to complete degree requirements within 5 years of their first course in the master's degree program. However, for master's students (but not doctoral students), the policy also includes this note: "*Note: Students have until December 31st of the fifth year to complete the degree. For example, a student first registering in the summer of 2022 has through December of 2027 to complete the degree.*" This means that depending on the timing of their first course, master's students could have more than 5 calendar years from the start date. After discussion in Graduate Council, it seems that including similar language for doctoral students will improve consistency, reduce confusion, and reduce the number of petitions requesting a time limit extension, while still retaining the rigor and timeliness of the degree.

Covered Parties: Graduate students.

Defined Terms: N/A

Proposed New or Revised Policy (Clean Version):

Time Limits for Degree Completion

Students must complete coursework, pass the comprehensive examination, complete their dissertation and pass the final examination within ten (10) years of completing their first course in the doctoral program.

Note: Students have until December 31st of the tenth year to complete the degree. For example, a student first registering in the summer of 2022 has through December of 2032 to complete the degree

Proposed Revised Policy (Marked Up Version):

Time Limits for Degree Completion

Students must complete coursework, pass the comprehensive examination, complete their dissertation and pass the final examination within ten (10) years of completing their first course in the doctoral program.

Note: Students have until December 31st of the tenth year to complete the degree. For example, a student first registering in the summer of 2022 has through December of 2032 to complete the degree.

Effective Date: August 26, 2024

Responsible Parties: The Graduate School

Implementation Procedures and Timeline: The Graduate School will disseminate this information to the relevant programs, departments, and offices.

Additional Resources and Procedures:
N/A

SR 24-15
Sense of the Senate: Department of Comparative Religion Elimination Process Coordinator Recommendations
April 22, 2024

Whereas we affirm that University Senate is the legislative body of the University in matters involving educational programs, requirements, and standards – including matters of curriculum, programs, and course offerings – as delegated by the University's Board of Trustees;

Whereas we are reminded of our "Sense of the Senate: Department of Comparative Religion Elimination" that was adopted on February 26, 2024, especially our acknowledgment that the faculty and staff in the Department of Comparative Religion are acting to preserve the academic study of religion at Miami;

BE IT HEREBY RESOLVED that University Senate accepts the recommendations of the Process Coordinator for Comparative Religion as reported to Senate on April 15, 2024 and as outlined below:

- The elimination of the Department of Comparative Religion as a result of its low-enrolled major and institutional re-prioritizations
- The re-housing of faculty from Comparative Religion in other departments of the College of Arts and Science where their interests will align and where they can continue to teach and research the relevance of religion in today's world
- The proposal and establishment of the proposed Center for the Study of Religion, Policy, and Public Life to maintain the future of the teaching and research of religion at Miami

SR 24-16
Proposed Policy Change: Teaching, Clinical Professors, & Lecturers (TCPLs)
April 29, 2024

BE IT HEREBY RESOLVED that University Senate approves changes to the Proposed Policy Change: Teaching, Clinical Professors, & Lecturers (TCPLs) as outlined below:

Policy Title: Teaching, Clinical Professors, & Lecturers (TCPLs)

Rationale: The College of Education, Health, and Society (EHS) has many professional and clinical programs. Particularly with the addition of some of our newer professionally-focused graduate programs (e.g., counseling, athletic training), our current 26% TCPL cap does not provide us with enough flexibility to hire needed continuing faculty in some of our programs. This proposal is requesting to increase our cap from 26% to 29%, which would put us at the same level as CCA, CEC, FSB, and CLAAS.

Proposed New Policy (Marked Up Version):

Limitation on Number of Lecturers and Teaching Faculty

TCPLs may not exceed the following percentages of continuing faculty (full-time TCPL and Tenure/Tenure Track) within each division:

- CAS: 23.0%
- CCA: 29.0%
- EHS: 296.0%
- CEC: 29.0%
- FSB: 29.0%
- CLAAS: 29.0%

Proposed New Policy (Clean Version):

Limitation on Number of Lecturers and Teaching Faculty

TCPLs may not exceed the following percentages of continuing faculty (full-time TCPL and Tenure/Tenure Track) within each division:

- CAS: 23.0%

- CCA: 29.0%
- EHS: 29.0%
- CEC: 29.0%
- FSB: 29.0%
- CLAAS: 29.0%

Effective Date: August 26, 2024

SR 24-17
Senate Attendance Policy
April 29, 2024

BE IT HEREBY RESOLVED that University Senate approves changes to the Standing Rules, Meeting Procedures of University Senate as outlined below

1. ~~When an at-large faculty~~ Any member of University Senate who is unable to attend meetings of Senate for a semester or longer because of a leave-of-absence or other reasons should notify the Secretary of University Senate as soon as possible. When the absence is the result of an authorized leave, Senate Executive Committee will work with the Governance Committee to find someone to temporarily fill the seat during the senator's leave. If the absence is unauthorized, his or her seat shall be declared vacant. *The Governance Committee will be notified to fill faculty vacancies by the appropriate process. The Chief of Staff will be notified to fill Presidential Appointee vacancies and CPAC or UPAC will be notified by the Secretary of Senate and the Staff representative of the Senate Executive Committee to fill the CPAC or UPAC vacancy. The Associated Student Government or Graduate Student Association will be notified to fill student vacancies.* A vacancy for an at-large faculty member of University Senate will be filled by the candidate (who had not been previously elected) who receives the largest number of votes when the ballots are re-tabulated after the votes for the person who has resigned have been deleted and those votes are reassigned. ~~At-large senators who expect to be unable to attend meetings of Senate for a full semester or more should notify the Secretary of University Senate as soon as possible~~. The name of the faculty member who is replaced shall be undeleted when the faculty member becomes available for service and thereby becomes eligible for election, should future vacancies occur prior to the next all-University election for at-large faculty members of Senate.

   (Approved SR88-56C, April 18, 1988)
   (Amended, SR99-1, August 31, 1998)

2. *Upon three (3) absences of a member of Senate from regularly scheduled meetings of Senate during a semester, the Executive Committee of University Senate will notify the senator of the absences and extend an invitation to the senator to discuss the absences in a session of Senate Executive Committee. ~~the Secretary of University Senate shall be directed to report said absences to~~*

~~*the constituency of the member of Senate*~~. ~~In the case of student members of Senate, said report shall be reported to the executive cabinet of the Associated Student Government or the Graduate Student Association.~~ *Upon the fourth absence* ~~*six (6) absences*~~ *of a member of Senate during the semester, the Secretary of University Senate shall be directed to report said absences to the constituency of the member of Senate. In the case of at-large faculty members of Senate, Presidential Appointee, or staff senators, said report shall be reported to the Chair of the Executive Committee of University Senate. In the case of student members of Senate, said report shall be reported to the executive cabinet of the Associated Student Government or the Graduate Student Association. Then, Senate shall consider a motion to declare said member's seat to be vacant and to direct the Governance Committee to fill faculty vacancies by the appropriate process, the Chief of Staff to fill Presidential Appointee vacancies, CPAC or UPAC to fill staff vacancies, and the Associated Student Government or Graduate Student Association to fill student vacancies . At-Large Senator vacancies will be filled as described in Part 1.*

SR 24-18
Administration of Graduate Awards: Time Limits

April 29, 2024

BE IT HEREBY RESOLVED that University Senate approves changes to the Administration of Graduate Awards: Time Limits as outlined below:

Rationale:

Issue #2: Address the need to permit MFA students to be eligible for 3 years of support from graduate assistantships

The current policy regarding the Administration of Graduate Awards describes time limits for graduate assistantships for students in master's programs and doctoral programs that roughly correlate to the time required to complete these degrees. The MFA in Art and Master of Architecture programs, however, are designed as 3-year graduate programs and would benefit from a policy change to extend eligibility for GA appointments up to 3 years. Students in these programs have petitioned in the past for an additional year of eligibility for GA appointments. Adding language to the Administration of Graduate Awards policy, under the heading Time Limits for Graduate Awards that specifies this limit would allow MFA and Master of Architecture programs to be eligible for GA appointments for a 3rd year without the need for a petition.

One example of the problem that exists is that, when recruiting prospective MFA students, the Dept of Art wishes to be transparent regarding this policy and articulates that Master's degree students are limited to two years of support and can petition for a 3rd year. This conveys the message that a 3rd year of eligibility is uncertain which may influence a prospective student's decision to confirm admission. A similar issue exists for students in the Master of Architecture III program.

Covered Parties: Graduate students.

Defined Terms: N/A

Proposed Revised Policy (Marked Up Version):

Nomination of Graduate Award Candidates

Graduate Directors submit the graduate award nominations using the electronic nomination process to the divisional dean for approval. When a graduate award has

received all necessary approvals, the Academic Personnel Office will process the

award. When the Dean of the Graduate School approves the award nomination, an appointment letter will be sent to the student, with copies sent to the appropriate chair or supervisor and the divisional dean.

After April 15th, departments should not recommend the appointment of a student known to have accepted an appointment elsewhere unless the department has written evidence that the student has been officially released from the previous commitment. This is in accordance with the resolution of the Council of Graduate Schools in the United States, to which Miami University is a signatory.

Time Limits for Graduate Awards

Graduate assistantships awarded to students admitted to a master's program at Miami University may be appointed for one additional year for a maximum of two years of support.

Graduate assistantships awarded to students admitted to a Master of Fine Arts or three year Master of Architecture program may be appointed for up to two additional years for a maximum of three years of support.

Regardless of source of support, students enrolled in a doctoral program may receive the following:

Financial support from graduate assistantships and dissertation scholarships for a total of four years beyond receipt of a master's degree, or

Six (6) years of support beyond the bachelor's degree if admitted directly into a doctoral program at Miami University.

Procedures for Award Recipients

Upon receipt of their award notice, students must do the following to facilitate their registration and compensation:

- Complete the medical history form and have a tuberculin test or chest X-ray if students are first-time appointees. Graduate students are required to complete the Miami medical history form. Proof of immunity to Measles, Mumps, and Rubella is required if students were born after January 1, 1957. Students with

graduate awards are required to have a tuberculin test within six (6) months of admission. The Student Health Service offers the tuberculin test at no charge and a chest X-ray for a nominal fee. A student who has a positive tuberculin test must have a chest X-ray. International students must have an annual tuberculin test and/or a chest X-ray.

- Complete the necessary payroll forms, including the Immigration and Naturalization Service forms (and provide the necessary documents); this can be done during the Graduate Student Orientation in mid-August or in the Academic Personnel Office, 1 Roudebush Hall. If students do not complete these forms, their end-of-August payroll check will not be issued.

Payroll and Tax Information

The University requires automatic paycheck deposit for all employees, including graduate award holders for the academic year and for the summer sessions. Graduate Assistants will receive paychecks on the last business day of each month they are to be paid.

- Academic year appointment: half month pay for August and May; full month pay September through April
- Fall semester appointment: Half month pay for August, four monthly payments September through December
- Spring semester appointment: If student is a new GA, half month for January; full month pay February through April. If student is a current GA, four full months January through April, half month pay in May.

Taxable Income

Depending on individual circumstances, students' stipend is subject to withholding for Federal and Ohio income taxes and the Oxford earnings tax. Students must complete and sign a W-4 form (computer card) during the Graduate Student Orientation or at the Payroll Office, 2 Roudebush Hall, designating their withholding allowances; this information is needed by the Payroll Department, which determines the amount to withhold from stipend checks. If students do not complete this form on time, their payroll check will not be issued.

Under the current federal tax regulations (The Tax Reform Act of 1986), the IRS may determine that tuition waivers for graduate award holders are taxable. As of this writing, tuition waivers provided through graduate awards (assistantships and scholarships) have been exempted from this tax up to $5,250.00.

Tax Liabilities

If students can be claimed as a dependent on another person's tax return, they may not be exempt from Federal Income Tax liability. Students cannot claim exempt status if they have any non-wage income, such as interest on savings, and expect their wages plus non-wage income to add up to more than $500.00.

Residents of Indiana, Michigan, Kentucky, Pennsylvania, or West Virginia may elect to pay state income tax in that state and be exempted from the withholding of Ohio Income Tax by notifying the Payroll Department. Otherwise, they must pay state income tax in Ohio.

Compensation earned at the Oxford Campus is subject to deduction of a one and three fourths percent (1.75%) earnings tax for the City of Oxford. Compensation earned at the Hamilton Campus is subject to the deduction of two percent (2%) earnings tax. Compensation earned at the Middletown Campus is subject to the deduction of one and one-half percent (1.5%) earnings tax. If students currently reside within the city limits of Cincinnati or Fairfield, or other municipality that has an earning tax, they should contact the Payroll Office to insure the deduction of the **proper city tax.**

Proposed New or Revised Policy (Clean Version):

Nomination of Graduate Award Candidates

Graduate Directors submit the graduate award nominations using the electronic nomination process to the divisional dean for approval. When a graduate award has received all necessary approvals, the Academic Personnel Office will process the award. When the Dean of the Graduate School approves the award nomination, an appointment letter will be sent to the student, with copies sent to the appropriate chair or

supervisor and the divisional dean.

4

After April 15th, departments should not recommend the appointment of a student known to have accepted an appointment elsewhere unless the department has written evidence that the student has been officially released from the previous commitment. This is in accordance with the resolution of the Council of Graduate Schools in the United States, to which Miami University is a signatory.

Time Limits for Graduate Awards

Graduate assistantships awarded to students admitted to a master's program at Miami University may be appointed for one additional year for a maximum of two years of support.

Graduate assistantships awarded to students admitted to a Master of Fine Arts or three year Master of Architecture program may be appointed for up to two additional years for a maximum of three years of support.

Regardless of source of support, students enrolled in a doctoral program may receive the following:

Financial support from graduate assistantships and dissertation scholarships for a total of four years beyond receipt of a master's degree, or

Six (6) years of support beyond the bachelor's degree if admitted directly into a doctoral program at Miami University.

Procedures for Award Recipients

Upon receipt of their award notice, students must do the following to facilitate their registration and compensation:

- Complete the medical history form and have a tuberculin test or chest X-ray if students are first-time appointees. Graduate students are required to complete the Miami medical history form. Proof of immunity to Measles, Mumps, and Rubella is required if students were born after January 1, 1957. Students with

graduate awards are required to have a tuberculin test within six (6) months of admission. The Student Health Service offers the tuberculin test at no charge and a chest X-ray for a nominal fee. A student who has a positive tuberculin test must have a chest X-ray. International students must have an annual tuberculin test and/or a chest X-ray.

5

- Complete the necessary payroll forms, including the Immigration and Naturalization Service forms (and provide the necessary documents); this can be done during the Graduate Student Orientation in mid-August or in the Academic Personnel Office, 1 Roudebush Hall. If students do not complete these forms, their end-of-August payroll check will not be issued.

Payroll and Tax Information

The University requires automatic paycheck deposit for all employees, including graduate award holders for the academic year and for the summer sessions. Graduate Assistants will receive paychecks on the last business day of each month they are to be paid.

- Academic year appointment: half month pay for August and May; full month pay September through April
- Fall semester appointment: Half month pay for August, four monthly payments September through December
- Spring semester appointment: If student is a new GA, half month for January; full month pay February through April. If student is a current GA, four full months January through April, half month pay in May.

Taxable Income

Depending on individual circumstances, students' stipend is subject to withholding for Federal and Ohio income taxes and the Oxford earnings tax. Students must complete and sign a W-4 form (computer card) during the Graduate Student Orientation or at the Payroll Office, 2 Roudebush Hall, designating their withholding allowances; this information is needed by the Payroll Department, which determines the amount to withhold from stipend checks. If students do not complete this form on time, their payroll check will not be issued.

Under the current federal tax regulations (The Tax Reform Act of 1986), the IRS may

determine that tuition waivers for graduate award holders are taxable. As of this writing, tuition waivers provided through graduate awards (assistantships and scholarships) have been exempted from this tax up to $5,250.00.

Tax Liabilities

6

If students can be claimed as a dependent on another person's tax return, they may not be exempt from Federal Income Tax liability. Students cannot claim exempt status if they have any non-wage income, such as interest on savings, and expect their wages plus non-wage income to add up to more than $500.00.

Residents of Indiana, Michigan, Kentucky, Pennsylvania, or West Virginia may elect to pay state income tax in that state and be exempted from the withholding of Ohio Income Tax by notifying the Payroll Department. Otherwise, they must pay state income tax in Ohio.

Compensation earned at the Oxford Campus is subject to deduction of a one and three fourths percent (1.75%) earnings tax for the City of Oxford. Compensation earned at the Hamilton Campus is subject to the deduction of two percent (2%) earnings tax. Compensation earned at the Middletown Campus is subject to the deduction of one and one-half percent (1.5%) earnings tax. If students currently reside within the city limits of Cincinnati or Fairfield, or other municipality that has an earning tax, they should contact the Payroll Office to insure the deduction of the **proper city tax.**

Effective Date: August 26, 2024

Responsible Parties: The Graduate School

Implementation Procedures and Timeline: The policy library will be updated in August, and the Graduate School will update any relevant pages on our website accordingly. The Graduate School will also work with other relevant offices and individuals to ensure timely and effective implementation.

Additional Resources and Procedures:
N/A

SR 24-19
Appointment to Standing and Advisory Committee of University Senate
May 06, 2024

BE IT HEREBY RESOLVED that University Senate confirm the 2024-2025 appointments to open seats of the standing and advisory committees of University Senate; and

BE IT FURTHERMORE RESOLVED that Senate authorizes Senate Executive Committee to confirm remaining 2024-2025 appointments to the standing and advisory committees of University Senate

Presented by the Office of Student Wellness and HAWKS Peer Education

Student Wellness at Miami

Peer Education

An evidence-based process whereby well-trained, motivated students undertake informal or organized educational activities with their peers, aimed at developing their knowledge, attitudes, beliefs, and skills enabling them to be responsible for and to protect their own health.

Peer Education Teams

Office of Student Wellness:

- HAWKS Peer Health Educators
- Suicide Prevention Health Educators
- Its On Us Sexual Assault Prevention Educators

The Power of Partnership

- Allyship
- Increased capacity
- Culture change
- Relationship building and trust
- Unity and shared messaging

Stephanie Selvaggio

- Junior, Nutrition and Dietetics major
- Second year in HAWKS
  - Recruitment chair
  - Incoming VP for university programs
- Also in Chi Omega sorority, and Student Academy of Nutrition and Dietetics
- Aiming for a Masters of Kinesiology, Nutrition, and Health; want to become a registered dietitian

Our Philosophy: FIRE

- **F**reedom: Respect that each person has inherent ***freedom*** to choose and make decisions for themselves.
- **I**nformation: Present factual, relevant ***information*** that influences students to think critically about their choices and possibly challenges their beliefs.
- **R**eflect: Ask students to ***reflect*** on their values, choices, and protective actions they will take.
- **E**ngage: Strive to ***engage*** students in the learning process, helping them see the relevance and importance of their choices.

Programming Focus Areas

- Bystander Intervention
- Substance use
- Mental health promotion
- Sexual health
- Sexual assault prevention
- Nutrition and healthy behaviors
- General wellness

City of Oxford: HAWKS Walks

- Deliver health, wellness, and safety messaging
- Door-to-door off campus, twice per semester
- Sense of neighborly connection
- Includes written communications, freebies, and resources from a variety of university partners.

Fraternity and Sorority Life

Greeks Step Up!

- Step Up Bystander Intervention training
- Specific to the student experience in the Greek community
- Partnership with Panhellenic and Interfraternity Council

Athletics

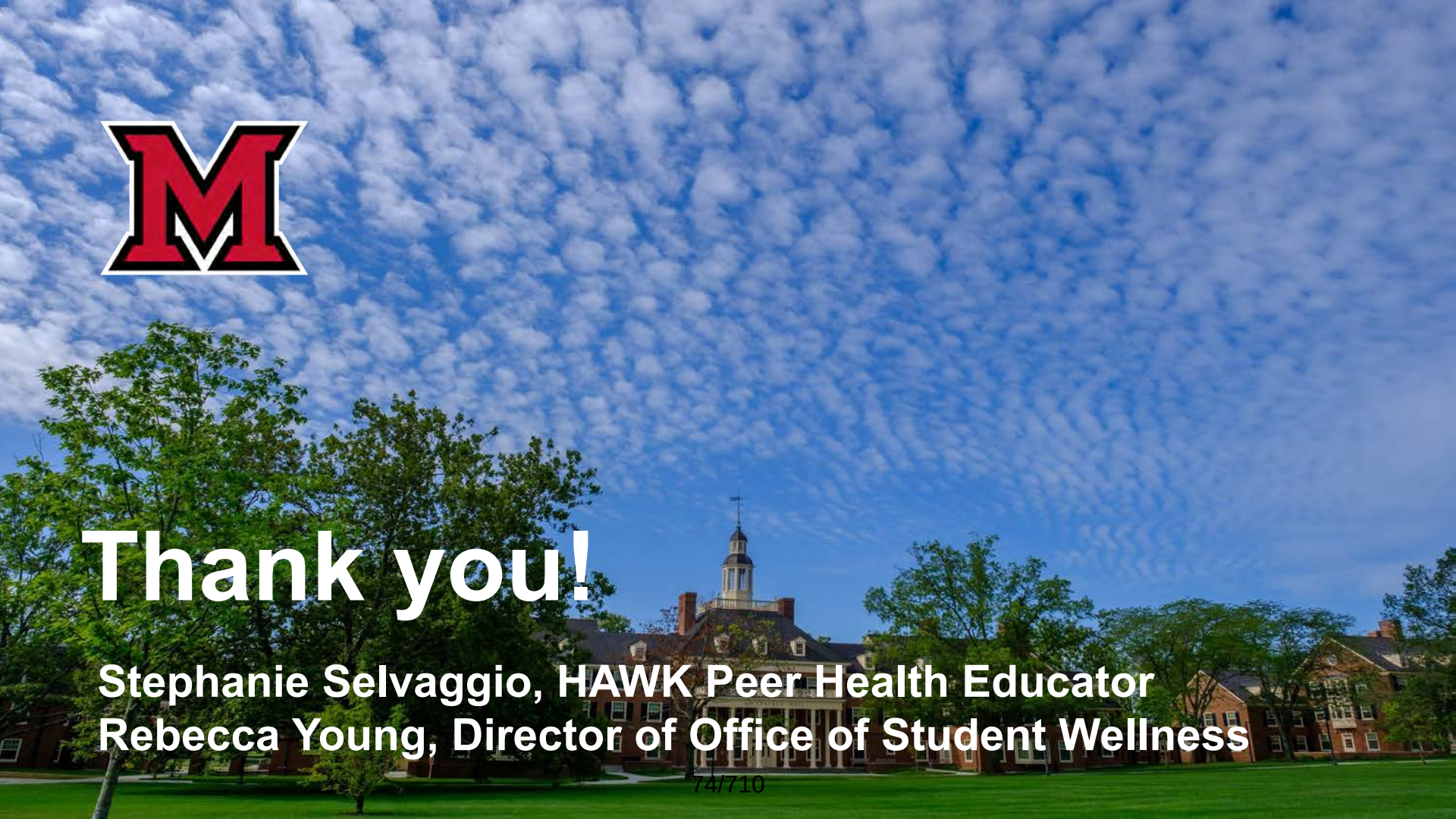
Sexual Assault Prevention Programming

- Annual program
- Fall 2023: Students Fight Back
- Over 600 athletes participate

Academics

Step Up Bystander Intervention

- First-year experience courses
- Over 95% of first-year students
- Online program with in-class discussions
- Campus wide campaign to coincide with course delivery



Thank you!

Stephanie Selvaggio, HAWK Peer Health Educator
Rebecca Young, Director of Office of Student Wellness

UCM Update and Marketing ROI

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Introduction | Topics

UCM update

- Operational Improvements
- Team Highlights: Graphic Design, News, Social Media

Advertising ROI: Undergraduate

- Context
- Applications, Confirms

Looking Forward

UCM Update

Operational Improvements

- Project management
  - New project management tool
  - Ability to resources plan
  - Linked to key industry partners
- Transparent budget model
- Cross-team committees
- Career pathway planning

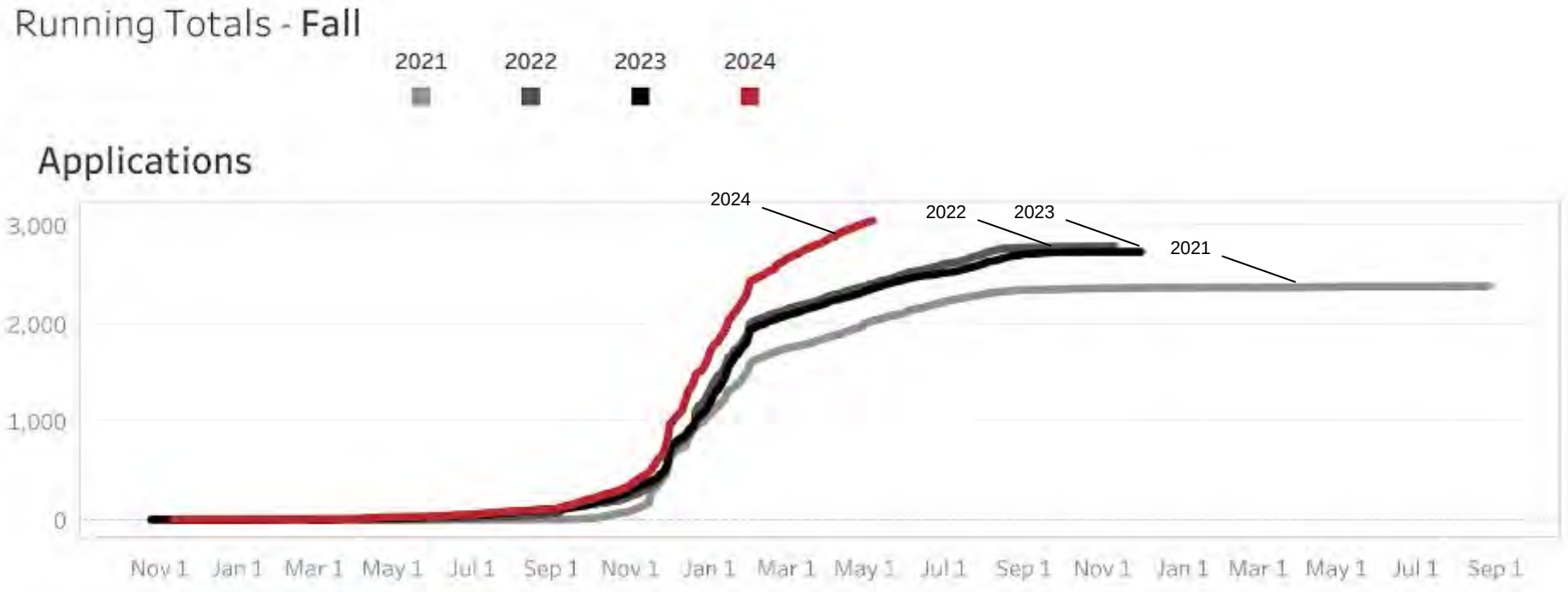
Graphic Design Spotlight: CEC Displays

BEFORE

CONCEPT

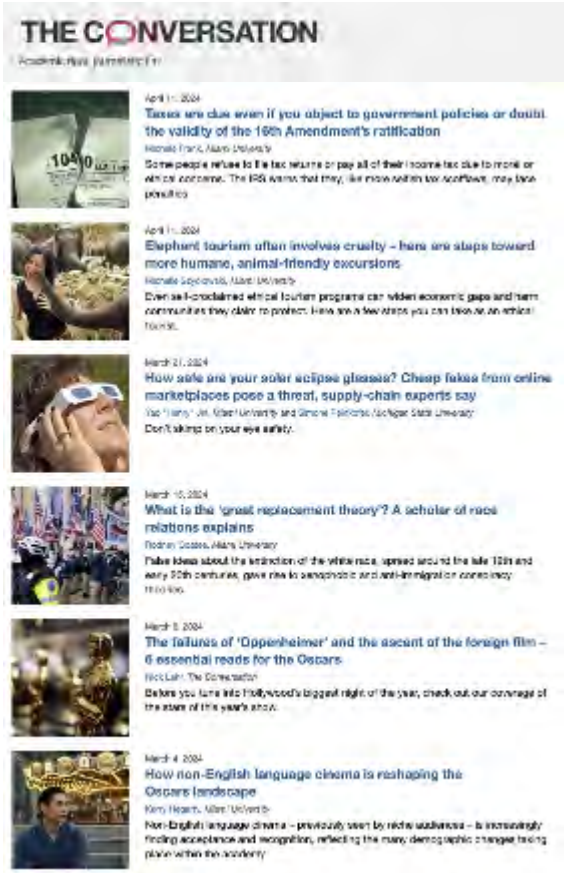

Miami
SPRING CAREER
INTERNSHIP FAIRS

Marketing Spotlight: Graduate Enrollment



Data as of 5/5/24

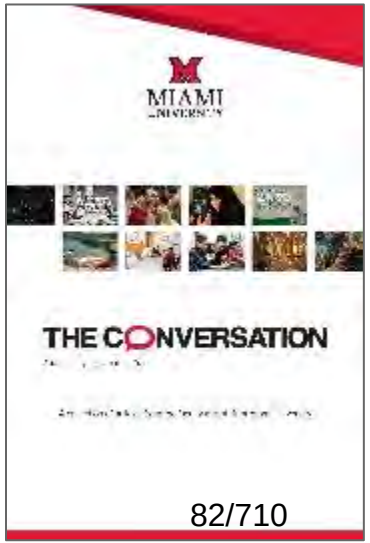
News Spotlight: Faculty Expertise



- 39 articles
- 22 faculty authors
- 170 Publishers
- 1,042,000 reads

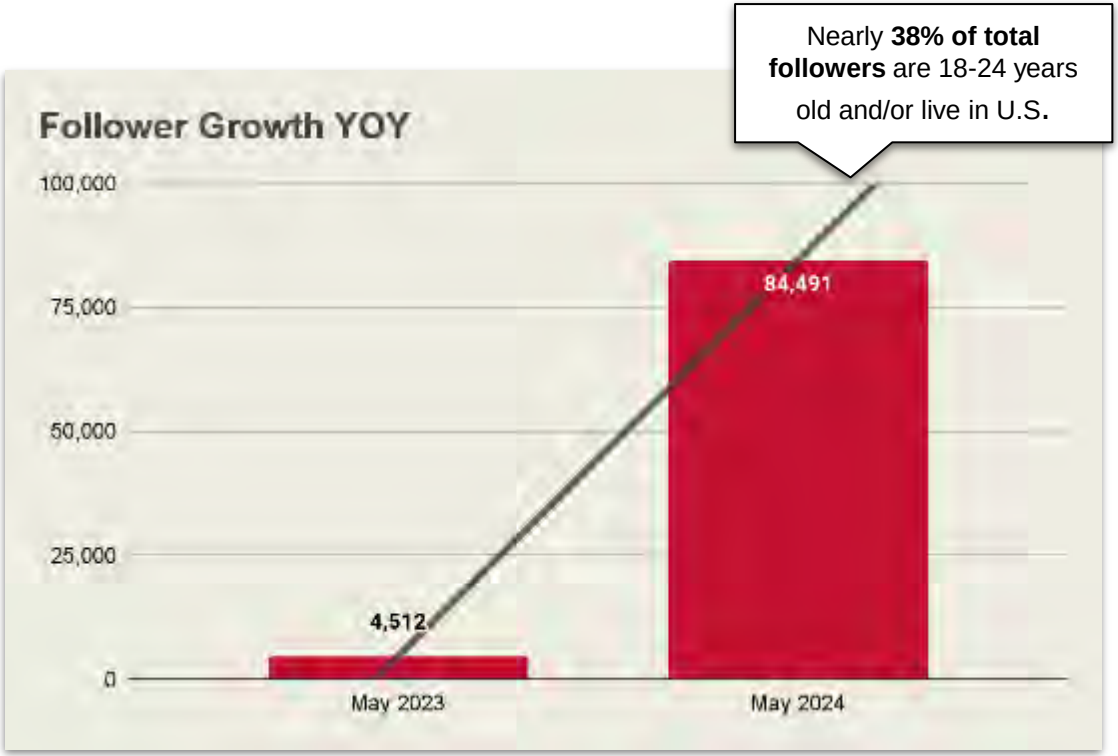
- Concept: Book for peer influence campaign

CONCEPT

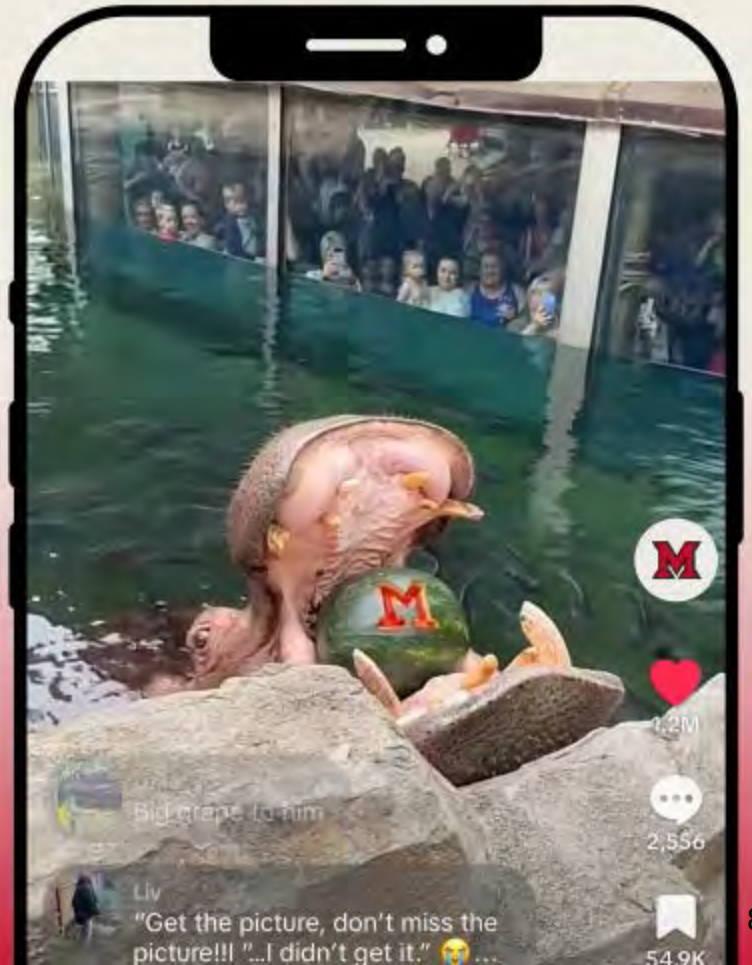


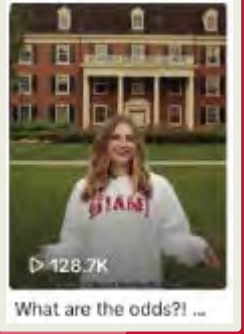
Social Media Spotlight: TikTok

- **May 2022 -** Miami University launches official @miamiuniv TikTok account.
- **August 2023 -** strategy moves in-house to focus effort on building intern program and campus partnerships.
- **May 2024 -** Video views up 3,525% at 106M YOY = more brand exposure.



By The Numbers





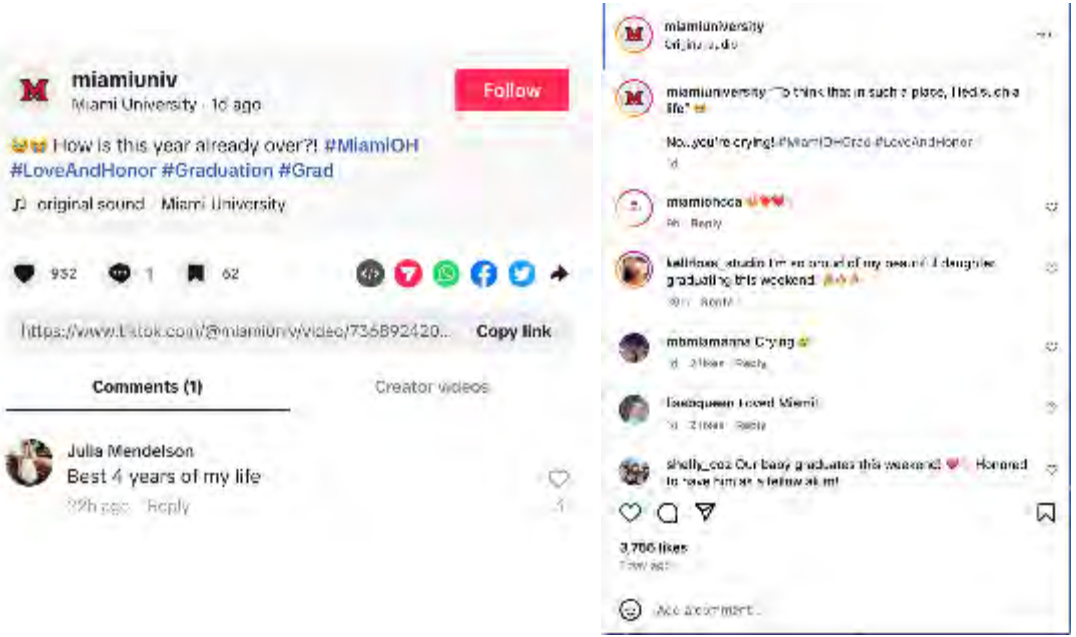
Followers 84.4K
1,772% YOY

Organic Impressions 106M
3,525% YOY

Organic Engagements 1.4M
837% YOY

Organic Comments 9.5K
386% YOY

Organic Shares 35K
375% YOY


miamiuniv
Miami University · 1d ago
Follow
How is this year already over?! #MiamiOH #LoveAndHonor #Graduation #Grad
original sound · Miami University
952
1
62
Copy link
Comments (1)
Creator videos
Julia Mendelson
Best 4 years of my life
Reply
3,766 likes

Advertising ROI: Undergraduate Applications

Context: History of Ad Spend and Strategy

- Began comprehensive approach in 2021
  - Partnered with EMSS to conduct 3E enrollment market research
  - Dedicated more budget to support marketing (still below industry avg)
  - Refined OOS Strategy
  - Direct mail to sophomores

- FY22
  - Partnered with Carnegie Dartlet
  - Conducted brand research
  - More consistent communication with sophomores

- FY23
  - Developed and implemented personas/archetypes for segmentation (Darts)
  - Observed increased App/Confirm/NTR in MSAs with advertising

Context: Out-of-State Outcomes (FY23)

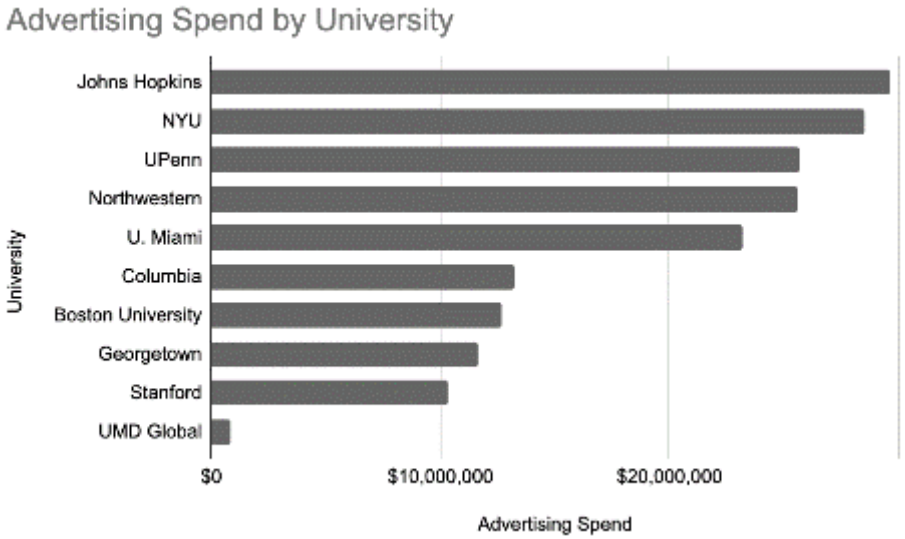
Primary Market: Chicago

- Applications increased 20.2%
- Admits increased 17.1%
- Confirms increased 15.2%

Tertiary Market: Connecticut

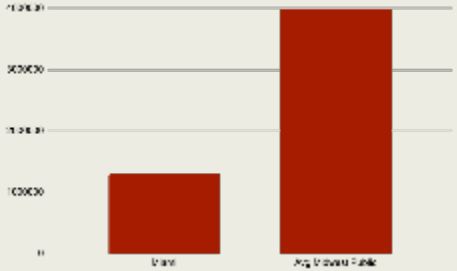
- Applications increased 20.5%
- Admits increased 16.4%
- Confirms increased 17.0%

Context: Competitive Landscape



Digital advertising spend (since 2020)

- $1.3M annually = Avg. Miami
- $4M annually = Avg. Midwest Public*



* similar size and reputation

Context: Current Ad Spend and Strategy

- FY24
  - Increased marketing spend to saturate markets; saturate Ohio
  - Increased spend on traditional and digital advertising
  - Unified brand and enrollment strategy (awareness, saturation)
  - Created new high-impact content
  - Increased parent/family outreach

- Planned for FY25
  - Continue to saturate markets, expand geographies (South, West)
  - Continue increased spend level of traditional and digital advertising
  - Implement MiamiTHRIVE recommendations
  - Further audience segmentation
  - Improve international marketing
  - Sustain/Increase airport buys

Traditional Advertising

FY 23

Billboards/Bus Shelters:
- Cincinnati
- Chicago
- New Haven

Airport:
- None

TV:
- Cincinnati

Radio:
- Cincinnati
- Cleveland
- Columbus

FY 24

Billboards/Bus Shelters/Malls:
- Cincinnati
- Cleveland
- Chicago
- Columbus
- Detroit
- Minneapolis/St. Paul
- Nashville
- New Haven
- Pittsburgh

Airport:
- Cincinnati
- Chicago (O'Hare)
- Minneapolis/St. Paul

TV:
- Cincinnati
- Chicago
- Detroit
- Minneapolis/St. Paul
- Nashville
- New Haven
- Pittsburgh

Radio:
- Cincinnati
- Cleveland
- Columbus
- Dayton

Digital Advertising Channels and Cities 2024

Northeast and Mid-Atlantic
Boston, MA
Buffalo, NY
Bridgeport/Stamford/Norwalk/New Haven, CT
Philadelphia, PA
DC/VA/MD
Baltimore, MD
Pittsburgh, PA
Newark, NJ/PA area
Nassau and Suffolk counties, NY
White Plains NY/NJ

Midwest
All Ohio
Chicago, IL
Detroit, MI,
Elgin, IL
Indianapolis, IN
Lake and Kenosha Counties, WI
Milwaukee, WI
Minneapolis/St. Paul, MN
St. Louis, MO

South
Atlanta, GA
Charlotte, NC
Louisville, KY
Nashville, TN

West
LA/Long Beach/Glendale/San Diego, CA
Denver, CO

Results

FY22-24: digital advertising in 19 states and 36 MSAs; traditional advertising in 6 states and 13 MSAs

- Applications have increased in every state where we have advertised except CO
- Since 2022, applications are up more than 20% in 12 of 19 states
- Still examining advertising influence on yield
- Positive trends suggest expanding continuing level of saturation and expanding geographic reach

Advertising and Applications by State

State	2019	2020	2021	2022	2023	2024	% since 22
Indiana	981	979	1121	1167	1444	1660	42.25%
Massachusetts	503	450	480	417	464	563	35.01%
North Carolina	173	173	201	222	269	299	34.68%
Kentucky	496	490	589	517	659	684	32.30%
Connecticut	512	595	515	409	493	536	31.05%
Tennessee	256	192	240	185	196	241	30.27%
Pennsylvania	617	655	657	668	747	844	26.35%
New Jersey	612	474	480	401	437	503	25.44%
Illinois	3228	3305	3562	3332	4007	4107	23.26%
Wisconsin	208	227	262	227	234	277	22.03%
Michigan	943	873	1090	1046	1175	1273	21.70%
New York	717	691	723	725	781	880	21.38%
Georgia	215	232	263	262	271	310	18.32%
Ohio	12498	12624	14443	15273	16469	17846	16.85%
California	670	668	552	511	545	541	5.87%
DC/Md/Va	831	922	946	813	833	848	4.31%
Missouri	428	463	469	456	469	475	4.17%
Colorado	363	297	379	345	368	345	0.00%
Minnesota	283	332	354	412	389	405	-1.70%

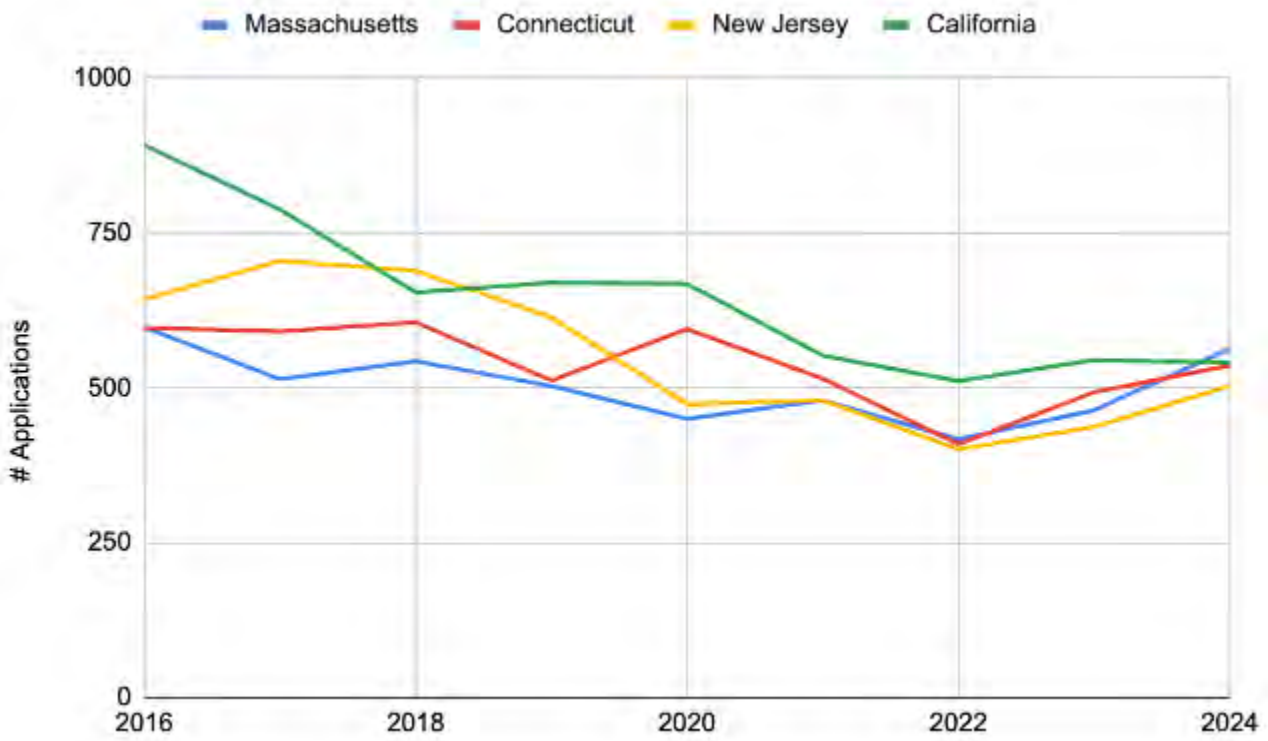
Green = Digital only
Blue = Digital + Traditional

- States previously in decline: MA, CT, TN, NJ, CA
- Other states stagnant
- Continued growth in all states in ‘24 w/advertising except CO and CA (4 apps fewer)

Data as of 5/5/24

Closer Look

- Inflection point in 2022 as marketing strategy began to mature and take root
- MA was falling at avg rate of 6.9%; if continued, we'd expect apps around 300 (vs 563 today)



Data as of 5/5/24

Traditional Advertising and Applications by MSA

MSA (Date Feb. 13)	State	2021	2022	2023	2024	Since 2022	Since 2023
CT NONMETROPOLITAN AREA	CT	7	3	5	9	200.00%	80.00%
Hartford-West Hartford-East Hartford	CT	65	43	43	54	25.58%	25.58%
Nashville-Davidson-Murfreesboro-Franklin	TN	173	129	126	147	13.95%	16.67%
Dayton	OH	1,136	1,280	1,412	1,614	26.09%	14.31%
Pittsburgh	PA	457	461	515	586	27.11%	13.79%
Detroit-Warren-Livonia	MI	675	672	741	831	23.66%	12.15%
Springfield	OH	97	127	89	99	-22.05%	11.24%
Columbus	OH	3,177	3,265	3,434	3,727	14.15%	8.53%
Cincinnati-Middletown	OH-KY-IN	4,475	4,679	5,028	5,452	16.52%	8.43%
Cleveland-Elyria-Mentor	OH	2,737	2,857	3,055	3,259	14.07%	6.68%
Bridgeport-Stamford-Norwalk	CT	399	336	411	436	29.76%	6.08%
Minneapolis-St. Paul-Bloomington	MN-WI	344	395	379	396	0.25%	4.49%
Chicago-Naperville-Joliet	IL-IN-WI	3,477	3,250	3,897	4,008	23.32%	2.85%
New Haven-Milford	CT	40	22	30	29	31.82%	-3.33%

- New for FY24: Nashville, Dayton, Pittsburgh, Detroit, Springfield, Minneapolis
- Trend lines suggest continuing traditional and digital pairings

Data as of 2/13/24

Advertising Halo Effect and Applications

- 75% of MSAs immediately surrounding targeted MSAs also increased applications since 2021

MSA (Date Feb. 13)	State	2023	2024	% Since 2021
Clarksville	TN-KY	5	13	**1200.00%**
Athens-Clark County	GA	1	4	**300.00%**
IL NONMETRO	IL	12	22	**266.67%**
Pueblo	CO	2	3	**200.00%**
Allentown-Bethlehem-Easton	PA-NJ	19	32	**166.67%**
GA NONMETRO	GA	9	20	**150.00%**
NY NONMETRO	NY	33	62	**138.46%**
Altoona	PA	0	2	**100.00%**
Elizabethtown	KY	2	4	**100.00%**
MA NONMETRO	MA	7	4	**100.00%**
Kankakee-Bradley	IL	8	9	**80.00%**
NC NONMETRO	NC	20	19	**72.73%**
WI NONMETRO	WI	16	22	**69.23%**
Rochester	NY	69	94	**54.10%**
Greensboro-High Point	NC	10	15	**50.00%**
Winston-Salem	NC	4	9	**50.00%**
Madison	WI	29	38	**35.71%**
TN NONMETRO	TN	10	8	**33.33%**

Data as of 2/13/24

PRELIMINARY: Advertising and Confirms by State

State	2019	2020	2021	2022	2023	5/14/2024	% since 23
Massachusetts	67	64	64	56	39	54	38.46%
Wisconsin	32	29	27	33	24	31	29.17%
Michigan	129	81	129	120	114	145	27.19%
New York	85	57	80	71	64	79	23.44%
Minnesota	41	51	55	49	43	51	18.60%
Florida	15	19	18	21	23	26	13.04%
Indiana	89	85	140	123	131	143	9.16%
Pennsylvania	64	67	92	87	67	73	8.96%
Maryland	63	53	57	52	39	42	7.69%
New Jersey	68	61	41	35	44	47	6.82%
Ohio	2615	2276	2955	2559	2541	2618	3.03%

- **Not final numbers**
- Advertised in 17 of 19 states with highest #s of confirms
- Most significant growth in states with advertising

Green = Digital only
Blue = Digital + Traditional

Data as of 5/4/24

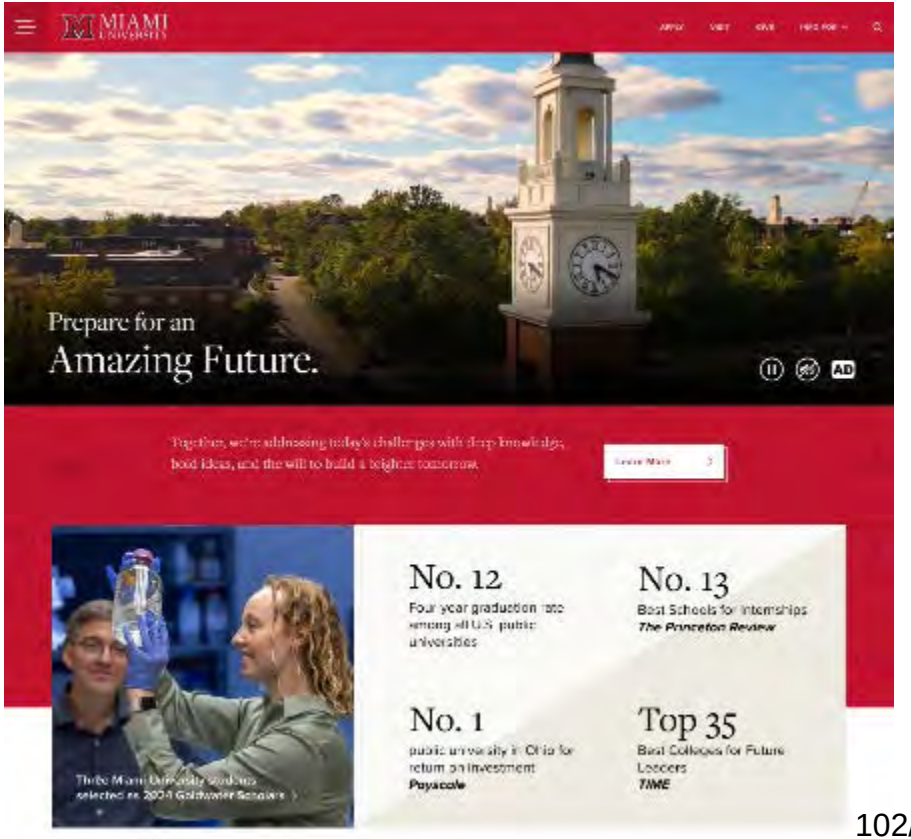
Looking Forward

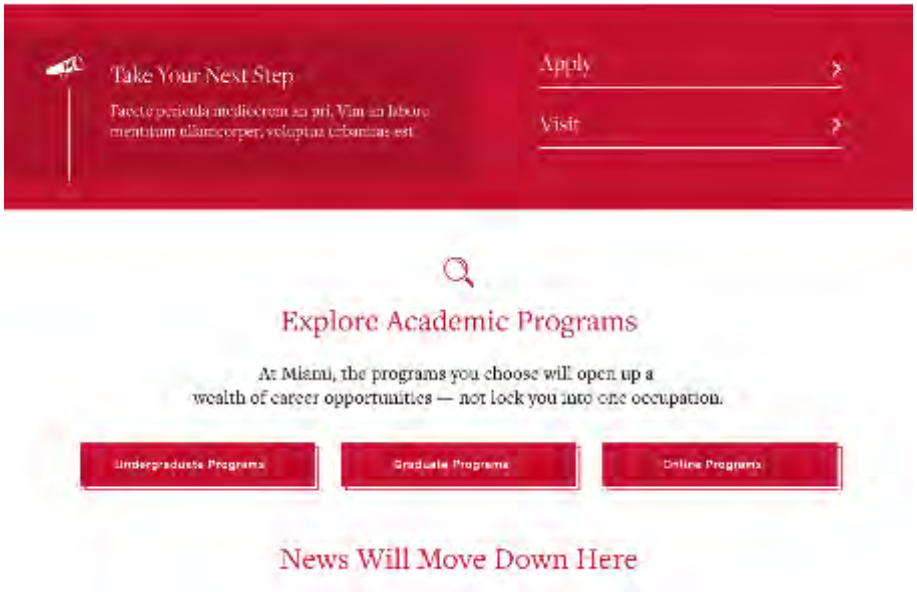
Looking Forward

- Continue to saturate markets, expand geographies (South, West)
- Continue increased spend level of traditional and digital advertising
- Implement MiamiTHRIVE recommendations
- Further audience segmentation
- Improve international marketing
- Sustain/Increase airport ad buys

Projects in Development: Web Translation

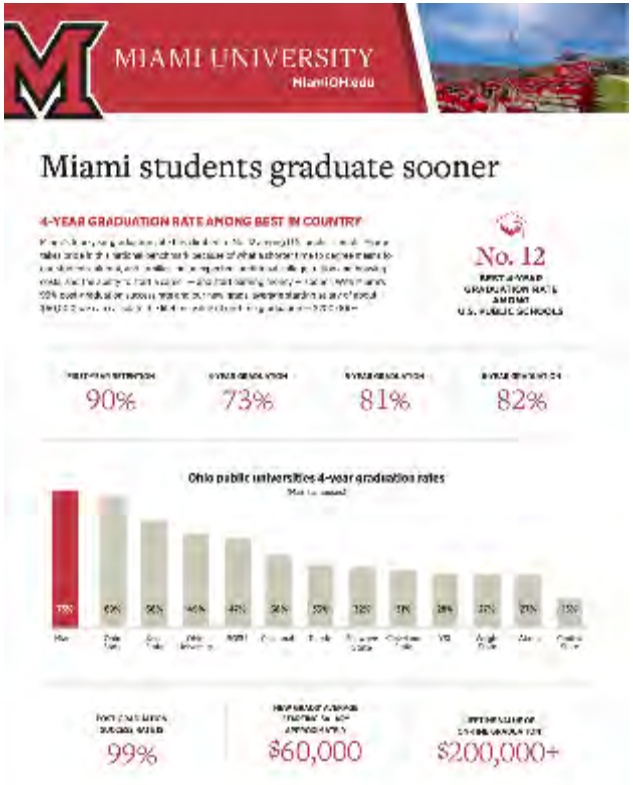
Projects in Development: ROI-heavy Web





Projects in Development: Pride Points Materials

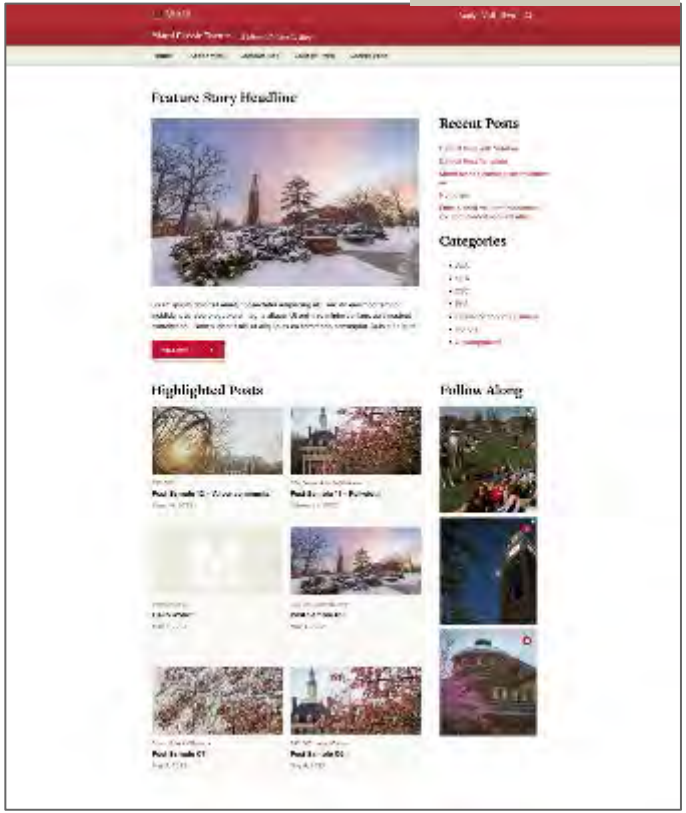
- 2 minute video
- 30-sec PSA
- Multiple 15-sec vignettes for social
- Series of one pagers
- “Elevator Speech”
- Customizable presentation slides



Projects in Development: Blog

- Authentic, Miami University blog that educates, informs, and entertains prospective Miami University students and families
- Content marketing
  - Learning about, and preparing for, college (Top-of-Funnel)
  - The College and Miami Experience (Middle-of-Funnel)
  - Miami University and College Outcomes (Mid-and-Bottom Funnel)

CONCEPT



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Thank you.

rivinius@miamioh.edu

May 2024

Enrollment Management & Student Success Update

Breaking News: 2024 Confirmations are Up!

	2022	2023	2024	∆ 2023 to 2024
Oxford	**4,202**	**4,124**	**4,357**	**5.6%**
Pathways	86	106	213	100.9%
Grand Total	**4,288**	**4,230**	**4,570**	**8.0%**

Data as of May 15

May 2024

Enrollment Update

Fall 2024 Applications

Residency

	2022	2023	2024	∆ 2023 to 2024
Non-Resident	16,214	19,626	21,468	9.4%
Domestic Non-Resident	13,247	15,072	16,389	8.7%
International	2,967	4,554	5,079	11.5%
Ohio Resident	15,206	16,411	17,790	8.4%
Grand Total	**31,420**	**36,037**	**39,258**	**8.9%**

Data as of May 12

Fall 2024 Applications

Academic Division

	2022	2023	2024	∆ 2023 to 2024
College of Arts and Sciences	12,071	12,400	13,227	6.7%
Farmer School of Business	8,584	9,917	10,856	9.5%
College of Engineering and Computing	4,465	5,654	6,268	10.9%
College of Education, Health, and Society	2,833	3,789	4,023	6.2%
College of Creative Arts	1,802	2,104	2,237	6.3%
Nursing	1,665	2,173	2,647	21.8%
Grand Total	**31,420**	**36,037**	**39,258**	**8.9%**

Data as of May 12

Fall 2024 Admits

Residency

	2022	2021	2024	∆ 2023 to 2024
Non-Resident	14,085	14,388	15,340	6.6%
Domestic Non-Resident	12,228	13,299	13,633	2.5%
International	1,857	1,089	1,707	56.7%
Ohio Resident	12,486	13,835	14,234	2.9%
Grand Total	**26,571**	**28,223**	**29,574**	**4.8%**

Data as of May 12

Fall 2024 Admits

Academic Division

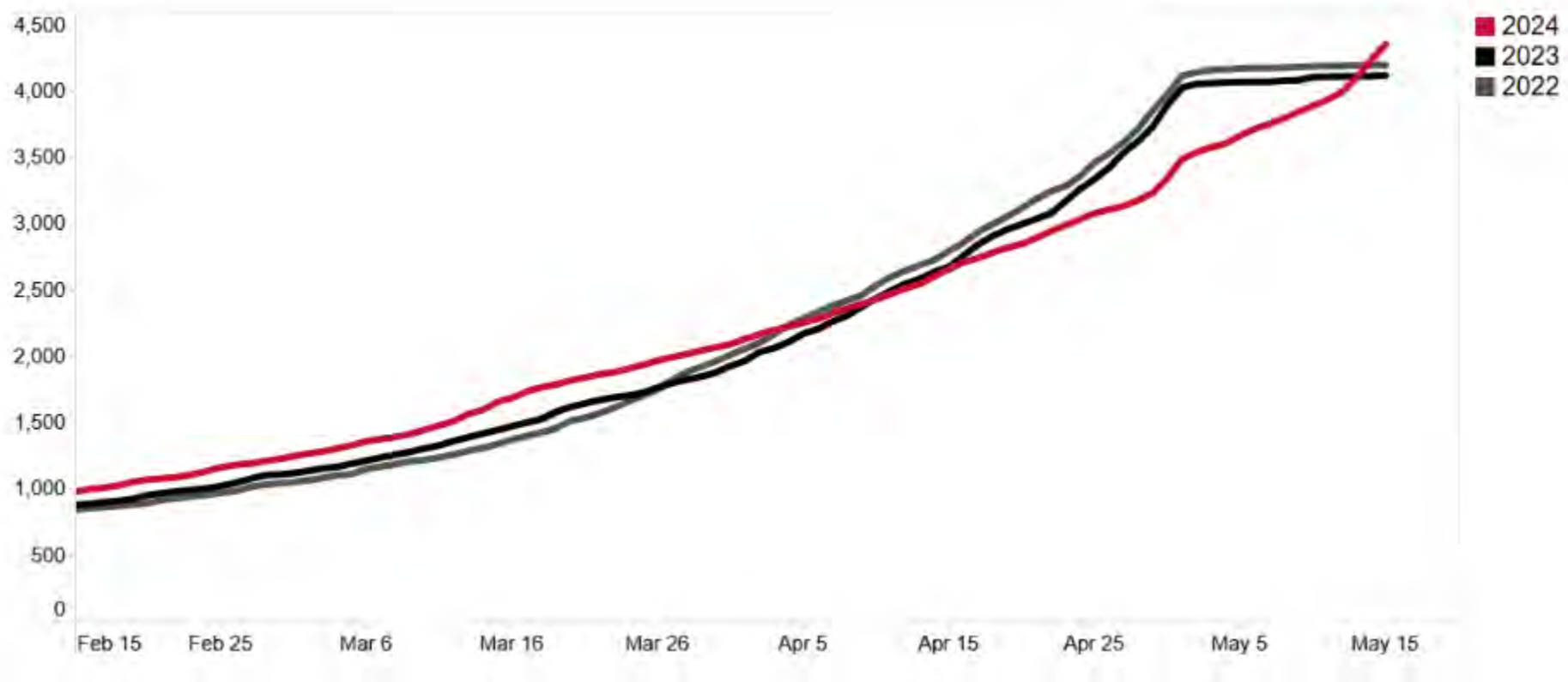
	2022	2023	2024	∆ 2023 to 2024
College of Arts and Sciences	12,074	11,498	12,609	9.7%
Farmer School of Business	6,395	7,298	6,878	-5.8%
College of Engineering and Computing	3,697	3,852	4,331	12.4%
College of Education, Health, and Society	2,286	3,058	3,158	3.3%
College of Creative Arts	1,441	1,612	1,336	-17.1%
Nursing	678	905	1,262	39.4%
Grand Total	**26,571**	**28,223**	**29,574**	**4.8%**

Data as of May 12

FAFSA Delays and Family Communication

- The DOE delivered all reprocessed FAFSAs by Tuesday, April 30th.
- Miami Timeline:
  - First release: Monday, April 29
  - Final release: Friday, May 3
- Miami delivered email and video updates to families regularly leading up to each aid offer release.

Confirm Timeline Fall 2024 Cycle



Data as of May 15

Fall 2024 Confirmations

Residency

	2022	2023	2024	∆ 2023 to 2024
Non-Resident	1,630	1,571	1,646	4.8%
Domestic Non-Resident	1,533	1,496	1,545	3.3%
International	97	75	101	34.7%
Ohio Resident	2,572	2,553	2,711	6.2%
Grand Total	**4,202**	**4,124**	**4,357**	**5.6%**

Data as of May 15

Fall 2024 Confirmations

Residency and Pathways

	2022	2023	2024	∆ 2023 to 2024
Non-Resident - Oxford	1,630	1,571	1,646	4.8%
Domestic Non-Resident	1,533	1,496	1,545	3.3%
International	97	75	101	34.7%
Ohio Resident - Oxford	2,572	2,553	2,711	6.2%
Grand Total - Oxford	**4,202**	**4,124**	**4,357**	**5.6%**
Pathways	86	106	213	100.9%
Grand Total – Oxford & Pathways	**4,288**	**4,230**	**4,570**	**8.0%**

Data as of May 15

Fall 2024 Confirmations

Academic Division

	2022	2023	2024	∆ 2023 to 2024
College of Arts and Sciences	1,677	1,492	1,611	8.0%
Farmer School of Business	1,216	1,331	1,304	-2.0%
College of Engineering and Computing	479	430	510	18.6%
College of Education, Health, and Society	406	448	474	5.8%
College of Creative Arts	294	264	266	0.8%
Nursing	130	159	192	20.8%
Grand Total	**4,202**	**4,124**	**4,357**	**5.6%**

Data as of May 15

Yield as of Commit Date and 15th day

* Commit date for Fall 2020 was June 1. For 2024, it is May 15. Commit Date was May 1 in all other years.

Western Region

		2020	2021	2022	2023	2024
Pacific	Applied	780	673	594	653	667
	Admitted	667	612	537	556	542
	Confirmed	57	50	45	44	38
Mountain	Applied	414	501	477	497	494
	Admitted	372	468	447	449	417
	Confirmed	53	79	72	56	46
Grand Total	Applied	1,194	1,174	1,071	1,150	1,161
	Admitted	1,039	1,080	984	1,005	959
	Confirmed	110	129	117	100	84

Data as of May 15

Midwest Region

		2020	2021	2022	2023	2024
West North Central	Applied	913	945	986	972	982
	Admitted	866	885	934	880	865
	Confirmed	127	141	124	116	114
East North Central	Applied	5,384	6,036	5,778	6,861	7,319
	Admitted	5,002	5,664	5,393	6,182	6,281
	Confirmed	625	705	664	719	728
Grand Total	Applied	6,297	6,981	6,764	7,833	8,301
	Admitted	5,868	6,549	6,327	7,062	7,146
	Confirmed	752	846	788	835	842

Data as of May 15

Southern Region

		2020	2021	2022	2023	2024
West Central South	Applied	265	299	305	345	417
	Admitted	218	272	260	294	322
	Confirmed	23	27	35	27	29
East Central South	Applied	700	861	734	895	969
	Admitted	661	803	685	804	835
	Confirmed	95	111	111	112	99
South Atlantic	Applied	1,561	1,790	1,639	1,797	1,988
	Admitted	1,392	1,653	1,507	1,550	1,577
	Confirmed	191	203	185	155	159
Grand Total	Applied	2,526	2,950	2,678	3,037	3,374
	Admitted	2,271	2,728	2,452	2,648	2,734
	Confirmed	309	341	331	294	287

Data as of May 15

Northeast Region

		2020	2021	2022	2023	2024
Mid Atlantic	Applied	1,820	1,860	1,794	1,966	2,228
	Admitted	1,640	1,722	1,604	1,665	1,782
	Confirmed	185	213	193	175	209
New England	Applied	1,126	1,103	902	1,045	1,224
	Admitted	1,010	988	812	886	971
	Confirmed	151	117	113	103	123
Grand Total	Applied	2,946	2,963	2,696	3,011	3,452
	Admitted	2,650	2,710	2,416	2,551	2,753
	Confirmed	336	330	306	278	332

Data as of May 15

Ohio Regional

		2020	2021	2022	2023	2024
Northern	Applied	4,496	5,092	5,342	5,909	6,352
	Admitted	4,096	4,187	4,504	5,011	5,171
	Confirmed	816	989	880	874	902
Central	Applied	4,004	4,682	5,000	5,240	5,760
	Admitted	3,619	3,769	4,105	4,410	4,643
	Confirmed	687	870	756	690	793
Southern	Applied	4,130	4,677	4,954	5,330	5,747
	Admitted	3,608	3,658	3,933	4,444	4,526
	Confirmed	776	1,099	925	977	1,016
Grand Total	Applied	12,630	14,451	15,296	16,479	17,859
	Admitted	11,323	11,614	12,542	13,865	14,340
	Confirmed	2,279	2,958	2,561	2,541	2,711

Data as of May 15

Yield and Anti-Melt Initiatives

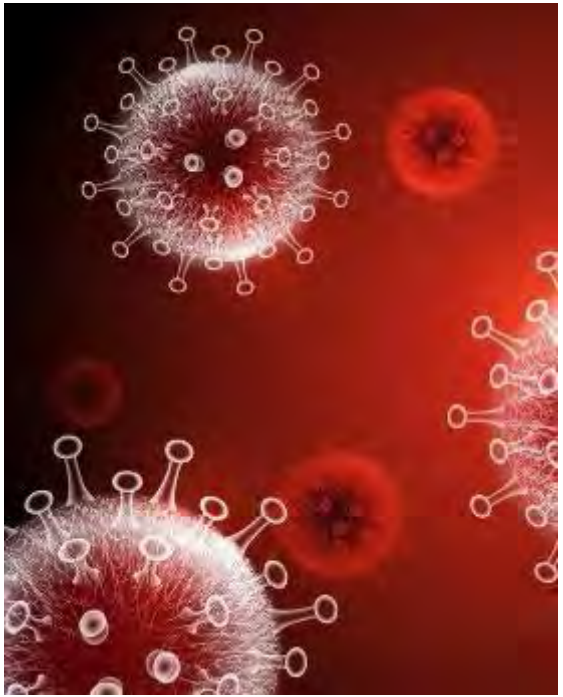
- “Just Ask” Campaign
- Warm Welcome from the President
- Regular aid evaluation and reconsideration
- Admission representative outreach to targeted students
- Divisional and/or departmental outreach
- Waitlist reconsideration

Pathways Program

- Pathways also acts as a waitlist for Oxford admission
- As of May 6, 301 students confirmed for a cohort of 175
- Top students will be admitted Oxford to keep cohort at 175 for the fall

Future Consideration: Retention and Graduation Rates

- As shown in the presentation at the last meeting, Miami's practices and rates are best-in-class.
- However, we should prepare for COVID impact to show in both rates as the incoming classes of Fall 2020 and Fall 2021 move through to graduation.



Questions?

Provost’s Update

Academic and Student Affairs Committee: May 16 2024

Revising the Academic Portfolio

Academic Year 2023-2024

2019 = 163 Bachelors Degrees

2024 = 116* Bachelors Degrees

* 16 programs in process of teach out.
Total eliminations since 2020= >60

Graduate Degrees Elimination

Since 2020

4 doctoral programs

15 masters

15 grad certificates

Programs Eliminated in the last 3 years [APEIP]

- Adult TESOL Certificate [CAS]
- Studio Art Certificate [CCA]
- Analytics Certificate [FSB]
- Applied Social Research [CLAAS]
- Applied Stats Certificate [CAS]
- Assessment/Evaluation Cert. [EHS]
- Athletic Training [EHS]
- Chinese Business Cert. [FSB]
- Comparative Media Studies [CAS]
- Creative Writing MFA [CAS]
- Criminal Justice MS [CLAAS]
- Criminal Justice Admin Cert [CLAAS]
- Classical Languages & Culture [CAS]
- Curriculum & Teaching Leadership [EHS]
- Customer Service Certificate [CLAAS]
- Earth Science [CAS]
- Elementary Ed BS [EHS]
- Forensic Investigation [CLAAS]
- Forensic Science [CLAAS]
- General Engineering [CEC]
- Geology BA [CAS]
- Gerontology BA [CAS]
- History Ph.D [CAS]
- Human Brain & Learning Cert. [EHS]
- Interactive Media Cert. [CCA]
- Interdisciplinary Business [FSB]
- Mathematics MA [CAS]
- Music Education MM [CCA]
- Non-Profit & Community Studies [CLAAS]
- Physics BA [CAS]

Programs Eliminated in the last 3 years [APEIP]

- Political Science MAT [CAS]
- Political Science Ph.D [CAS]
- Data Analytics in Ed Cert [EHS]
- Russian, East Eur/Eurasian MA [CAS]
- Social Entrep. & Aging Cert. [CAS]
- Student Affairs in Higher Ed. Ph.D [EHS]
- Theatre, MA [CCA]
- Transformation Education MS [EHS]
- Engineering Physics [CAS]
- Media and Culture [CAS]
- Botany, Ph.D [CAS]
- Experience Design MFA [CCA]
- Math and Stats BA [CAS]
- Zoology MA and Ph.D
- Mass Com MA [CAS]
- Speech Com MA [CAS]
- Art Education MA and MFA [CCA]
- Adolescent Ed MEd [EHS]
- Elementary Math MEd [EHS]
- Elementary Ed MEd [EHS]
- Curriculum &Teacher Leadership MEd [EHS]
- Instructional Design and Tech MEd [EHS]
- Experience Design MFA [CCA]

Elimination/Consolidation of Low-Enrolled Majors

- East Asian Languages and Culture [CAS]
- Education Studies [EHS]
- Geography & Sustainable Dvlpmnt [CAS]
- Community Arts [CLAAS]
- Social Justice Studies [CAS]
- Health Information Tech [CLAAS]
- Art and Architecture History [CCA]
- Integrated Science Education [EHS]
- Quantitative Economics [CAS]
- French [CAS]
- Health Communication [CLAAS]
- Sport Coaching [EHS]
- Inclusive Special Ed [EHS]
- Public Health [EHS/KNH]
- German [CAS]
- Russian, East Eur, Eurasian Studies [CAS]
- Spanish Ed [EHS]
- American Studies [CAS]
- Italian Studies [CAS]
- Women, Gender, Sexuality Studies [CAS]
- Classical Studies [CAS]
- Biological Physics [CAS]
- Religion [CAS]
- Critical Race/Ethnic Studies [CAS]
- French Ed [EHS]
- Latin American Studies [CAS]
- German Ed [EHS]
- Latin Ed [EHS]

New Programs since 2019

Bachelors Programs

- Applied Mathematics, B.S. (in process)
- Arts Management & Arts Entrepreneurship, B.A.
- Business Analytics, B.S. Business
- Computer Science, B.A.
- Cybersecurity, B.S.
- Cybersecurity & Networking, B.S.
- Data Analytics, B.S.
- Digital Commerce, B.S. Commerce
- Emerging Technology, Business + Design, B.A.
- Environmental Earth Science, B.S.

Bachelor Programs

- Games + Simulation, B.S.
- Hospitality Management, B.S. Commerce
- Integrated Science, B.S. Education
- Organizational Leadership, B.A.
- Real Estate, B.S. Business
- Robotics Engineering, B.S. Engineering
- Robotics Engineering Technology, B.S.
- Sales Management, B.S. Commerce
- Sport Leadership & Management, B.S. (majors in media & communication, coaching, management)

**Emphasis on STEM, business, data science, and applied fields*

New Graduate Masters Degrees

- Biomedical Science, M.M.S.
- Biomedical Engineering, ME
- Chemical Engineering, ME
- Business Analytics, M.S.
- Clinical Engineering, M.S.
- Computer Science, M.S
- Mechanical and Smart Manufacturing Engineering, MME
- Entrepreneurship & Emerging Technology, M.A
- Esport Management, M.S.
- Management, M.S.
- Nurse Practitioner, M.S.
- Nurse Educator, M.S.
- Physician Associate, M.M.S.
- Sports Analytics, M.S.

**Emphasis on STEM, business, data science, and applied fields*

Miami Academic Program Incubator [MAPI]

- All programs now vetted through MAPI
- Decisions are data informed with market research
  - EAB
  - Gray and Associates
- Emphasis on career outcomes and market feasibility studies
- Enrollment projections
- Following national trends

Miami Plan Category	# of Courses Approved for New Plan	# of Courses Approved for Old Plan (2021 Listing)
Composition	1	2
Advanced Writing	13	38
Math/Formal Reasoning	6	17
Social Sciences	20	66
Natural Sciences	17	47
Creative Arts	16	37
Humanities	54	124
Global Citizenship	84	145 (does not include all of the study abroad workshops which automatically counted – count is likely above 200)
Signature Inquiry	65 New requirement (but all double-count with another Miami Plan requirement);	This requirement replaces Thematic Sequence which had 524 courses approved for that category; only one course in each TS could double-count (and each TS had at least 3 courses in it). So this represents a significant reduction.
Experiential Learning	14	Hundreds of activities automatically counted
Senior Capstone	13 (will likely get a lot more given that this is mostly incorporated into the major – but we could create a project to incentivize more shared capstones across majors)	137

Miami Plan Specific Course Reductions since 2021

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May 17, 2024
Academic Affairs

RESOLUTION R2024-xx

WHEREAS, University Senate on April 29, 2024 approved SR 24-15 to forward the recommendation of Dr. Terri Barr, the Process Coordinator who was appointed and approved by University Senate, to eliminate the Department of Comparative Religion to the Provost for consideration; and

WHEREAS, it is the recommendation of the Dean of the College of Arts & Science, the Provost, and the President, to eliminate the Department of Comparative Religion.

NOW THEREFORE BE IT RESOLVED, that the Board of Trustees hereby approves the elimination of the Department of Comparative Religion, to become effective on July 1, 2025.

SR 24-15
Sense of the Senate: Department of Comparative Religion Elimination Process Coordinator Recommendations
April 22, 2024

Whereas we affirm that University Senate is the legislative body of the University in matters involving educational programs, requirements, and standards – including matters of curriculum, programs, and course offerings – as delegated by the University's Board of Trustees;

Whereas we are reminded of our "Sense of the Senate: Department of Comparative Religion Elimination" that was adopted on February 26, 2024, especially our acknowledgment that the faculty and staff in the Department of Comparative Religion are acting to preserve the academic study of religion at Miami;

BE IT HEREBY RESOLVED that University Senate accepts the recommendations of the Process Coordinator for Comparative Religion as reported to Senate on April 15, 2024 and as outlined below:

- The elimination of the Department of Comparative Religion as a result of its low-enrolled major and institutional re-prioritizations
- The re-housing of faculty from Comparative Religion in other departments of the College of Arts and Science where their interests will align and where they can continue to teach and research the relevance of religion in today's world
- The proposal and establishment of the proposed Center for the Study of Religion, Policy, and Public Life to maintain the future of the teaching and research of religion at Miami

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May 17, 2024
Academic and Student Affairs

RESOLUTION R2024-xx

WHEREAS, Ohio Revised Code 3345.81 Strategic Completion Plan, states:

"Not later than June 30, 2014, the board of trustees of each institution of higher education, as defined by section 3345.12 of the Revised Code, shall adopt an institution-specific completion plan designed to increase the number of degrees and certificates awarded to students. The plan shall be consistent with the mission and strategic priorities of the institution, include measurable student completion goals, and align with the state's workforce development priorities. Upon adoption by the board of trustees, each institution of higher education shall provide a copy of its plan to the chancellor of higher education.

The board of trustees of each institution of higher education shall update its plan at least once every two years and provide a copy of their updated plan to the chancellor upon adoption."

THEREFORE, BE IT RESOLVED, that the Board of Trustees hereby accepts the attached Completion Plan Update Report, and directs the Provost and Executive Vice President to submit the document to the Ohio Department of Higher Education.

Miami University Completion Plan Update

Submitted to Chancellor of the University System of Ohio Department of Higher Education

May, 2024

University Mission

Miami University's mission underscores that we are "a student-centered public university" with "an unwavering commitment to liberal arts undergraduate education and the active engagement of its students in both curricular and co-curricular life" as well as a deep commitment to "student success." In addition, Miami "supports students in a highly involving residential experience on the Oxford campus and provides access to students, including those who are time and place bound, on its regional campuses."

Student Profile

During Fall 2023, 16,478 undergraduates and 2,140 graduate students were studying on the Oxford campus. Regional campuses in Hamilton and Middletown enrolled a combined total of 3,558 undergraduate students. Across all campuses and levels, 54.0% of Miami students were female and 66.8% were residents of Ohio.

Oxford Campus

Of total 16,478 Fall 2023 Oxford undergraduate students, 13.9% were domestic Students of Color. Among first-time, full-time undergraduate students at the Oxford campus, 51.7% were female; 63.1% were residents of Ohio; 98.8% were born in 2004 or 2005. Race and ethnicity breakdown for Oxford is listed below:

Fall 2023 First-time, Full-time Students at Oxford by Race/Ethnicity

- 0.2% American Indian or Alaska Native and Other
- 2.8% Asian, Native Hawaiian, or other Pacific Islander
- 3.1% Black or African-American
- 4.8% Hispanic/Latino
- 3.6% Multi-racial
- 83.2% White
- 1.1% Unknown

An additional 1.2% were international students.

Of Oxford first-time, full-time undergraduates, 14.6% were Pell Grant recipients, 48.6% had financial need, and 99.8% of students with need received offers of financial aid.

Of the Fall 2023 first-year Oxford campus students, 32.2% graduated in the top 10% of their high school class. 59% percent entered Miami with college credit from Advanced Placement, College Credit Plus, and other programs, with students receiving 17.6 hours of credit on average.

First-year retention for full-time baccalaureate students at the Oxford campus in the 2022 cohort was 89.5%. Miami's four-year graduation rate for the fall 2019 cohort was 72.2%. The Oxford campus's six-year graduation rate on average for the last 4 years was 82%. According to IPEDS, Miami's four-year graduation rate ranked 12th among public universities nationally and 1st in Ohio. In 2022-2023 Miami Oxford posted a 96**%** graduation success rate for student-athletes (the percentage of eligible student-athletes who graduate within six years, according to the NCAA Graduation Success Rate).

Table 1: First-time, full-time baccalaureate students at Oxford

First-time, full-time baccalaureate students at Oxford	**2007 Cohort**		**2017 Cohort**	
Race/Ethnicity	**6-year Graduation Rate**	***N (total cohort)***	**6-year Graduation Rate**	***N (total cohort)***
American Indian, Alaska Native, Other	78.3%	*23*	83.3%	*6*
Asian	83.7%	*104*	75.8%	*91*
Black or African-American	70.8%	*120*	79.2%	*144*
Hispanic/Latino	81.2%	*69*	82.3%	*237*
International	83.3%	*54*	69.1%	*311*
Native Hawaiian/other Pacific Islander	100%	*3*	60.0%	*5*
White	81.5%	*2985*	83.6%	*2852*
Multi-racial	100%	*2*	81.9%	*160*
Unknown	68.8%	*96*	63.6%	*11*
Total	80.8%	*3456*	81.8%	*3817*

Miami Oxford is working diligently to close the gap between graduation rates for Students of Color and White students. This is evident in Table 1 above, where the increases in the graduation rates for Students of Color are illustrated. While the graduation rate for white students has increased 2.1% over the last 10 years, the graduation rates for some students of color have increased by 1.1% (Hispanic/Latino), 8.4% (Black/African American), and 10%

(American Indian, Alaska Native and Other). Losses in graduation rates for Asian students (7.9%) and Native Hawaiian/other Pacific Islander students (8.9%) are concerning. Miami will continue to devote energy to ensuring the success of underrepresented students as we strive to meet our completion goals.

Regional Campuses

During Fall 2023, Miami Regional campuses in Hamilton and Middletown enrolled a combined total of 3,558 undergraduate students. Of total Fall 2023 Regional undergraduate students, 21.2% were domestic non-White.

Among first-time, full-time undergraduate students at the regionals, 53.2% were female; 90.8% were residents of Ohio. Regionals students' race and ethnicity breakdown is listed below:

Fall 2023 First-time, Full-time Students at Regionals by Race/Ethnicity

- 0.2% American Indian or Alaska Native and Other
- 3.3% Asian, Native Hawaiian, or other Pacific Islander
- 9.0% Black or African-American
- 6.6% Hispanic/Latino
- 2.4% International
- 3.1% Multi-racial
- 74.6% White
- 0.7% Unknown

Of Regional first-time, full-time undergraduates, 38.6% were Pell Grant recipients, 56.6% had financial need, and 97.6% of students with need received offers of financial aid.

Of the fall 2023 first-year Regional campus students, 25% graduated in the top 25% of their high school class. 33% percent entered Miami with college credit from Advanced Placement, College Credit Plus, and other programs, with students receiving 17 hours of credit on average.

67% of the Fall 2022 Regional campus cohort were retained to either the Regional or Oxford campuses in Fall 2023. 41.7% of the 2017 Regional campus cohort earned a Miami Bachelor's degree from either the Regionals or Oxford campuses in 6 years or less.

While also focused on a liberal arts education, Miami's regional campuses serve a different student population. 32.7% of the undergraduate students are part time, and 67.3% are full time. 16.6% of the students on the regional campuses are non-traditional students (25 years or older); 55.4% are female, and 44.6% are male. 17.8% of the students on the regional campuses are CCP students. The average ACT score (or SAT score converted to an ACT basis) of the 2023 entering freshman class for students submitting scores was 19.

The majority of students on the regional campuses are place-bound. The top feeder schools are area high schools as well as local institutions of higher education. The regional campuses house their own academic division, the College of Liberal Arts & Applied Science (CLAAS), which offers several baccalaureate degrees: biological sciences, commerce, communication studies, community arts, computer and information technology, criminal justice, engineering technology, English studies, integrative studies, liberal studies (degree completion program), nursing, and psychological sciences.

Barriers to Persistence and Completion

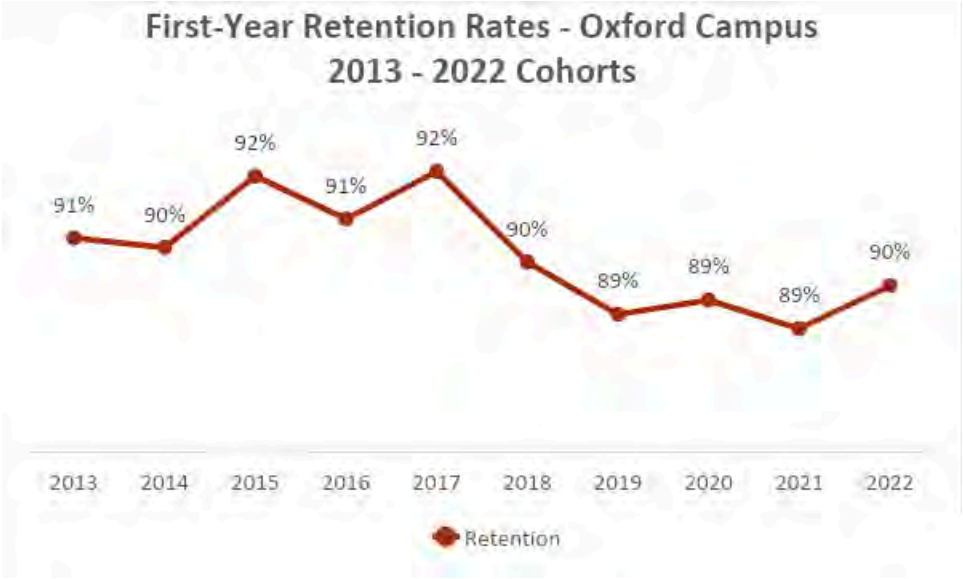
In this report, retention rate is defined as the percent of first time, full time, degree-seeking students who enter in the fall semester and return to Miami in the fall semester of the next (i.e., their second) year. Graduation rate is defined as the percent of first time, full time, degree-seeking students who enter in the fall semester and graduate within six years. Students are assigned to a cohort based on the year they entered the University. The academic profile and completion rate of Miami's Oxford campus students remain very strong overall.* However, our data show that there is room for improvement, particularly on the two regional campuses. Moreover, the Oxford campus rates have remained relatively stable with little movement.

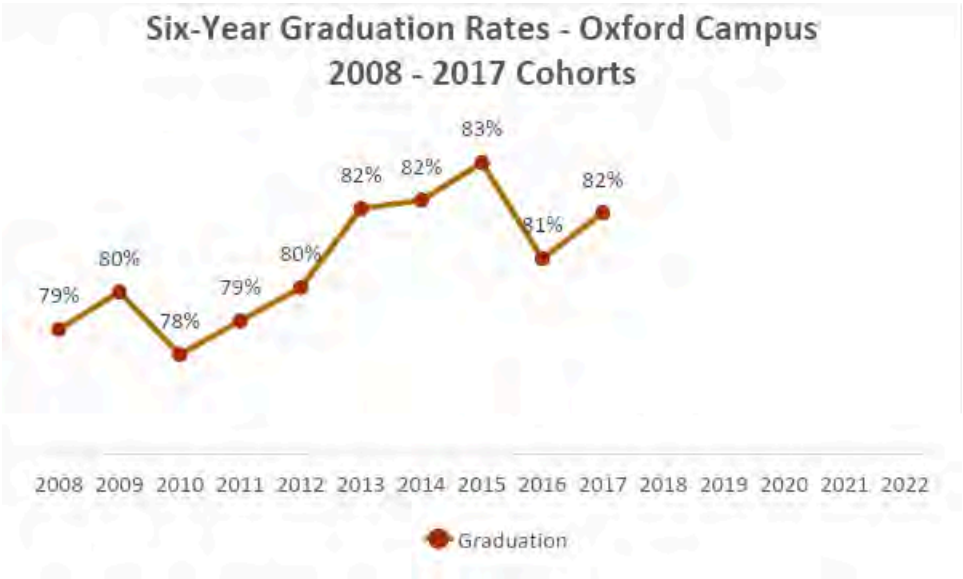
**Throughout this report, retention rates and graduation rates are presented as reported to the Integrated Postsecondary Education Data System (IPEDS), the core postsecondary education data collection program for the National Center for Education Statistics (NCES).*

Oxford retention and six-year graduation rates have remained consistent in recent years (See Figure 1).

Retention rates vary based on several characteristics:

- First-generation students were retained at a rate of 84.5%, while non-first-generation students were retained at a rate of 90.5%
- Students receiving PELL grants were retained at a rate of 83.6%, while students not receiving PELL grants were retained at a rate of 90.4%





Completion barriers may include:

- High cost of attendance
- Varied preparation for college-level academics
- College transition issues
- Difficulty in establishing a sense of belonging on campus
- Campus climate that does not feel welcoming to some students

Progress on 2022 Completion Report Strategies

College completion and student success are integral to Miami's mission and the strategic plan, Miami**RISE**, which was developed in 2019. Our mission statement emphasizes that Miami "is deeply committed to student success, builds great student and alumni loyalty, and empowers its students, faculty, and staff to become engaged citizens who use their knowledge and skills with integrity and compassion to improve the future of our global society." The eleventh recommendation of the Miami**RISE** strategic plan calls for improvement of student retention and persistence.

The Miami University Student Success Committee is the body charged with overseeing Miami's student success progress. This committee is a partnership between the Enrollment Management & Student Success division, the Division of Student Life, and the Office of the Provost, and sets the agenda for all matters related to student success. With the support of the Office of Institutional Research and Effectiveness, the Student Success Committee regularly analyzes quantitative and qualitative data to identify areas for improvement. Data sources include:

- EAB Student Success Collaborative
- Oracle Business Intelligence Tool
- External standardized student surveys (Beginning College Survey of Student Engagement, National Survey of Student Engagement, CIRP Freshman Survey, College Senior Survey)
- In-house surveys (first-year student transition survey, graduation survey, alumni survey, etc.).

This data-driven campus collaboration allows Miami University to think and act strategically around student success with an eye toward accomplishing the goals laid out in this completion report.

Below we describe our progress on the 2022 Completion Report strategies:

Category	**Description**	**Strategies**	**Status**
Academic Advising	Create a comprehensive advising and mentoring student support system consisting of student success navigators, professional academic	Build on divisional professional advising hiring. Onboard Student Success Navigators to support exploring students. Undergraduate Studies Dean and	Each academic division now has enough professional advising capacity to meet the needs of first- and second-year students. Due to budget constraints, hiring of additional professional advisors is on hold. The Office of Exploratory Studies has been created and staffed to support exploring students.

	advisors, and faculty mentors.	Associate Provost for Faculty will initiate a process for moving faculty to mentoring roles.	Work on faculty mentoring is on-going, and is contextualized in the current budget constraints and negotiation of the first union contract.
	Build an academic advising community that supports improvements in advising through professional development, relationship enhancement, and review of advising practices and processes.	Implement monthly academic advising community meetings focused on community and professional development. Create new training content that reflects and addresses changing student needs. Include Student Life and EMSS advising partners in advising community meetings 1-2 times per semester. Create working groups to begin review of advising practices and policies.	Monthly academic advising meetings have been in place for 18 months. Student Life and EMSS partners attend regularly. Committee has reviewed current academic advising training and new modules that will be easier to maintain and update are in development and will be finalized in 2024-25. Advising practices and policies continue to be reviewed. Highlights include: ● Develop learning outcomes for professional academic advising ● Develop usage guidelines for Navigate 360 and include these in advisor annual performance evaluations ● Develop process for requesting courtesy email accounts for non-enrolled students ● Refine process for change of campus
	Build capacity for, and skills in, proactive and intrusive advising, ensuring that students in need receive support in a timely and consistent way.	In addition to the increased professional development above, overhaul advisor training to include using campus technologies to ensure that students who need support are receiving it. Establish institutional expectations for the use of technology to	Use of student data to guide advising interventions has increased. The following interventions have been introduced: ● Early alerts: faculty provide progress reports regarding students in their courses for whom they have concerns in weeks 1-2 and 4-5 of the semester. 877 early alert cases were closed at Oxford and Regionals Campuses in Fall 2023

		provide on-time support to students.	● High Support Students: based on admissions data, identified students are provided additional resources by academic advisors and housing staff. ● Spring Launch and Winter Thrive: these workshops provide support and direction for students who struggled academically during their first semester at Miami. Institutional expectations for professional advisors' use of Navigate 360 are established and are part of advisors' annual review process. Navigate Student was launched in fall 2023 allowing students to see holds, schedule with advisors, and receive notifications/messages based on a campaign by department, office, or advisor. 3558 new users have signed into Navigate Student, with 9140 all-time users.
	Design and implement a more comprehensive assessment of our advising system.	Develop consistent assessment for advising across campus that will allow reporting at the departmental, divisional, and institutional levels. Develop learning outcomes for academic advising and create institutional expectations for meeting advising outcomes. Utilize new EAB tools for student feedback.	Academic advising outcomes have been developed and assessment utilizing Navigate 360 on these outcomes has been underway since Fall 2023. In fall 2024 we launched an intake survey within Navigate 360. Students complete the survey on their first login to Navigate each academic year.
Policies	Audit existing policies and procedures, and make revisions to improve	New Office of Undergraduate Education will support the audit of existing policies and processes	Review of policies has included: ● CR/NC policy was reviewed.

	student success.	related to student success, including: ● CR/NC policy and process ● Foreign Language Deficiency policy ● Two-strikes policy for academic dishonesty ● Support for unenrolled students Moonshot for Equity initiative includes review of the use of retention grants and registration holds as part of the effort to close completion gaps for diverse students.	● Foreign language deficiency policy was reviewed and changed. ● Two strikes policy for academic dishonesty was reviewed and changed. ● Mid-term grades policy was reviewed and changed. ● Attendance policy was reviewed and remains the same. Hold reform as part of Moonshot for Equity has Removed 5 holds impacting 3,500 students and 25 additional holds were removed in March 2024.
Pathways	Help students to get on a success path prior to matriculation.	2022 Summer Survey will provide insight on students in need of support and resources prior to their arrival on campus. Action plans for meeting students' needs are in development. Process for implementing pre-orientation, automated registration for all new students is in development with goal of piloting pre-registration in summer 2023.	Changes to registration processes will be implemented along with the Workday implementation scheduled for 2024-26. Fall 2024 High Support Students initiative based on admissions data served over 500 students identified as needing extra support through pre-college characteristics correlated with academic performance in the first semester. Assessment and adjustments to this initiative are under way.
	Develop purposeful pathways for	Experiential Major Maps are in development. Maps	Experiential major maps will be included in new major exploration technology. Maps will be finalized for academic

	students in the major.	will allow students to plan for academic and co-curricular experiences throughout their Miami University career. Maps will provide the foundation for the UNV101 course and similar first-year courses offered within departments and divisions. Maps will begin rolling out in fall 2023.	programs during 2024-25 academic year and uploaded into existing technology for use starting fall 2025.
	Develop success pathways for undecided students.	The Office of Exploratory Studies will begin serving exploring students in summer 2022. Goals for the office include: ● matching exploring students' retention and completion rates to those of students in majors ● at least 85% of students who go through the program stay in the major they select as a result of their involvement with OES	The Office of Exploratory Studies has been operational since fall 2022. The fall to fall retention rate for undecided students in the 2022 cohort was 79%, significantly lower than for students who start at Miami with a selected major. The 2023 cohort fall to spring retention rate was 92%. This is promising. We will adjust our work with these students as data indicate is necessary. Future analysis of these efforts will include overall retention gains, persistence in selected major, and eventually, graduation rates.
	Identify and remove pathway roadblocks.	Moonshot for Equity process and new Transfer Coordinator will continue this work, including	New Transfer Coordinator has developed 70 pathways with 16 different partners underway and developed a plan for OT36 non-equivalent courses to post to appropriate Miami Plan areas without

		developing a new transfer web portal, supporting more timely transfer credit evaluation, and developing dual admission/enrollment programs with signature partners.	individual student petitions. Prior Learning Assessment portfolio process has been launched.
	Create pathways for high school students.	Our new Early College Academy will provide pathways for high school students into Miami University. Regional campuses are the driving force behind this initiative, which holds great promise for enabling more students from the local community to enroll at Miami University.	Early College Academy has grown since its first year enrollment of 27 from 2 high schools to current enrollment of 109 students from 6 high schools. The first ECA graduating class included 19 students. 91 new students from 8 school districts have applied for fall 2024.
Curriculum	Continue addressing courses of concern.	Associate Provost for Faculty and Dean for Undergraduate Studies will launch a holistic and collaborative plan for addressing courses of concern in fall 2022. We will rely on the expertise of departments and faculty who have improved DFW rates in courses that were previously identified as concerning to support this process.	Associate Provost for Faculty and Dean for Undergraduate Education has explored a number of courses of concern, and, in conjunction with the Associate Provost for faculty, has presented workshops to assist faculty with making changes to these courses. Work here has not been as productive as we had hoped, and will require more time to complete.
Affordability	Lower cost of textbooks	The Open Educational Resources Committee will survey faculty regarding their use of affordable materials in	Miami's Open Educational Resources Adopt program has assisted over 20 faculty in developing OER for their courses, which has led to approximately $1,209,000 in cost savings for students.

		Fall 2022 and is also exploring how open educational resources enhance the University's ability to support diverse students.	Faculty will be surveyed again in fall 2024 to increase the use of more affordable course materials. In spring 2024, Miami successfully piloted inclusive access, which makes e-materials available to students through textbook provider, e-Campus. Inclusive access program is now fully adopted starting in summer 2024.
	Enhance need-based and other aid for students and families.	Build on successes in fundraising to increase resources for students and families who have high financial need.	Miami University is in the middle of a $1 billion capital campaign. The scholarship goal for this campaign is $450,000,000. This will significantly increase the ability to support students and families with high financial need.
Special Populations	Enhance support for transfer students.	Participation in the EAB Moonshot for Equity will include a focus on transfer pathways. The Office of Transfer in the Associate Provost for Strategic Initiatives will coordinate our efforts to increase transferability into Miami both at Oxford and at the Regionals.	Noted above, Miami has made significant progress in the area of transfer pathways.
	Deepen support for Pell Grant students.	Utilize data to identify success-related patterns for Pell eligible students and implement proactive support processes for these students. Continue to develop the GradU8 program and implement new First Generation Student program.	The High Support Student initiative identified numerous Pell eligible students for additional resources and supports. The program began in fall 2023 and we are refining the identification of students and the provision of resources for 2024. A new First Generation Student program coordinator has been hired, and new attention is being given to the GradU8 program components.

	Develop additional support for domestic students of color and LGBTQ+ students.	BRIDGES and other programs for historically underrepresented students have been revised to improve recruitment and retention of these students. CSDI hired a new Associate Director of LGBTQ+ Initiatives and added an Assistant Director of LGBTQ+ Initiatives in Spring of 2022, who are expanding support for this student population. Continue to develop Heritage Month Programming (started in Fall 2021), which addresses intersectional identities explicitly and includes Pride Month and LGBTQ+ History Month: https://www.miamioh.edu/diversity-inclusion/programs-resources/history-heritage-months/index.html A new anti-racism workshop developed within OIDI, being piloted Spring 2022, for faculty, staff, and students, will ensure a more welcoming and inclusive climate Continue to roll out SafeZone training, which OIDI	BRIDGES has contributed to the increase in the proportion of underrepresented students at Miami: ● AAPI up .2% ● Black-AA up .9% ● Hispanic/Latino up .3%. Retention rate for BRIDGES students for the past two years was 93% (2021 cohort) and 90% (2022 cohort). This indicates that we need to continue efforts to retain historically underrepresented students. The Passport Program is a 4-year student success program in FSB. Launched 2019, wrap-around services support about 20-25 first-generation students, students of color, LGBTQ+ students in cohorts between a year. May 2023 marked the first graduating cohort for the Passport Program with a cohort of 20 students. 17 have full-time employment. Redhawk Equity Leadership Series is a cultural competency certificate launched by the Office of Transformational and Inclusive Excellence (OTIE) in the fall of 2023. Five modules provide students with important skills to foster success in a global world: A Road to Active Allyship; Inclusive Marketing; Introduction to Microaggressions; Leading with Racial Equity; and, Pronouns 101. OTIE, along with ASPIRE, the Honors College, and the Menard Family Center for Democracy, offered the Constructive Dialogue Institute partnership, which. supports an inclusive climate for students, including students of color and LGBTQ+ students. Addresses need for respectful dialogue between individuals and groups with different perspectives, values, and beliefs. Results of Spring 2024 Miami pilot with 97 student leaders

		recommended for every Department Chair Fall 2021/Spring 2022. Fully implement the new Nellie Craig Walker Scholarship (beginning Spring 2022). Plan for and implement a new climate survey in Fall 2022.	across backgrounds, identities, values include: ● 78% showed improvements in affective polarization ● 58% showed significant improvements in dichotomous thinking ● Participants noted improvements in communication, conflict resolution, and conversations across differences Climate survey took place, Spring 2023. Climate survey results shared with university, Spring 2024. Climate interviews were held w/ 13 students of color, Fall-Sp 23-24. LGBTQ+ Task Force, launched by OTIE Fall 2023, composed of faculty, staff, students, alumni, met regularly to strengthen sense of belonging for LGBTQ+ faculty, staff, and students. This advisory group to OTIE examines, develops, and assesses policies, programming, and support systems to better serve LGBTQ+ faculty, staff, and students. Final report submitted Spring 2024. OTIE developed informational Resource Sheets for Heritage Months, including LGBTQIA+ History Month, Black History Month, Latinx Heritage and History Month, Juneteenth, Jewish American Month, Arab American Month, and others to complement programming. Informational resources available here: https://miamioh.edu/transformational-inclusive-excellence/educational-programming-resources/history-heritage-months/index.html
Technology	Leverage technology to advance diverse	Establish community standards for the use of Navigate to support students. Revisit who should have what	Community standards for academic advisor's use of Navigate 360 are established and are part of advisors' annual performance reviews. Navigate

	student success.	level of access to Navigate information and develop a set schedule for updates around new developments that can enhance use of Navigate. Expand use of Navigate as part of Moonshot for Equity.	updates included in monthly academic advising community meetings. Faculty access to Navigate 360 has been changed to comply with FERPA guidelines. Process for increasing faculty advisors' use of Navigate is in place and will begin in fall 2024. Coordinated Care group in Moonshot for Equity is working on using Navigate 360 to develop support teams for students. This includes expanding access to Navigate to student life offices and librarians, and defining how to use the system for different levels of users.

Completion Goals for 2024-2026

The following goals guide Miami University's completion strategies for the coming two years. Several of these goals carry forward from previous completion plans, while others are new:

- Miami Oxford will achieve a six-year graduation rate of 85% and a four-year graduation rate of 75%. The Regional campuses will increase the graduation rate by 10%, an equally ambitious goal.
    - As part of the commitment to the Moonshot for Equity initiative, Miami University will strive to eliminate enrollment and graduation gaps across student populations.
- Across all campuses Miami will increase the use of Navigate 360 to enhance support of students and increase retention and graduation rates.
    - Increase advisor usage of Navigate tools such as campaigns and to-do list to support student success.
    - Increase in coordinated care networks across campus.
    - Increase student engagement with Navigate 360.
- Within one year after graduation, 97% of Oxford graduates who are seeking employment (excluding those enrolled in graduate or professional school) will be employed.
    - Increase the ability to account for students who participate in internships and co-op programs.

    - Ensure that every Miami student participates in a high impact experience (e.g., undergraduate research, internship/co-op, community-engaged learning, case study competition, performance, public or private sector-based project, study abroad/away) prior to graduation.
    - Ensure that these opportunities available for this engagement are offered in equitable and compelling ways.
- Across all campuses, Miami will increase the number of transfer students and smooth the pathways for them to join our community.
    - Increase structured pathways to Miami from area community colleges.
    - Create a more seamless process through which transfer students receive credit evaluation and academic advising.

2022-2024 Completion Strategies

To build on prior efforts, the following new strategies will support Miami University's progress towards its ambitious completion goals.

Category	Description	Strategies
Academic Advising	Increase consistency in faculty advising through the use of Navigate 360.	Utilize EAB partnership to help leverage Navigate 360 as an advising tool for faculty. Provide in-depth Navigate 360 trainings for faculty advisors
	Increase consistency in professional advising through professional development and community standards.	Collect feedback on existing advising standards and add new ones to reflect the institutional commitment to excellent academic advising. Ensure that advising levels requirements reflect new advising community standards. Revise advisor recognition process to ensure that awards reflect new advising community standards.
Pathways	Implement degree planning technology to assist students and academic advisors in course planning and to support department chairs and deans with curriculum planning.	Review tools as part of initial Workday Student implementation and select and implement as quickly as possible.
	Develop purposeful pathways for students.	Continue development of Experiential Major Maps with support of University Communications and Marketing. Start rollout in fall 2025.

	Continue to build transfer pathways to Miami University.	Moonshot for Equity process and new Transfer Coordinator will continue this work.
	Enhance pathways for high school students.	Continue to build on Early College Academy and CCP successes. Determine how these pathways can lead to enrollment at Miami University. Work across campuses to ensure that students consider Miami as a final college destination.
Policies	Continue to assess policies and procedures, and make revisions to improve student success.	The Student Success Committee will identify policies and processes for review; Associate Provost and Dean for Undergraduate Education will coordinate review.
Retention – first-year and beyond	Assess and refine new retention initiatives	Assess on-going impact of High Support Student initiative, Spring Launch, and Winter Thrive. Make necessary adjustments and consider other initiatives to support second-year student success.
	Continue to implement Moonshot for Equity initiatives	Commence work in the Fostering Student Belonging group, and share results of the Fostering Belonging in the Curriculum Learning Cohort to enhance student success strategies across campuses.
	Transparency in Learning and Teaching (Regionals)	TILT aims to advance equitable teaching and learning practices that reduce systemic inequities in higher education. The TILT transparency framework can be applied not only to course assignments, but to student-facing documents, course or program outcomes, and other areas of higher education. Focus on TILT during Fall 2024 opening week events for faculty and staff.
	Build sophomore Courses in Common program (Regionals)	Build on first-year success with Courses in Common by starting a second-year program with Applied Communication in fall 2024.
Special Populations	Focus on adult learners. Continue to develop critical dialogues across campus to support underrepresented student populations. Continue to use Climate survey to motivate change for underrepresented student retention.	Moonshot for Equity working group will focus on Second Chances for Adult Learners, with an objective of breaking down returning student barriers and allowing students to complete degrees they started at Miami. Focus on communication and understanding across student populations to better support special populations as part of Miami/OTIE will expand the Constructive Dialogue Pilot starting Fall 2024, with an objective of embedding Perspectives online program across Miami, and focusing on Honors

		College, Student Life, and select pipeline programs such as LSAMP. Focus on enhancing inclusive climates in the classroom for students, including those from special populations: OTIE has partnered with CTE to launch the "Teaching and Learning Across Differences" Faculty Learning Community starting Fall 2024. Objective is to produce toolkits for faculty to use across disciplines by Spring 2025, to support student success across populations. Continued analysis of climate survey, LGBTQ+ Task Force recommendations, and Accessibility Task Force recommendations to identify specific ways to better support students' sense of belonging at Miami.
Structures	Create an Undergraduate Council to serve as an advisory board for the Dean for Undergraduate Education.	Include staff, faculty, students, and University Senate members.
Technology	Review of work processes related to student success	As part of Workday Student implementation, commence comprehensive review of policies and processes impacting students to ensure we leverage the new technology to improve these processes to support retention and completion.

Workforce Development Priorities

Miami University has a longstanding national reputation for producing outstanding graduates who become successful personally and professionally. Miami is rated No. 1 among Ohio public universities and among the top 10% nationally for return on investment by Payscale (2023 Payscale report). Additionally, Miami University is ranked in the top 13 institutions producing the most young executives in the Midwest by SteppingBlocks.com (link to the article.)

One reason for Miami students' success is a dedicated and talented faculty. As a result of this exceptional undergraduate learning experience, Miami students are routinely accepted into graduate and professional schools:

- over the last four years 60.4% of Miami undergraduate first-time applicants were accepted to medical schools (MD and DO). The national medical school acceptance average reported by the Association of American Medical colleges is 43.7%

- 92% of 2022-23 senior applicants were admitted to at least one law school, compared to 80% national average for the same period

Another reason for Miami students' success is our exemplary Center for Career Exploration and Success (CCES) which provides state-of-the-art programming and support, including career fairs, internship expos, career development courses, mock interviews, resume and cover letter support, consultations, a Professional Headshot Booth, career treks, professional attire, internship and research grants, and drop-in hours. The CCES embraces a career development approach that reaches beyond basic career offerings.

Data show that the career development programming leads not only to interest in Miami University students among top employers in the region and nation but also to graduates who land successful jobs. In 2023-2024, 487 unique organizations recruited on-campus during our job/internship fairs whereas the national average is 146.7 (NACE 2022-2023 Career Services Benchmark Report). Employers placed more than 200,000 internship and job postings, many for multiple openings, on Miami's electronic job board. Employers also hosted 1,412 virtual and in-person events for Miami students in 2022-2023, showcasing strong interest in recruiting Miami University students.

A study conducted by Miami Oxford's Office of Institutional Research and Effectiveness, which tracked 2021-2021 alumni career and educational placement, found the following:

- The overall success rate for the graduating class is 99%, compared to 98.0% last year (1% increase).
- According to NACE, nationally 85.7% of the previous year's bachelor's graduates (2021-2022) were successfully placed.

To ensure that we maintain this high level of success, Miami has developed academic programs that prepare students for some of the most highly demanded jobs in the region and nation. Among Ohio public universities, Miami graduates a high percentage and number of undergraduate students in biological sciences, physical sciences, and mathematics. The University develops programs selectively, using our Miami Academic Program Improvement (MAPI) process to determine market demand and enrollment capacity for proposed programs. Miami has also begun consolidating or eliminating under-enrolled programs to ensure that we put our resources where they are most productive. Miami's focus on liberal education as part of all academic programs ensures that Miami graduates have the career-adaptability skills needed for successful careers in a rapidly changing job market.

Programs that will be initiated or expanded over the next two years to support Ohio's critical workforce needs include:

- **Hometown Talent Initiative**: The Hometown Talent Initiative focuses on building workforce talent and community leaders in small to mid-size communities in Ohio. The vision is to expose young people to the exciting opportunities in our partner communities. The Initiative fosters the development of future workforce and community leaders by (i) providing existing residents opportunities to upskill their talents, (ii) creating a K-12 pipeline of future workforce talent, and (iii) providing first- and second-year college students internships with employers in our partner communities. We are currently piloting this initiative with Butler, Darke, Preble, Shelby, and Warren Counties.

- **Moonshot for Equity**: launched in spring 2022, Moonshot focuses on closing higher education enrollment and completion gaps for historically underrepresented students. Miami University partners with other institutions in the region to smooth pathways into and through higher education. Our primary areas of focus were registration hold reform, retention and completion grants, transfer pathways, and coordinated care. We have made significant progress in all of these areas. In spring 2024 we added fostering student belonging and second chances for adult learners. With the support of EAB and in partnership with our regional partners, Oxford and the Regional campuses are committed to making significant differences in local college-going and completion rates.

- **Director of Experiential Education**: Miami University's Center for Career Exploration and Success recently hired a Director of Experiential Education. In this newly created role, the position will expand internship, micro-internship, and co-op opportunities for students. The position will also design an on-demand job shadowing program and invigorate the Career Champions program for Miami faculty and staff.

- **Vora Partnership with Butler Tech**: Responding to the current and predicted future workforce and applied research needs of Butler County and Southwest Ohio manufacturers, Butler Tech and Miami University are leading a unique effort to establish a new advanced manufacturing hub in Butler County. A collaboration among Miami University, Butler Tech, the Butler County Board of Commissioners, and the City of Hamilton, the hub will bolster the region's strong manufacturing base and serve the needs of industry and students through education, training, and research. The hub is expected to open in fall 2025.

ORC 3345.81 (D)

In Spring 2024, Miami University notified 102 former students that they were near the completion of an Associate degree and 12 former students that they had enough credits to receive an Associate degree. Messages to these students were sent to the email addresses they

provided to the University when they applied for admission. In our 2026 completion plan and report we will provide updates to the state on the status of these students as well as additional students who may qualify for this initiative.

Conclusion

Over the past two years, Miami University has implemented numerous initiatives intended to increase students' persistence and degree completion. We have also embarked on Miami THRIVE, a new strategic planning process for the University, which will amplify our retention, completion, and workforce preparation efforts. All of these initiatives require the partnership of stakeholders across the institution and the campuses that together make Miami University an important contributor to the State of Ohio's education and workforce goals. Our students' success is always at the center of our work, and the measures of our success complement the State's goals. We are proud of the preparation our students have to face the uncertainties of the future and to solve the challenges that the state, nation, and world face moving forward. We look forward to continuing this work and reporting on our many successes in 2026.

MIAMI UNIVERSITY
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May 17, 2024
Academic Affairs

RESOLUTION R2024-35

WHEREAS, University Senate on February 12, 2024 passed SR 24-09, endorsing a proposed program, MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering.

NOW THEREFORE BE IT RESOLVED, that the Board of Trustees hereby approves the establishment of a MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering.

Approved by the Board of Trustees
May 17, 2024

T. O. Pickerill II
Secretary to the Board of Trustees

EXECUTIVE COMMITTEE of UNIVERSITY SENATE
Tracy Haynes, Chair, Senate Executive Committee
Rosemary Pennington, Chair Elect, Senate Executive Committee
Tom Poetter, Past Chair, Senate Executive Committee
University Senate Website: https://www.miamioh.edu/academic-affairs/university-senate

May 15, 2024

To: Gregory P. Crawford, President
From: Brooke Flinder, Secretary of the University Senate
Re: Curriculum Approval
SR 24-09 MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering

On February 12, 2024, University Senate adopted SR 24-09:

> **BE IT HEREBY RESOLVED** that University Senate endorses the proposed program, MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering
>
> **AND FURTHERMORE**, that the endorsement by University Senate of the proposed degree will be forwarded to the Miami University Board of Trustees for consideration.

Approval of the President

I, Gregory P. Crawford, President of Miami University, approve/do not approve: MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering

✓	Approve Forward to the Board of Trustees for action (copy to Secretary of University Senate)
	Do Not Approve

Gregory P. Crawford, President

5/8/2024
Date

cc: Tracy Haynes, Chair, Executive Committee of University Senate
Elizabeth R. Mullenix, Provost, Chair University Senate
Ted Pickerill, Secretary to the Board of Trustees and Executive Assistant to the President

EXECUTIVE COMMITTEE of UNIVERSITY SENATE
Tracy Haynes, Chair, Senate Executive Committee
Rosemary Pennington, Chair Elect, Senate Executive Committee
Tom Poetter, Past Chair, Senate Executive Committee
University Senate Website: https://www.miamioh.edu/academic-affairs/university-senate

May 15, 2024

To: Gregory P. Crawford, President
From: Brooke Flinder, Secretary of the University Senate
Re: Curriculum Approval
SR 24-09 MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering

On February 12, 2024, University Senate adopted SR 24-09:

> **BE IT HEREBY RESOLVED** that University Senate endorses the proposed program, MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering
>
> **AND FURTHERMORE**, that the endorsement by University Senate of the proposed degree will be forwarded to the Miami University Board of Trustees for consideration.

Approval of the President

I, Gregory P. Crawford, President of Miami University, approve/do not approve: MME-Mechanical and Smart Manufacturing Engineering, Master of Engineering

	Approve Forward to the Board of Trustees for action (copy to Secretary of University Senate)
	Do Not Approve

_____ _____

Gregory P. Crawford, President Date

cc: Tracy Haynes, Chair, Executive Committee of University Senate
Elizabeth R. Mullenix, Provost, Chair University Senate
Ted Pickerill, Secretary to the Board of Trustees and Executive Assistant to the President

New Program Proposal

Date Submitted: Mon, 13 Nov 2023 16:33:48 GMT

Viewing: : Mechanical and Smart Manufacturing Engineering - Master of Engineering

Last edit: Thu, 02 May 2024 15:43:49 GMT

Changes proposed by: zanjanm

Contact(s)

Name	Phone	Email
Mehdi Zanjani	5135294188	zanjanm@miamioh.edu

General Bulletin Edition
2024-2025
Proposed start date
Fall 2024

Level
Graduate

Program Type
Major/Concentration within Existing Degree

Delivery site(s)
Oxford

CIP Code
149999 - Engineering, Other.

Department
Mechan & Manufact Engineering
Related Department

College
Col of Engineering & Computing
Related College

Degree
Master of Engineering

General Bulletin Title
Mechanical and Smart Manufacturing Engineering - Master of Engineering

Program Code

Educator Preparation Programs:
Indicate the program request leads to educator preparation licenses or endorsements

Licensure:
No

Endorsement:
No

Rationale for the proposal
This proposed MEng program leverages the existing MS courses in Mechanical and Manufacturing Engineering, but with a non-thesis path for fee-paying students. This program provides the department, division and university with a way to increase revenue from fee-paying students with no additional costs as all the required resources currently exist in the MME department.

Miami University currently offers an ABET accredited undergraduate program in Mechanical and Manufacturing Engineering. The department also offers a research-based Master of Science in Mechanical and Manufacturing Engineering. The proposed Master of Engineering (MEng) in Mechanical and Smart Manufacturing Engineering (MSME) is a course-intensive graduate degree that includes culminating experience and will prepare graduates with the versatile skills and mindset to meet the needs of a demanding and dynamic workforce in the mechanical and manufacturing engineering fields.

This new MEng degree aims to attract recent Bachelor of Science (BS) graduates, as well as part-time and non-traditional students such as working professionals, by enabling them to pursue an MEng degree at their own pace. Furthermore, this program will attract international applicants who seek advanced training and coursework that could be completed in a short period of time. All students enrolled in this program will be fee-paying and ineligible for Graduate Assistantships.

The proposed program addresses the growing national and global need for engineers with expertise in the areas of Materials Engineering, Dynamics and Robotics, Thermal Fluids, and Smart Manufacturing with advanced problem-solving skills and internship/hands-on experiences. The graduates of this program will be well-prepared to join the workforce with qualifications required to be successful in industrial settings.

Introduction

Brief summary of the request

The proposed curricular path for this Master of Engineering (MEng) program will maintain more than 50% overlap with the existing Master of Science (MS) in Mechanical and Manufacturing Engineering. The proposed program does not require additional courses/resources. Therefore, a separate student demand analysis may not be warranted here. The main idea is to create innovative curriculum pathways from the existing curricula so we can attract more professionals and international students, who may not be interested in pursuing research-based master's and are interested in obtaining a graduate degree in a relatively short time frame. The MEng in Mechanical and Smart Manufacturing Engineering (MSME) consists of 30 credit hours, can be completed within a year on a full-time basis, or pursued over a longer period of time by working professionals and non-traditional students.

Accreditation

Notification of appropriate agencies. Provide a statement indicating that the appropriate agencies (e.g., regional accreditors, specialized accreditors, state agencies, etc.) have been notified of the institution's request for authorization of the new program.

Upload documentation of the notification

Academic Leadership

Organizational structure

Describe the organizational structure of the proposed program. In your response, indicate the unit that the program will be housed. Further, describe the reporting hierarchy of the administration, faculty, and staff for the proposed program.

This program will be hosted in the Department of Mechanical and Manufacturing Engineering (MME), and will be administered by MME Graduate Program Director (currently Dr. Mehdi Zanjani) and MME Chair (Dr. Kumar Singh). All MME faculty, who often teach 5xx or 6xx level courses, will be involved in this program.

Provide the title of the lead administrator for the proposed program and a brief description of the individual's duties and responsibilities.

The administrators for this MEng program is the MME Graduate Program Director, who is responsible for communicating with prospective applicants about the program. The Graduate Program Director will also work with the MME Chair (Dr. Kumar Singh), the CEC Graduate Program Coordinator (Dr. Tim Cameron), and the CEC Director of Industrial Relations (Colleen Bush) to advertise the program and manage various aspects of the academic life of MEng students.

Upload this individual's CV/resume
CV_Zanjani.pdf

Describe any councils, committees, or other organizations that support the development and maintenance of the proposed program. In your response, describe the individuals (by position) that comprise these entities, the terms of their appointment, and the frequency of their meetings.

MME Department Faculty Meetings (meets biweekly during fall and spring)
MME Industrial Advisory Council (meets once a semester)

Program development

Describe how the proposed program aligns with the institution's mission.

This MEng program aims to train highly-skilled professionals in the various fields of Mechanical and Manufacturing Engineering, which will benefit Ohio-based as well as national industries. This program specifically addresses one of the key element of Miami's strategic planning to "advance knowledge in the professional fields considered most in-demand throughout Ohio, the region and the nation."

Indicate whether the institution performed a needs assessment/market analysis to determine a need for the program. If so, briefly describe the results of those findings.

N/A-the need for this program is similar to the existing MS program in Mechanical Engineering.

If completed, upload the full analysis

Indicate whether the institution consulted with advisory groups, business and industry, or other experts in the development of the proposed program. If so, briefly describe the involvement of these groups in the development of the program.

The department consulted with its Industrial Advisory Board, which strongly supports the proposal.

Indicate whether the proposed program was developed to align with the standards of a specialized or programmatic accreditation agency. If so, indicate whether the institution plans to pursue programmatic/specialized accreditation for the proposed program and provide a timeline for achieving such accreditation. If the program is already accredited, indicate the date that accreditation was achieved and provide information on the next required review.

This MEng program does not require accreditation. The program and course outcomes will be assessed according to the MME department's guidelines. These assessments will be reported annually to Miami University.

Collaboration with other Ohio institutions

Indicate opportunities for collaboration with Chancellor's Council on Graduate Studies (CCGS) member institutions.

Indicate whether the proposed program was developed in collaboration with another institution in Ohio. If so, briefly describe the involvement of each institution in the development of this request and the delivery of the program.

N/A

Student Services

Admissions policies and procedures

Describe the admissions requirements for the program. In your response, highlight any differences between the admission requirements for the program and for the institution as a whole.

A Bachelor of Science (BS) degree is required for admission to this program. BS/MS double counting of courses is allowed. The requirements for the current Miami students are a minimum GPA of 3.00, a curriculum vitae, and one letter of recommendation. For non-Miami applicants, the requirement is a minimum GPA of 2.75, a curriculum vitae, two letters of recommendation, GRE, as well as a TOEFL score of at least 95 for international applicants.

This program could be of interest to graduates of Miami University as well as other national and international academic institutions. Students who wish to enroll in any electives offered by the other CEC departments may need additional prerequisites or the permission of instructor.

Student administrative services

Indicate whether the student administrative services (e.g., admissions, financial aid, registrar, etc.) currently available at the institution are adequate to support the program. If new or expanded services will be needed, describe the need and provide a timeline for acquiring/implementing such services.

Current existing services are adequate.

Student academic services

Indicate whether the student academic services (e.g., career services, counseling, tutoring, ADA, etc.) currently available at the institution are adequate to support the program. If

new or expanded services will be needed, describe the need and provide a timeline for acquiring/implementing such services.

Current existing services are adequate.

Description of the program to display in the General Bulletin.

The Master of Engineering in Mechanical and Smart Manufacturing Engineering (MSME) prepares students for future engineering practice that requires a higher level of mastery in mechanical and manufacturing engineering. It is best suited for individuals with backgrounds in mechanical engineering or related areas such as materials science, manufacturing, biomedical engineering or physics. The degree includes core courses in mathematical modeling, dynamical systems and control, thermal-fluid systems, mechanics and mechanical behavior of materials, and advanced manufacturing as well as diverse options for courses in science, engineering, and mathematics.

All students are required to complete graduate coursework as defined below:

- Students must earn **a minimum of 30 credit hours** (with a **minimum of 18 credit hours of concentration courses**), with an option for 3-6 credit hours of non-thesis project or internship.

Course offerings

Bulletin Requirement Listing

Program Requirements

The program requires completion of a minimum of 30 credit hours, with a minimum of 18 credit hours of concentration courses (including the culminating experience credit hours). The distribution of hours is summarized as follows:

Culminating Experience

3-6 credit hours of MME 640 (Internship)/MME 704 (Non-thesis project), or equivalently 3-6 credit hours of graduate level Elective courses

Course List

Code	Title	Credit Hours
MME 640	Internship	3-6
MME 704	Non-Thesis Project	3-6

Concentration Courses

Course List

Code	Title	Credit Hours
MME 503	Heat Transfer [1]	3
MME 512	Advanced Mechanics of Materials [1]	3
MME 513	Introduction to Compressible Flow [1]	3
MME 532	Digital Manufacturing	3
MME 533	Smart Factory	3
MME 535	Process Engineering	3
MME 536	Control of Dynamic Systems [1]	3
MME 538	Mechanics, Analysis, and Control of Robots	3
MME 570	Special Topics in Mechanical Engineering [2]	1-4
MME 595	Introduction to Applied Nonlinear Dynamics [1]	3
CPB/MME 612	Engineering Analysis	3

1 Students who have taken the 400-level version of this course or its equivalent must select from among other concentration/elective courses.

2 Student can take special topics which are pre-approved by the department for graduate level courses

Elective Courses

Students select elective courses in consultation with their faculty advisor. If a course does not appear on this list, it can be approved through a petition to the MME department.

Course List

Code	Title	Credit Hours
MME 613	Computational Fluid Dynamics	3
MME 615	Advanced Vibration	3
MME 621	Finite Element Analysis	3

Course List

Code	Title	Credit Hours
MME 623	Mechanical Behavior of Materials	3
CPB 512	Chemical Engineering Thermodynamics [1]	3
CPB 514	Mass Transfer and Unit Operations [1]	4
CPB 518	Biological Transport Phenomena [1]	4
CPB 519	Biomaterials [1]	3
CPB 611	Transport Phenomena in Engineering	3
CSE 543	High Performance Computing & Parallel Programming [1]	3
CSE 616	Simulation of Physical Systems	3
ECE 525	Digital Signal Processing [1]	3
ECE 601	State Variables for Engineers	3
MTH 532	Optimization [1]	3
MTH 535	Mathematical Modeling Seminar [1]	3
MTH 632	Advanced Optimization	3
PHY 537	Intermediate Thermodynamics and Introduction to Statistical Physics [1]	4
PHY 551	Classical Mechanics [1]	4
PHY 583	Mathematical Methods in Physics [1]	4
STA 501	Probability [1]	3
STA 504	Advanced Data Visualization [1]	3
STA 563	Regression Analysis [1]	4
STA 566	Experimental Design Methods [1]	4
CPB 524	Musculoskeletal Biomechanics	3

[1]

Students who have taken the 400-level version of this course or its equivalent must select from among other concentration/elective courses.

Plan of Study/ Roadmap

This program offers flexibility in choosing elective courses that meet the career goals of students. The overall roadmap depends on the students consulting with their thesis advisors as all courses are not offered all the time.

Thesis
Non-Thesis

Non-Thesis Explanation
Students will have the option to take either 3-6 hours of MME 640 (Internship)/MME 704 (Non-thesis project), or equivalently take 3-6 credit hours of graduate level Elective courses. Students who choose the non-thesis Project must present their project to a committee formed by a minimum of two faculty members.

Off site program components
Co-op/Internship/Externship

Brief description of Co-op/Internship/Externship component
Students who choose an internship experience will be required to spend at least 8 weeks in industry. The College of Engineering and Computing (CEC) has a designated Director of Industrial Relations. This has resulted in identification of internship opportunities for CEC students. During the course of the internship, students will enroll in MME 640. At the conclusion of the internship, students are required to submit an extensive report detailing the relationship between the work experience and the objectives of the MEng program, along with a self-evaluation survey. Furthermore, a detailed student performance report will be sought from the employer. The student's and employer's report will enable the instructor of the class to submit a letter grade for the student.

Assessment and Evaluation

Program assessment

Upload a copy of the assessment requirements/plan

List at least 3 specific student learning outcomes (SLOs) that the students are expected to achieve by the time they complete the program. If the program includes liberal education course(s), articulate any specific linkages between your stated SLOs and Miami Plan principles or competencies.

-Demonstrate an ability to apply analytical, computational and/or experimental techniques to solve engineering problems
-Demonstrate an ability to communicate effectively, in writing and oral presentations, the results of research or project work
-Demonstrate an ability to acquire, understand and apply knowledge, beyond the undergraduate level of mechanical engineering

Identify courses (and examinations or assignments within them) or other culminating projects where these outcomes are emphasized and can be measured, especially near the point of graduation. If relevant, specify any licensing or external exams you intend to use.

All MME 5XX/6XX courses may be used for this purpose, i.e. the same courses with the same SLOs as in the existing MS program in MME, with the same outcomes assessment instruments and methods.

Describe how you intend to evaluate the learning outcomes by means of the assignment(s)—e.g., rubric(s) or answer key(s) to exam.

The same evaluation methods and means that are currently used in the MME-MS program will be used.

Describe the sampling procedure. What percentage of your student body will comprise your sample? If the sample size is small, make the case that they adequately represent the whole.

The same procedures that are currently used in the MME-MS program will be used.

Describe how you intend to collect student perceptions of their achievement of the program learning outcomes.

The same procedures that are currently used in the MME-MS program will be used.

Describe your plans for regular (annual or biennial, depending on program size) collection and summary of data.

The same plans that are currently used in the MME-MS program will be used.

Describe your plans for a regular faculty meeting in which faculty discuss assessment data findings and make plans for improvement of teaching and learning based upon the data.

The same plans that are currently used in the MME-MS program will be used.

Identify who will be responsible for creating and submitting an annual assessment report to the assessment coordinator at the end of each academic year.

MME Graduate Program Director will be responsible for this purpose (currently Dr. Mehdi Zanjani).

Other means of measuring student success

In addition to program assessment, describe the other ways that individual student success in the proposed program will be measured (e.g., exit interviews, job placement, alumni surveys). Describe the measurements to be used, frequency of data collection and how the results will be shared and used for program improvement.

-Confidential exit surveys (every year)
-Job placement data (every year)

Faculty

Faculty appointment policies

Describe the faculty designations available (e.g., professor, associate professor, adjunct, instructor, clinical, etc.) for the proposed program's faculty.

All MME faculty will be available for teaching the relevant courses, similar to the existing MME MS program.

Describe the credentialing requirements for faculty who will be teaching in the program (e.g., degree requirements, special certifications or licenses, experience, etc.).

The same credentials that are already satisfied for the existing MME MS program will be applicable here.

Indicate whether the department will need to identify additional faculty to begin the proposed program. Also indicate the workload implications of the proposed program for existing faculty in the department. In particular, for existing faculty, explain how their workload will be adjusted to teach courses within the new program.

N/A

Program faculty

Provide the number of existing faculty members available to teach in the proposed program.
Full-time:
17
Less than full-time:

Provide an estimate of the number of faculty members to be added during the first two years of program operation.
Full-time:

Less than full-time:

Expectations for professional development/scholarship

Describe the institution's general expectations for professional development/scholarship activities by the proposed program's faculty. In your response, describe any differences in the expectations for tenure-track vs. non tenure-track faculty and for full-time vs. part-time faculty. Indicate the financial support provided for such activities.

Expectations for professional development and scholarship activities will be the same as for any faculty in the department, and there will be no new expectation added due to the proposed program as this new program is aligned with the existing MME-MS program.

Upload a faculty handbook outlining the expectations and documenting support

Faculty matrix

Upload faculty matrix/CVs

Library Resources

Describe the involvement of a professional librarian in the planning for the program (e.g., determining adequacy of current resources, working with faculty to determine the need for additional resources, setting the budget for additional library resources/services needed for the program). Please list the name of the librarian consulted.

The current Miami University Library holdings are sufficient to support the proposed MEng program.

Describe the library resources in place to support the proposed program (e.g., print, digital, collections, consortia, memberships, etc.).

Print and digital media currently serving the existing MME program will also serve the proposed MEng program.

Describe any additional library resources that will be needed to support the request and provide a timeline for acquiring/implementing such services. Where possible, provide a list of the specific resources that the institution intends to acquire, the collaborative arrangements it intends to pursue, and monetary amounts the institution will dedicate to the library budget to support and maintain the proposed program.

N/A

Budget, Resources, and Facilities

Resources and facilities

List the facilities/equipment currently available for the program. Where possible, provide a list of the specific resources that the institution intends to acquire, the collaborative

arrangements it intends to pursue, and monetary amounts the institution will dedicate to the library budget to support and maintain the proposed program.

No additional equipment or resources is anticipated for offering this course-intensive MEng program.

Describe the institution's intent to incorporate library orientation and/or information literacy into the proposed program. In your response, describe any initiatives (e.g., seminars, workshops, orientations, etc.) that the institution uses or intends to use for faculty and students in the program.

N/A

Budget/financial planning

Upload Fiscal Impact Statement for New Degree Programs
Fiscal Impact Statement for MEng MSME.xlsx

Use narrative to provide additional information as needed

Additional comments

Reviewer Comments
Carolyn Haynes (haynesca) (Thu, 09 Nov 2023 16:37:49 GMT): Did this program go through the Miami Academic Program Incubator?
Courtney Thompson (kuhlmace) (Fri, 10 Nov 2023 21:45:50 GMT): Rollback: Did this program go through the Miami Academic Program Incubator?

Supporting documents

Key: 547

Select any proposals you would like to bundle together for approval. Only proposals you have saved are available to bundle.

Bundle Title:

Course:

☐ Proposal A

Program:

☐ Proposal B

MIAMI UNIVERSITY
OXFORD, OH • EST. 1809

BOARD OF TRUSTEES
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(513) 529-6225 MAIN
(513) 529-3911 FAX
WWW.MIAMIOH.EDU

May 17, 2024
Academic Affairs

RESOLUTION R2024-36

WHEREAS, University Senate on April 1, 2024 passed SR 24-11, endorsing a proposed program, MTH - Applied Mathematics - Bachelor of Science.

NOW THEREFORE BE IT RESOLVED, that the Board of Trustees hereby approves the establishment of a Bachelor of Science in Applied Mathematics.

Approved by the Board of Trustees
May 17, 2024

T. O. Pickerill II
Secretary to the Board of Trustees

EXECUTIVE COMMITTEE of UNIVERSITY SENATE
Tracy Haynes, Chair, Senate Executive Committee
Rosemary Pennington, Chair Elect, Senate Executive Committee
Tom Poetter, Past Chair, Senate Executive Committee
University Senate Website: https://www.miamioh.edu/academic-affairs/university-senate

May 15, 2024

To: Gregory P. Crawford, President
From: Brooke Flinder, Secretary of the University Senate
Re: Curriculum Approval
SR 24-11 MTH - Applied Mathematics - Bachelor of Science

On April 01, 2024, University Senate adopted SR 24-11:

> **BE IT HEREBY RESOLVED** that University Senate endorses the proposed program, MTH - Applied Mathematics - Bachelor of Science
>
> **AND FURTHERMORE**, that the endorsement by University Senate of the proposed degree will be forwarded to the Miami University Board of Trustees for consideration.

Approval of the President

I, Gregory P. Crawford, President of Miami University, approve/do not approve: MTH - Applied Mathematics - Bachelor of Science

✓	Approve Forward to the Board of Trustees for action (copy to Secretary of University Senate)
	Do Not Approve

Gregory P. Crawford, President

5/8/2024
Date

cc: Tracy Haynes, Chair, Executive Committee of University Senate
Elizabeth R. Mullenix, Provost, Chair University Senate
Ted Pickerill, Secretary to the Board of Trustees and Executive Assistant to the President

SR 24-11

MTH - Applied Mathematics - Bachelor of Science

April 01, 2024

BE IT HEREBY RESOLVED that University Senate endorses the proposed program, MTH - Applied Mathematics - Bachelor of Science

AND FURTHERMORE, that the endorsement by University Senate of the proposed degree will be forwarded to the Miami University Board of Trustees for consideration.

OhioHigherEd
Department of Higher Education

Mike DeWine, Governor
Randy Gardner, Chancellor

REQUEST FOR APPROVAL

SUBMITTED BY
MIAMI UNIVERSITY

ESTABLISHMENT OF A BACHELOR OF SCIENCE IN APPLIED MATHEMATICS

May 2024

MIAMI UNIVERSITY
OXFORD, OH • EST. 1809

TABLE OF CONTENTS

REQUEST

Date of submission: 20 May 2024

Name of institution: Miami University

Degree/degree program title: Bachelor of Science in Applied Mathematics

Primary institutional contact for the request

Name: Carolyn Haynes
Title: Senior Associate Provost
Phone number: 513 529 6717
E-mail: haynesca@miamioh.edu

Department chair/program director

Name: Anna Ghazaryan
E-mail: ghazarar@miamioh.edu

Delivery sites: Oxford Campus

Date that the request was approved by the institution's governing board:
Approved by the Miami University Senate on April 2024, and the Board of Trustees on May 17, 2024

Proposed start date: Fall 2024

Date Institution established: 1809

Institution's programs: associate, bachelor's, master's, educational specialist, doctoral degrees (total 210 degree/majors as of March 2022)

Educator Preparation Programs:
Indicate the program request leads to educator preparation licenses or endorsements.

Licensure ☐ Yes X No
Endorsement ☐ Yes X No

SECTION 1: INTRODUCTION

1.1 Brief summary of the request

The Mathematics Department proposes a new B.S degree in Applied Mathematics to meet the breadth of demand among both future and current students. We believe that this major is a logical next step for the Mathematics Department to serve our current students, increase enrollments, and better serve the community and the state by presenting an opportunity for students to pursue a degree that is not offered in institutions near Oxford. This Applied Mathematics degree is specifically designed to prepare students for growing job opportunities in Operations Research, Finance, Data science, and related fields through various courses in applied mathematics and new experiential learning opportunities.

SECTION 2: ACCREDITATION

2.1 Regional accreditation

Original date of accreditation:	1913
Date of last review:	2015
Date of next review:	2025

2.2 Results of the last accreditation review

Miami University is accredited by the Higher Learning Commission (HLC) of the North Central Association of Colleges and Schools. HLC accredits degree-granting post-secondary educational institutions in the North Central region of the United States. Miami's most recent comprehensive accreditation review was in 2015 with a mid-cycle review in 2019, and the next reaccreditation review will occur in 2025-2026. Miami was granted full accreditation with no concerns or monitoring at its last review.

2.3 Notification of appropriate agencies

Provide a statement indicating that the appropriate agencies (e.g., regional accreditors, specialized accreditors, state agencies, etc.) have been notified of the institution's request for authorization of the new program. **Provide documentation of the notification as an appendix item.**

HLC has authorized Miami to offer this degree program, and it is not subject to any specialized accreditation process.

SECTION 3: LEADERSHIP—INSTITUTION

3.1 Mission statement

Miami University, a student-centered public university founded in 1809, has built its success through an unwavering commitment to liberal arts undergraduate education and the active engagement of its students in both curricular and co-curricular life. It is deeply committed to student success, builds great student and alumni loyalty, and empowers its students, faculty, and staff to become engaged citizens who use their knowledge and skills with integrity and compassion to improve the future of our global society.

Miami provides the opportunities of a major university while offering the personalized attention found in the best small colleges. It values teaching and intense engagement of faculty with students through its teacher-scholar model, by inviting students into the excitement of research and discovery. Miami's faculty are nationally prominent scholars and artists who contribute to Miami, their own disciplines and to society by the creation of new knowledge and art. The University supports students in a highly involving residential experience on the Oxford campus and provides access to students, including those who are time and place bound, on its regional campuses. Miami provides a strong foundation in the

traditional liberal arts for all students, and it offers nationally recognized majors in arts and sciences, business, education, engineering, and fine arts, as well as select graduate programs of excellence. As an inclusive community, Miami strives to cultivate an environment where diversity and difference are appreciated and respected.

Miami instills in its students intellectual depth and curiosity, the importance of personal values as a measure of character, and a commitment to life-long learning. Miami emphasizes critical thinking and independent thought, an appreciation of diverse views, and a sense of responsibility to our global future.

-- June 20, 2008

See: https://miamioh.edu/policy-library/mission-values/

3.2 Organizational structure

Miami University is governed by a Board of Trustees which has 11 members appointed by the Governor with the consent of the Ohio Senate. The Board of Trustees delegates responsibility for administration of the university to the President. The President is advised by an Executive Committee that includes the Provost and Executive Vice President for Academic Affairs, Vice President for Finance and Business Services, Vice President for Student Life, Vice President for Enrollment Management & Student Success, Vice President for University Advancement, Vice President for Information Technology, Vice President for Diversity & Inclusion, Vice President of ASPIRE, General Counsel, Secretary to the Board of Trustees, Vice President of University Communications & Marketing, and Director of Intercollegiate Athletics.

The Division of Academic Affairs includes six academic divisions (College of Arts & Science, College of Creative Arts; College of Education, Health and Society; College of Engineering and Computing, Farmer School of Business; College of Liberal Arts & Applied Sciences), the Graduate School, University Libraries, and the Miami University Dolibois European Center (MUDEC).

The administrative leadership of Miami University can be found at: https://miamioh.edu/about-miami/leadership/

SECTION 4: ACADEMIC LEADERSHIP—PROGRAM

4.1 Organizational structure

Describe the organizational structure of the proposed program. In your response, indicate the unit that the program will be housed within and how that unit fits within the context of the overall institutional structure. Further, describe the reporting hierarchy of the administration, faculty, and staff for the proposed program.

The program resides in the Department of Mathematics in the College of Arts & Science on the Oxford campus.

The Chair of the Department of Mathematics would be the lead administrator, in collaboration with the chair of the Strategic Planning Committee that was responsible for designing the current proposed degree.

Provide the title of the lead administrator for the proposed program and a brief description of the individual's duties and responsibilities.

The department chair is Professor Anna Ghazaryan. The department chair is responsible for the following:

- Assigning teaching duties – establish and monitor individual faculty workloads/determining the size of classes;
- Ensuring annual evaluations of faculty;
- Recommending merit salary increases;
- Recommending approval/disapproval of external services
- Maintaining department personnel records;
- Authorizing faculty absences;
- Assuring faculty meet assigned duties and professional responsibilities/advising of known failures to comply with any applicable policies or guidelines, violation of standards of conduct, professional incompetence, or failure to carry out job responsibilities;
- Addressing written complaints about quality of instruction;
- Hearing cases of alleged academic misconduct;
- Maintaining and operating the department within budget;
- Recommending personal leaves, research appointment, faculty improvement leaves;
- Recommending faculty rehiring after retirement;
- Nominating faculty for graduate faculty standing; and
- Terminations of graduate award holders.

Describe any councils, committees, or other organizations that support the development and maintenance of the proposed program. In your response, describe the individuals (by position) that comprise these entities, the terms of their appointment, and the frequency of their meetings.

The Department of Mathematics has a Strategic Planning Committee. Meetings are held bi-weekly during the fall and spring semesters. All curriculum is also approved by the faculty in the department at faculty meetings which are held bi-weekly during the fall and spring semesters. The department chair serves as the meeting facilitator.

Once the proposal is approved at the departmental level, it moves to the College of Arts & Science Curriculum Committee.

The proposal was also approved by a university level curriculum committee, Council of Undergraduate Curriculum. This body is a University Senate committee and includes faculty representation from all academic divisions. It was also approved by the Council of Academic Deans, University Senate, and the Board of Trustees.

4.2 Program development

Describe how the proposed program aligns with the institution's mission.

The proposed B.S. in Applied Mathematics is clearly aligned with Miami's mission of promoting critical thinking and independent thought. In addition to its well-known logical element, mathematics – both pure and applied – also contains a creative element. In pure mathematics, this manifests itself largely through extensions of previous work and the development of new theoretical machinery. In applied mathematics, this enters into the process of modeling the problem at hand and then applying or developing various tools to solve it. As this process nearly always involves adopting and understanding a problem from another field, Applied Mathematics is an interdisciplinary endeavor, and as such is aligned with Miami's current initiatives. The proposed degree offers several experiential learning opportunities to promote the active engagement of students in their educational journeys. Finally, our proposal is designed with breadth in mind; it affords students with a diverse set of mathematical and computational tools to prepare them for a variety of career paths outside academia.

Indicate whether the institution performed a needs assessment/market analysis to determine a need for the program. If so, briefly describe the results of those findings. If completed, submit the full analysis as an appendix item.

Miami requires ideas for new programs and majors be reviewed by the Miami Academic Program Incubator which conducts a needs assessment on each program idea. See the Gray Scorecard in the appendices which demonstrates that the degree is in demand by employers in the state.

According to the Bureau of Labor Statistics, employment of operations research analysts, data scientists, and actuaries, which are among the main career paths for students in mathematics, are projected to grow 23 percent, 35 percent, and 23 percent, respectively, from 2022 to 2032, much faster than the average for all occupations. Market research by Gray Associates also confirms that there is a strong student demand for an Applied Mathematics degree in Ohio and especially nationally. The total score for such a degree is 8, which corresponds to the 92nd percentile as a total measure of student demand, employment, competitive intensity, and degree fit. This will help the Department of Mathematics increase student recruitment to major in mathematics.

Indicate whether the institution consulted with advisory groups, business and industry, or other experts in the development of the proposed program. If so, briefly describe the involvement of these groups in the development of the program.

The program did not consult with external industry or business leaders.

Indicate whether the proposed program was developed to align with the standards of a specialized or programmatic accreditation agency. If so, indicate whether the institution plans to pursue programmatic/specialized accreditation for the proposed program and provide a timeline for achieving such accreditation. If the program is already accredited,

indicate the date that accreditation was achieved and provide information on the next required review.

The Department is not seeking accreditation for this program.

4.3 Collaboration with other Ohio institutions

Indicate whether any institution within a 30-mile radius of your institution offers the proposed program. If so, list the institutions that offer the proposed program, and provide a rationale for offering an additional program at this site.

There are no institutions within a 30-mile radius that offer a degree in Applied Mathematics. Indeed, the closest institution to Miami University is University of Cincinnati, which doesn't offer a degree in Applied Mathematics. Below, we compare the proposed degree with the similar one in two other institutions in Ohio (located beyond the 30-mile radius):

(1) Ohio University (OU): The applied mathematics program at OU is rather similar to our proposal with two major differences. While we allow students to choose courses from different areas in the related hours requirement, students in OU must choose one field of applications to satisfy this requirement. Internships and other experiential learning opportunities do not count toward the degree in the applied mathematics program in OU.

(2) Wright State University (WSU): The applied mathematics program at WSU is similar to our proposal with one major difference, which is that internships and other experiential learning opportunities do not count toward the degree in the applied mathematics program in WSU.

(3) Ohio State University (OSU): The applied mathematics program in OSU has two concentrations. Students in this program can pick 6 elective hours in physics or chemistry that highlight the focus of their track. While the physics track is comparable to the current proposal, it differs from it in the applied course options available for students to take. Internship and undergraduate research opportunities do not count toward the degree in the applied mathematics program in OSU.

Indicate whether the proposed program was developed in collaboration with another institution in Ohio. If so, briefly describe the involvement of each institution in the development of this request and the delivery of the program.

Indicate whether the proposed program was developed in collaboration with another institution in Ohio. If so, briefly describe the involvement of each institution in the development of this request and the delivery of the program.

The proposed program was not developed in collaboration with another institution in Ohio.

SECTION 5: STUDENT SERVICES

5.1 Admissions policies and procedures

Describe the admissions requirements for the program. In your response, highlight any differences between the admission requirements for the program and for the institution as a whole.

There will be no change in the admissions requirements for this program compared to the current admission requirements. Admission to the program will follow Miami University admissions standards. There is a direct admit to the major once the student is admitted to Miami University.

Admission to Miami University is based on academic performance (strength of curriculum, class rank, and grade point average), secondary school experience and community activities, personal essay, and recommendations of the high school. In making admission decisions, Miami also considers the diversity of the student body and applicants' special abilities, talents, and achievements. Miami believes that the diversity of the student body enhances the quality of the education students receive. Therefore, diversity may include socioeconomic factors, under-enrolled minority group membership, career interest, artistic ability, geographical background, and other special characteristics of the population.

The program being proposed will abide by all applicable transfer credit policies. Policies governing the transcription of credit are authorized by the Academic Policy Committee and University Senate and aligned with the ODHE transfer and articulation policies. Described in the General Bulletin, these policies articulate the standards for AP and CLEP credit, minimum length of study requirements, credit-hour equivalency, the process of evaluating credit and applying transfer courses to the general education requirements, and clear parameters for graduation requirements, including the number of credits that must be completed at Miami. The Bulletin also explains the specific course credit students receive for completion of the OT36 (which is a set of core courses equivalent to 36-40 semester hours that all Ohio public colleges and universities have agreed count for credit at any Ohio school) as well as Transfer Assurance Guides, Military Transfer Assurance Guides and Career-Technical Assurance Guides. All Miami courses that count for TAG, MTAG, CTAG or OT36 credit must advance specific outcomes and be approved by a statewide panel of faculty in the discipline. Miami also has a procedure for students to propose other courses taken at other universities to count for degree and major program requirements.

5.2 Student administrative services

Indicate whether the student administrative services (e.g., admissions, financial aid, registrar, etc.) currently available at the institution are adequate to support the program. If new or expanded services will be needed, describe the need and provide a timeline for acquiring/implementing such services.

The student administrative services (e.g., admissions, financial aid, registrar, etc.) currently available at the institution are adequate to support the program.

5.3 Student academic services

Indicate whether the student academic services (e.g., career services, counseling, tutoring, ADA, etc.) currently available at the institution are adequate to support the program. If new

or expanded services will be needed, describe the need and provide a timeline for acquiring/implementing such services.

The student academic services (e.g., career services, counseling, tutoring, ADA, etc.) currently available at the institution are adequate to support the program.

SECTION 6: CURRICULUM

6.1 Introduction

Provide a brief description of the proposed program as it would appear in the institution's catalog (*General Bulletin*). The description should be no more than 150 words.

This program provides an education in mathematics focused on applying current mathematical and computational techniques to practical problems arising in engineering, economics, the sciences, and industry.

The students will develop a strong foundation in applied mathematics and computation that will empower them to build scientific models and analyze data in real-world settings. Students choose electives in the sciences, technology, engineering or other areas of interest to complement their mathematical training.

6.2 Program goals and learning objectives

Describe the goals and objectives of the proposed program. In your response, indicate how these are operationalized in the curriculum.

- SLO 1 Identify, formulate, and solve mathematical problems that use tools from a variety of mathematical areas.
- SLO 2 Use computer technology and construct algorithms necessary for quantitative analysis and mathematical modeling
- SLO 3 Design mathematical models, apply mathematical analysis and problem-solving skills in a broad range of fields (e.g., biological, physical, social sciences or engineering) in the public or private sector
- SLO 4 Work collaboratively on mathematical models, and present results to the rest of the class. This trains them to communicate effectively and function well on multi-disciplinary teams

6.3 Course offerings/descriptions

Course (number/name)	Cr hrs	Major	General Education (Miami Plan)	Elective	OTM TAG CTAG	New/Existing Course
MAJOR REQUIREMENTS						
MTH 222 Intro to Linear Algebra	3	X				Existing
MTH 252 Calculus III	4	X			X (TAG,	Existing

					OT36)	
MTH 253 Intro to Technical Computing	1	X	X			Existing
MTH 331 Proof: Intro to Higher Mathematics	3	X	X			Existing
MTH 347 Differential Equations	3	X				Existing
MTH 441 Real Analysis	3	X				Existing
ELECTIVES: Select six of following courses	18 total					
MTH 377 Independent Study or MTH 340 Internship	0-9	X		X		Existing
MTH 400 Topics in Advanced Mathematics	3	X		X		Existing
MTH 432 Optimization	3	X		X		Existing
MTH 433 Applied Linear Algebra	3	X		X		Existing
MTH 435 Mathematical Modeling Seminar	3	X	X	X		Existing
MTH 438 Theory and Application of Graphs	3	X		X		Existing
MTH 439 Combinatorics	3	X		X		Existing
MTH 447 Topics in Mathematical Finance	3	X		X		Existing
MTH 451 Intro to Complex Variables	4	X		X		Existing
MTH 453 Numerical Analysis	3	X		X		Existing
MTH 455 Intro to Partial Differential Equations	3	X		X		Existing
MTH 495 Intro to Applied Nonlinear Dynamics	3	X		X		Existing
STA 401 Probability	3	X		X		Existing
RELATED HOURS (Select one of the courses below)						
Computer Programming	3					
CSE 153 Intro to C/C++ Programming	3	X				Existing
CSE 163 Intro to Computer Concepts and Programming	3	X	X		X (TAG)	Existing
CSE 174 Fundamentals of Programming and Problem-Solving	3	X			X (TAG)	Existing
RELATED HOURS – SELECT AT LEAST 9 CREDITS FROM THE COURSES BELOW.	**9**					
Computer Science						
CSE 274 Data Abstractions & Data Structures	3	X			X (TAG)	Existing
CSE 276 Mathematics and Computer Science	3	X				Existing
CSE 374 Algorithms I	3	X				Existing
CSE 432 Machine Learning	3	X				Existing
CSE 464 Algorithms	3	X				Existing
CSE 473 Automata, Formal Languages & Computability	3	X				Existing
Electrical Engineering						

ECE 205 Electric Circuit Analysis	4	X				Existing
Economics						
ECO 201 Principles of Microeconomics	3	X	X		X (TAG, OT36)	Existing
ECO 202 Principles of Macroeconomics	3	X	X		X (TAG, OT36)	Existing
ECO 315 Intermediate Microeconomic Theory	3	X				Existing
ECO 317 Intermediate Macroeconomic Theory	3	X				Existing
ECO 414 Mathematical Economics	3	X				Existing
ECO 465 Game Theory with Economic Applications	3	X				Existing
Finance						
FIN 301 Intro to Business Finance	3	X				Existing
FIN 401 Principles of Investments and Security Markets	3	X				Existing
FIN 402 Fixed-Income Portfolio Management	3	X				Existing
FIN 403 Portfolio Management	3	X				Existing
FIN 404 Forward, Futures & Derivatives	3	X				Existing
Geography						
GEO 441 Geographic Information Systems	3	X				Existing
GEO 442 Advanced Geographic Information Systems	3	X				Existing
GEO 443 Python Programming for Geospatial Applications	3	X				Existing
GEO 448 Techniques and Applications of Remote Sensing	3	X				Existing
Linguistics						
LIN 210 Special Topics in Language Awareness	3	X	X			Existing
LIN 460 Capstone in Linguistics	3	X	X			Existing
Physics						
PHY 181/183 General Physics I with Lab	5	X	X		X (TAG, OT36)	Existing
PHY 182/184 General Physics II with Lab	5	X	X		X (TAG, OT36)	Existing
PHY 281 Contemporary Physics I: Foundations	3	X				Existing
PHY 282 Contemporary Physics II: Frontiers	3	X				Existing
PHY 286 Intro to Computational Physics	3	X				Existing
Statistics						

STA 301 Applied Statistics	3	X				Existing
STA 308 Intro to Programming and Scripting for Data Analytics	3	X				Existing
STA 363 Intro to Statistical Modeling	3	X				Existing

Total Number of Credits for the Program: 124

Provide a brief description of each course in the proposed program as it would appear in the course catalog. In your response, include the name and number of the course. **Submit course syllabi as appendix items.**

CORE COURSES

MTH 222. Introduction to Linear Algebra. (3)
Treatment with emphasis on Euclidean spaces and matrix algebra: systems of linear equations, elementary matrix operations, determinants, vector methods in geometry, vector spaces, and linear transformations.
Prerequisite: A grade of C- or better in MTH 141 or MTH 151.

MTH 252. Calculus III. (4)
Continuation of Calculus I and II. Three-dimensional analytic geometry, vectors, derivatives, multiple integrals, applications. The honors course offers an in-depth treatment of these topics. Admission to the honors course requires honors standing or permission of the instructor.
Prerequisite: MTH 249, MTH 249H or MTH 251.

MTH 253. Introduction to Technical Computing. (1)
Introduction to technical computing using Matlab or a comparable software. The students learn mathematical functions, their limitations, how to modify the functions to suit specific mathematical needs, and the use of computer graphics. Topics include introduction to the software; matrices and vectors; linear equations; interpolation; zeros and roots; least squares; quadrature; eigenvalues and singular values; plotting graphs and surfaces. EL.
Prerequisites: MTH 222 and MTH 252.

MTH 331. Proof: Introduction to Higher Mathematics. (3)
Designed to ease the transition to 400-level courses in mathematics and statistics. The emphasis of the course is on writing and analyzing mathematical proofs. Topics covered will be foundational for higher level courses and will include propositional and predicate logic, methods of proof, induction, sets, relations and functions. ADVW. PA-1C.
Prerequisite: a grade of C- or above in MTH 249 or MTH 251; or a score of 4 or 5 on the AP Calculus BC exam.
Prerequisite or Co-requisite: MTH 222.

MTH 347. Differential Equations. (3)
Theory of ordinary differential equations with applications. Topics include first order differential equations, higher order linear equations, and systems of first order equations. Credit for graduation will not be given for more than one of MTH 245 and MTH 347.
Prerequisite: completion of or registration in MTH 222 and MTH 252.

MTH 441/MTH 541. Real Analysis. (3)
Continuity, differentiation, convergence, series and integration, in both one and several variables.
Prerequisites: A grade of C- or better in MTH 222, in MTH 252 and in MTH 331.

ELECTIVE COURSES

Select six of the following (total 18 credits):

MTH 340. Internship. (0-20)

MTH 377. Independent Studies. (0-6)

MTH 400. Topics in Advanced Mathematics. (3; maximum 9)
Topics selected from an area of advanced mathematics.

MTH 432. Optimization. (3)
Optimization of functions of several variables, convexity and least squares, Kuhn-Tucker conditions, linear programming.
Prerequisite: A grade of C- or better in MTH 222, in MTH 252 and in MTH 331.

MTH 433. Applied Linear Algebra. (3)
A course in linear algebra with a focus on applications and implementation of those applications using current computational software. Topics such as singular value decomposition, matrix factorizations, stochastic matrices and eigenvalue approximation will be presented and applied to problems in spline fitting, principal component analysis, random walks, image processing, least squares and recommender systems.
Prerequisite: A grade of C- or better in MTH 222 or in MTH 246.

MTH 435/MTH 535. Mathematical Modeling Seminar. (3)
Teaches how mathematics can help solve real world problems in fields such as biology, ecology, geophysics, engineering, and social sciences. The material is learned through a hands-on approach. A significant amount of class time is spent on a variety of group projects. This seminar introduces mathematical modeling as the art of using mathematics to formulate and analyze practical problems, and emphasizes usefulness of mathematics in understanding complex phenomena. A differential equations course (MTH 245 or MTH 347) is recommended but not required. SC.
Prerequisites: A grade of C- or better in MTH 222 and in MTH 252, or permission of instructor.

MTH 438/MTH 538. Theory and Applications of Graphs. (3)
Basic structural properties of graphs, trees, connectivity, traversability (Eulerian Tours and Hamiltonian Cycles), matchings, and vertex and edge colorings. Classic graph algorithms will also be analyzed, including shortest path, minimum weight tree, optimal assignment, etc. Additional topics are selected from network flows, planarity, extremal problems, and directed graphs as time allows. This is a theory-oriented course, so familiarity with mathematical proof is desirable.
Prerequisite: A grade of C- or better in MTH 222 and in MTH 331, or permission of instructor.

MTH 439/MTH 539. Combinatorics. (3)
Counting methods: permutations, combinations, generating functions, recurrence relations, inclusion/exclusion. Incidence structures: block designs, Latin squares, finite geometries.
Prerequisites: A grade of C- or better in MTH 222 and in MTH 331, or permission of instructor.

MTH 447/MTH 547. Topics in Mathematical Finance. (3)
Mathematical methods in options pricing; options and their combinations, arbitrage and put-call parity, stock and option trees, risk neutral pricing, geometric Brownian motion for stock models and derivation of the Black-Scholes formula; and as time allows, additional topics such as futures, forwards, swaps and bond models. A course in probability, such as STA 401/STA 501, is recommended but not required.
Prerequisite: A grade of C- or better in MTH 249, in MTH 251, or in an equivalent course.

MTH 451/MTH 551. Introduction to Complex Variables. (4)
Algebra and geometry of complex numbers, elementary functions of a complex variable including integrals, power series, residues and poles, conformal mapping, and their

applications.
Prerequisites: A grade of C- or better in MTH 222, in MTH 252 and in MTH 331.

MTH 453/MTH 553. Numerical Analysis. (3)
Errors and error propagation, root-finding methods, numerical solution of linear systems, polynomial and cubic spline interpolation, numerical differentiation and integration, programming of algorithms. An introductory CSE course, such as CSE 174, is recommended but not required. CAS-QL.
Prerequisite: A grade of C- or better in MTH 222 and in MTH 252.

MTH 455/MTH 555. Introduction to Partial Differential Equations. (3)
Course focuses on first and second order partial differential equations (PDEs), boundary value problems and their applications. Topics include physical examples of PDEs, classification of second order linear PDEs, method of characteristics, D'Alembert's formulation, maximum principles, heat kernels, separation of variables, and Fourier series.
Prerequisites: MTH 245 or MTH 347, or permission of the instructor.

MTH 495/MTH 595. Introduction to Applied Nonlinear Dynamics. (3)
Study of nonlinear dynamics of dynamical systems with application of associated one-dimensional and two-dimensional flows/maps, bifurcations, phase plane dynamics, stability and control. Applications from physics, biology, chemistry, and engineering will be utilized throughout the course.
Prerequisite: MTH 245 or MTH 347 or permission of instructor.
Cross-listed with MME.

STA 401/STA 501. Probability. (3)
Development of probability theory with emphasis on how probability relates to statistical inference. Topics include review of probability basics, counting rules, Bayes Theorem, distribution function, expectation and variance of random variables and functions of random variables, moment generating function, moments, probability models for special random variables, joint distributions, maximum likelihood estimation, unbiasedness, distributions of functions of random variables, chi-square distribution, students t distribution, F distribution, and sampling distributions of the sample mean and variance. Note: STA 401/STA 501 may not be counted toward graduate degree programs in mathematics or statistics.
Prerequisite: STA 261, STA 301, or STA 368 or ISA 225 and MTH 249 or MTH 251.

RELATED HOURS - Computer Programming -- Select one of the following:

CSE 153. Introduction to C/C++ Programming. (3)
Introduction to use of C/C++ programming language as an aid to solving mathematical and scientific problems. Students design, write, and implement programs.

CSE 163. Introduction to Computer Concepts and Programming. (3)
Introduction to computers in data processing, survey of various hardware and software concepts, and analysis and solution of problems by computer programming. Lecture/laboratory, project-oriented course to provide numerous opportunities to analyze problems, formulate alternative solutions, implement solutions, and assess their effectiveness. No prior knowledge of computer concepts or programming assumed. V. PA-1A.
Prerequisite: ACT Math score of 19 or higher, OR SAT Math Score of 510 or higher, or permission of instructor.

CSE 174. Fundamentals of Programming and Problem Solving. (3)
Algorithm development and refinement in problem solving. Modular programming using sequence, selection, and repetition control structures. Program debugging and testing. Formatted input/output. Data files. Fundamental data types. User-defined data types: structured and enumerated. Arrays and arrays of structures. Simple sorting and searching algorithms. Character data and string processing. Algorithm efficiency considerations. Classes, objects, and introduction to object-oriented

programming.
2 Lec. 1 Lab.
Prerequisite: ACT Math Score of 20 or higher, or SAT Math Score of 520 or higher, or Miami Math Placement Test score of 7 or higher, or successful completion of MTH 025.
Prerequisite or Co-requisite: MTH 122 or 124 or 125 or 141 or 151.

RELATED HOURS - Select at least 9 credit hours from the courses listed below. Or complete a major, co-major, or minor

Computer Science:

CSE 274. Data Abstraction and Data Structures. (3)
Abstract data types and their implementation as data structures using object-oriented programming. Use of object-oriented principles in the selection and analysis of various ADT implementations. Sequential and linked storage representations: lists, stacks, queues, and tables. Nonlinear data structures: trees and graphs. Recursion, sorting, searching, and algorithm complexity.
Prerequisites: C- or higher in CSE 271.

CSE 276. Mathematics and Computer Science. (3)
This course examines how mathematics has influenced computer science, and how computer science has influenced mathematics. It covers a range of topics which sit at the intersection of mathematics and computer science, such as encryption, randomness, computational geometry, fractals, prime numbers, numerical methods, image processing, and simulations. Most topics are approached through developing static and animated visualizations of mathematical concepts.
Prerequisite: CSE 271 and (MTH 231 or MTH 331).

CSE 374. Algorithms I. (3)
Design, analysis and implementation of algorithms and data structures. Dynamic programming, brute force algorithms, divide and conquer algorithms, greedy algorithms, graph algorithms, and red-black trees. Other topics include: string matching and computational geometry.
Prerequisites: CSE 274 and (MTH 231 or MTH 331).

CSE 432/CSE 532. Machine Learning. (3)
This course introduces the process, methods, and computing tools fundamental to machine learning. Students will work on large real-world datasets to write code to accomplish tasks such as predicting outcomes, discovering associations, and identifying similar groups. Students will complete a term project showcasing the different steps of the machine learning process, from data cleaning to the extraction of accurate models and the visualization of results.
Prerequisite: CSE 274.

CSE 464/CSE 564. Algorithms. (3)
Review of basic data structures and algorithms. Analysis of algorithms. Problem assessment and algorithm design techniques. Algorithm implementation considerations. Concept of NP-completeness. Analysis of algorithms selected from topics relevant to computer science and software engineering (sorting, searching, string processing, graph theory, parallel algorithms, NP-complete problems, etc.)
Prerequisite: MTH 231 or discrete math and CSE 274 or equivalent.

CSE 473/CSE 573. Automata, Formal Languages, and Computability. (3)
Regular expressions. Closure properties. Sequential machines and finite state transducers. State minimization. Chomsky hierarchy grammars, pushdown acceptors and linear bounded automata. Closure properties of algorithms on grammars. Turing machine as acceptor and transducer. Universal machine. Computable and noncomputable functions. Halting problem.
Prerequisite: CSE 274 or equivalent and (MTH 231 or MTH 331).

Electrical Engineering –ECE 205 or any ECE course 301 or above

ECE 205. Electric Circuit Analysis I. (4)
Study of electric circuits and networks. Includes resistive circuits, first-order transients, sinusoidal steady-state analysis, and frequency response. Emphasis on basic principles and their application to circuit analysis using linear algebra and calculus. Laboratory component included. 3 Lec 1 Lab.
Prerequisite: PHY 192 and (MTH 249 or MTH 251).

Economics:

ECO 201. Principles of Microeconomics. (3)
Nature and scope of microeconomics, including the role of the market in resource allocation, the role of competition, market forces, the forces governing the distribution of income, and the role of foreign trade in economic welfare. IIC. PA-2A. CAS-C.

ECO 202. Principles of Macroeconomics. (3)
Analysis of the determinants of output, prices, employment, and interest rates. Includes long run behavior of the economy, business cycle theory, monetary system, stabilization policy, and international finance. IIC. PA-2A. CAS-C.

ECO 315. Intermediate Microeconomic Theory. (3)
Analysis of the theory of consumer behavior and theory of the firm. Emphasis on logic of rational choice, model building, and economic efficiency. Other topics may include general equilibrium analysis, decision making under uncertainty, and applications of game theory in understanding strategic behavior in imperfect competition. CAS-C, CAS-W.
Prerequisites: earn a grade of at least a C in ECO 201, and 202, and MTH 151 or 153 or 141; or permission of the instructor.

ECO 317. Intermediate Macroeconomic Theory. (3)
National income, as a measure of economic activity, including examination of theories of consumption and investment spending, monetary demand and supply, and implications of alternative models for level and stability of output, employment and prices, and economic growth. CAS-C, CAS-W.
Prerequisites: earn a grade of at least a C in ECO 201, 202, and MTH 141 or 151 or 153; or permission of instructor.

ECO 414/ECO 514. Mathematical Economics. (3)
Development of mathematical techniques essential for understanding economic theory and performing economic research. Topics include calculus of several variables; linear algebra; classical, nonlinear, and convex programming; comparative statics; and dynamic programming.
Prerequisite: ECO 315 and one of the following: MTH 222, 231, or 251 or permission of instructor.

ECO 465. Game Theory with Economic Applications. (3)

Topics from the field of game theory applied to numerous economic problems. Equilibrium concepts are derived to determine the outcome of economic agents pursuing individual self-interest in a "non-cooperative" environment. Specific tools included: multi-person decision trees, expected utility theory, Bayes Theorem, and several classes of games. Economic applications may include: wage bargaining, strategic trade policy, adverse selection and credit rationing, strikes, cartel enforcement, insurance, patents, and product variety.
Prerequisite: ECO 315.

Finance:

FIN 301. Introduction to Business Finance. (3)

Financial management of business enterprises with emphasis upon financial analysis, working capital management, short and long term financing, capital budgeting, cost of capital, and dividend policy.
Prerequisite: ACC 221.
Prerequisite or Co-requisite: STA 125, ISA 125, ISA 225, STA 261, or STA 301.

FIN 401/FIN 501. Principles of Investments and Security Markets. (3)
Emphasis on investment methodology, investment risks, and security selection. Introduction to security analysis, security valuation, and portfolio management; for the individual investor. Finance majors are strongly encouraged to take FIN 381 and FIN 401/FIN 501 during the same semester.
Prerequisite: FIN 301 and FIN 303 with a grade "C" or better and one of ISA 225, STA 261, STA 301 or STA 368.

FIN 402. Fixed-Income Portfolio Management. (3)
Consideration of securities portfolio management objectives and techniques; investment risks, and diversification strategy. Detailed consideration of bond portfolio management, mathematics of bond yields, and interest rate environment. Individual and group participation required.
Prerequisite: FIN 401/FIN 501.

FIN 403. Portfolio Management. (3)
Theory and practice of modern portfolio management. Special consideration to asset pricing theories, nature and application of derivative securities, and investment strategies.
Prerequisite: FIN 401/FIN 501.

FIN 404. Forward, Futures and Derivatives. (3)
This course covers the fundamentals of option from pricing and hedging to their use in the management of financial risk. The course begins with a thorough theoretical development of futures, forwards, options and swaps, and ends with an analysis of structured products that have embedded derivative contracts. Discussion of issues of counter-party risk and the responsible use of derivatives is an integral part of the course.
Prerequisite: FIN 401/FIN 501.

Geography:

GEO 441/GEO 541. Geographic Information Systems. (3)
Introduces students to the structure, concepts, capabilities, and functionality of Geographic Information Systems (GIS) and geospatial science inquiry. The course focuses on the management and processing of spatial data, emphasizing data models and structures, geographic data input, data manipulation and storage, spatial analysis and modeling techniques. Students will learn to frame and solve a sequence of problems with GIS across a wide range of topics including environmental planning, biogeography, conservation biology, sustainable development, natural resource conservation, environmental justice, political geography, and urban geography and planning.

GEO 442/GEO 542. Advanced Geographic Information Systems. (3)
Advanced-level application of GIS technology to geographic problem-solving. Follows on from topics introduced in GEO 441/GEO 541 to provide (a) in-depth understanding of the technical and substantive issues associated with the use of GIS and (b) advanced-level training in the functionality of major GIS products.
Prerequisite: GEO 441/GEO 541 or permission of instructor.

GEO 443/GEO 543. Python Programming for Geospatial Applications. (3)
Introduces the basic concepts of computer programming languages, using the Python language as an example. Emphasis on use of Python scripts specifically within the ArcGIS and QGIS software packages. Taught on-line; available to students on any Miami campus.
Prerequisite: GEO 441/GEO 541.

GEO 448/GEO 548. Techniques and Applications of Remote Sensing. (3)
Description of nonphotographic remote sensing such as radar, thermal infrared, and multispectral scanning. Experience with machine-based interpretation of multispectral imagery.

Linguistics:

LIN 210. Special Topics in Language Awareness. (3; maximum 9)
Introduces various ways of looking at language: sociological, psychological, and formal. Students study how language plays a role in every human activity, from gender and racial stereotyping to the development of automata. May be taken three times, with different topics. PA-2A. CAS-C.

LIN 460. Capstone in Linguistics. (3; maximum 6)
Students work on projects to discover how linguists observe, collect, and analyze language data. Students learn to apply linguistics methodologies to problems about how language shapes our perceptions, how language mediates between people and institutions, or how to develop formal systems that enable computers to parse human sentences. Projects often touch upon concerns of other disciplines. SC.

Physics:

PHY 181. General Physics I. (4)
The course is a quantitative introduction to the basic physical laws of nature. Kinematics, Newtonian dynamics, energy and momentum, gravity, oscillations, waves, and quantum physics are emphasized. Concepts are developed through lectures, demonstrations, computer simulations, and problem solving. Qualitative reasoning is emphasized, and quantitative problem-solving skills are developed. Concepts from differential and integral calculus are developed and used. IV. PA-2B. CAS-D.
Co-requisite: MTH 151 or equivalent.

PHY 182. General Physics II. (4)
The course is a quantitative introduction to the basic physical laws of nature. Thermodynamics, electricity and magnetism, circuits, Maxwell's Equations, and special relativity are emphasized. Concepts are developed through lectures, demonstrations, computer simulations, and problem solving. Qualitative reasoning is emphasized, and quantitative problem-solving skills are developed. Concepts from differential and integral calculus are developed and used. IVB. PA-2B. CAS-D.
Prerequisite: MTH 151 or equivalent, PHY 181 or equivalent.
Co-requisite: MTH 249, MTH 251 or equivalent.

PHY 281. Contemporary Physics I: Foundations. (3)
Third course in a sequence that begins with two semesters expounding the visions of Newton, Schrodinger, Boltzmann, Maxwell, and Einstein. Incorporates a focus approach that emphasizes Nobel prize-winning physics occurring within the lifetime of the student. Presently, the foci are the scanning tunneling microscope, high-Tc superconductivity, and the "standard model" for particle physics. Topics include quantum mechanics in three dimensions, solid state physics, quantum optics, and particle physics.

Prerequisite: PHY 192.
Co-requisite: MTH 252 (or permission of instructor).

PHY 282. Contemporary Physics II: Frontiers. (3)
Designed for students in physics, engineering physics, and biological physics at the sophomore level; topics may be of interest to students in related disciplines. Explores and explains scientific principles and technological advances making quantum science and resulting technologies qualitatively and quantitatively different from the large scale. Covers enabling tools and techniques from atomic, molecular, condensed matter, and particle physics, as well as advances in nanotechnology, quantum optics, and biophysics.
Prerequisite: PHY 281.

PHY 286. Introduction to Computational Physics. (3)
Lecture-laboratory course on use of computers in analyzing physical systems. Topics of study come from classical mechanics, electromagnetism, statistical physics, and quantum mechanics.
Prerequisite: PHY 192, MTH 251.

Statistics:

STA 301. Applied Statistics. (3)
A first course in applied statistics including an introduction to probability, the development of estimation and hypothesis testing, and a focus on statistical methods and applications. Includes introduction to probability of events, random variable, binomial and normal distributions, mathematical expectation, sampling distributions, estimation, and hypothesis testing. Statistical methods include one and two sample procedures for means and proportions, chi-square tests, analysis of variance, and linear regression. Note: Credit for graduation will not be given for more than one of STA 125, ISA 125, STA 261, STA 301, or STA 368.
Prerequisite: MTH 151 or MTH 249 or MTH 251 or MTH 252.

STA 363. Introduction to Statistical Modeling. (3)
Applications of statistics using regression and design of experiments techniques. Regression topics include simple linear regression, correlation, multiple regression and selection of the best model. Design topics include the completely randomized design, multiple comparisons, blocking and factorials. STA 363 may not be taken after credit has been earned for STA 463/STA 563. CAS-QL.
Prerequisite: STA 261 or STA 301 or STA 368 or ISA 205 or ISA 225; or permission of instructor.

6.4 Program sequence: Provide the intended/ideal sequence to complete the program in the table below. Add additional time period as needed.

Time Period	Curriculum component	Time period	Curriculum component
Freshman Year			
Year 1 Fall Semester	Courses/Activities (hrs.)	Year 1 Spring Semester	Courses/Activities (hrs.)
	MTH 151 Calculus I (4)		MTH 251 Calculus II (4)
	Free Electives (6)		Free Electives (6)
	Miami Plan (General Education) (6)		Miami Plan (General Education) (6)
Time period	Curriculum component	Time period	Curriculum component
Sophomore Year			
Year 2 Fall Semester	Courses/Activities (hrs.)	Year 2 Spring Semester	Courses/Activities (hrs.)

	MTH 252 Calculus III (4)		MTH 331 Intro to Higher Mathematics (3)
	MTH 222 Intro to Linear Algebra (3)		MTH 253 Intro to Technical Computing (1)
	Free Electives (3)		Free Electives (3)
	Miami Plan (General Education) (6)		Miami Plan (General Education) (6)
			MTH 347 Differential Equations (3)
Time period	Curriculum component	Time period	Curriculum component
Junior Year			
Year 3 Fall Semester	Courses/Activities (hrs.)	Year 3 Spring Semester	Courses/Activities (hrs.)
	MTH 441 Real Analysis (3)		Major Electives (6)
	Free Electives (6)		Related Hours (3)
	Major Electives (3)		Miami Plan (General Education) (6)
	Miami Plan (General Education) (3)		
Time period	Curriculum component	Time period	Curriculum component
Senior Year			
Year 4 Fall Semester	Courses/Activities (hrs.)	Year 4 Spring Semester	Courses/Activities (hrs.)
	Related Hours (3)		Related Hours (3)
	Miami Plan (General Education) if needed (3)		Free Electives (8)
	Free Electives (3)		Major Electives (3)
	Major Electives (6)		

6.5 Alternative delivery options (please check all that apply):

☐ More than 50% of the program will be offered using a fully online delivery model
☐ More than 50% of the program will be offered using a hybrid/blended delivery model
☐ More than 50% of the program will be offered using a flexible or accelerated delivery model

For the purposes of this document, the following definitions are used:

- an **online course** is one in which most (80+%) of the content is delivered online, typically without face-to-face meetings;
- a **hybrid/blended course** is one that blends online and face-to-face delivery, with substantial content delivered online;
- a **flexible or accelerated program** includes courses that do not meet during the institution's regular academic semester (fall or spring) as well as courses that meet during the regular academic term but are offered in a substantially different manner than a fixed number of meeting times per week for all the weeks of the term.

6.6 Off-site program components (please check all that apply):

Co-op/Internship/Externship
☐ Field Placement
☐ Student Teaching
☐ Clinical Practicum
☐ Other

If one or more of the items is checked, please provide a brief description of the off-site component(s).

Students complete an internship or practicum as part of the requirements for the major.

SECTION 7: ASSESSMENT AND EVALUATION

7.1 Program assessment

Assessment efforts are directed by the Office of the Provost. Because of the accreditation standards of the Higher Learning Commission, each academic department, academic support unit and Student Life unit at Miami University is required to implement a full cycle assessment program for each undergraduate major, general education, free-standing certificate, and graduate program.

Each major or degree program specifies at least three learning outcomes to assess, and other units specify at least three major goals or objectives to assess. Each year, data related to the outcomes or goals are collected and analyzed and used for program improvement. When beginning the process of assessment for the first time, departments and units create an assessment plan. Annually or biennially, the assessment data for the three or more learning outcomes or goals are analyzed and discussed and plans for improving teaching and learning based upon those findings are articulated. The summary of the data collected, the analysis and the steps for improvement are recorded in an assessment report which is submitted each year. Plans and reports are reviewed regularly by a university-level assessment committee.

Below is a summary of the assessment plan for the BS Applied Mathematics program:

Each student learning outcome will be assessed in a specific course listed below:

- SLO 1 Identify, formulate, and solve mathematical problems that use tools from a variety of mathematical areas. (Final exams in MTH 432 and 441)
- SLO 2 Use computer technology and construct algorithms necessary for quantitative analysis and mathematical modeling (MTH 253, MTH 453).
- SLO 3 Design mathematical models, apply mathematical analysis and problem-solving skills in a broad range of fields (e.g., biological, physical, social sciences or engineering) in the public or private sector (MTH 435, MTH 455, MTH 495, MTH 438).
- SLO 4 Work collaboratively on mathematical models, and present results to the rest of the class. This trains them to communicate effectively and function well on multi-disciplinary teams (MTH 435, MTH 455, MTH 495, MTH 253).

Assessment measures include:

- (SLO 1) To assess the first learning outcome, data will be collected from final examinations in one or more of the listed courses. (Currently we already collect data from MTH 432 and MTH 441 in assessment for the BS MTH degree.)
- (SLO 2) To assess familiarity with computer technology, we will give a final project in MTH 253 which will require students to implement concepts from calculus, linear algebra and numerical analysis.
- (SLO 3) To assess students' ability to design mathematical models, we will review final or midterm projects in MTH 435 and/or MTH 495. These will be reviewed for the soundness of their models and the ability to successfully incorporate concepts from other disciplines.
- (SLO 4) Feedback on student presentations in MTH 435, MTH 455 and or MTH 495 will be reviewed with an eye toward student communication skills.

Exam questions, projects and student presentations will be evaluated based on a rubric.

These assessments will include every student in the relevant course sections.

A survey will be given to all students in the final semester of the program.

In parallel with our assessment for the mathematics major, we plan a 6-year cycle on the following schedule: In years 1-2, we would gather data for SLO2; in years 3-4, we would gather data for SLO 1; and in years 5-6, we would gather data for SLO 3 and SLO 4.

Each year, the selected learning outcome will be assessed and a summary of the results submitted.

Each year, the assessment will be presented at a regularly scheduled department meeting. This will be an opportunity for the department as a whole to reflect on the data as well as make recommendations as to how the learning outcomes may be better achieved.

A committee will be formed to create an annual assessment report.

7.2 Other means of measuring student success

In addition to program assessment, describe the other ways that individual student success in the proposed program will be measured (e.g., graduation rates, exit interviews, job placement, alumni surveys). Describe the measurements to be used, frequency of data collection and how the results will be shared and used for program improvement.

The Miami University Student Success Committee with the support of the Office of Institutional Research and Effectiveness guides and implements the university's student success evaluation and assessment. Student success is measures through national surveys and projects (e.g., the National Survey of Student Engagement, CIRP Freshman survey, Collegiate Learning Assessment, College Senior Survey, Your First College Year, HERI Faculty Survey, Faculty Survey of Student Engagement) as well as in-house graduate survey and alumni survey.

SECTION 8: FACULTY

8.1 Faculty appointment policies

Describe the faculty designations available (e.g., professor, associate professor, adjunct, instructor, clinical, etc.) for the proposed program's faculty. In your response, define/describe the differences between the designations.

Faculty designations include:

1. Tenured/tenure-track faculty (with responsibilities including teaching, scholarship and service) in the ranks of Professor, Associate Professor, Assistant Professor;

2. Continuing faculty (with responsibilities including teaching and service) in the non-tenurable ranks of Teaching Professor, Associate Teaching Professor, Assistant Teaching Professor, Clinical Professor, Associate Clinical Professor, Assistant Clinical Professor, Senior Lecturer, Associate Lecturer, Assistant Lecturer, Senior Clinical Lecturer, Associate Clinical Lecturer, Assistant Clinical Lecturer;

3. Faculty in 1-semester and 1-year appointments (with responsibilities only for teaching) holding the titles of Visiting Assistant Professor or Instructor.

Describe the credentialing requirements for faculty who will be teaching in the program (e.g., degree requirements, special certifications or licenses, experience, etc.).

Faculty holding the title of Professor, Associate Professor, Assistant Professor, Clinical Professor, and Visiting Assistant Professor must have a doctoral degree and prior teaching experience at the collegiate level. Faculty whose titles include the word Lecturer or Instructor must hold a Master's degree in sport leadership or sport management or related field.

Indicate whether the department will need to identify additional faculty to begin the proposed program. Also indicate the workload implications of the proposed program for existing faculty in the department. In particular, for existing faculty, explain how their workload will be adjusted to teach courses within the new program.

Describe the institution's load/overload policy for faculty teaching in the proposed program.

See policy: https://miamioh.edu/policy-library/employees/faculty/employment-of-faculty/overload-teaching.html

8.2 Program faculty

Provide the number of existing faculty members available to teach in the proposed program.

Full-time:32
Less than full-time: 3

Provide an estimate of the number of faculty members to be added during the first two years of program operation.

Full-time: 1
Less than full-time: 0

8.3 Expectations for professional development/scholarship

Describe the institution's general expectations for professional development/scholarship activities by the proposed program's faculty. In your response, describe any differences in the expectations for tenure-track vs. non tenure-track faculty and for full-time vs. part-time faculty. Indicate the financial support provided for such activities. **Include a faculty handbook outlining the expectations and documenting support as an appendix item.**

Miami's teaching, scholarly and service expectations for promotion of tenure-track faculty can be found here: https://www.miamioh.edu/policy-library/employees/faculty/evaluation-promotion-tenure-faculty/index.html

The expectations for teaching faculty can be found here: https://miamioh.edu/policy-library/employees/faculty/evaluation-promotion-tenure-faculty/tcpl.html

The key difference is that teaching faculty are not expected to engage in research or scholarship. Part-time faculty are not generally expected to engage in research, scholarship or service.

8.4 Faculty matrix

Complete a faculty matrix for the proposed program. A faculty member must be identified for each course that is a required component of the curriculum. If a faculty member has not yet been identified for a course, indicate that as an "open position" and describe the necessary qualifications in the matrix (as shown in the example below). **A copy of each faculty member's CV must be included as an appendix item.**

See attached appendices for faculty matrix and CVs of faculty in the program.

SECTION 9: LIBRARY RESOURCES

9.1 Library resources

Describe the involvement of a professional librarian in the planning for the program (e.g., determining adequacy of current resources, working with faculty to determine the need for additional resources, setting the budget for additional library resources/services needed for the program).

No additional library resources are needed at this time. We work closely with Roger A Justus, our science librarian liaison, who is invited to attend one faculty meeting per academic year to promote the variety of resources offered by Miami University's library system and to ensure that the library resources are adequate..

Describe the library resources in place to support the proposed program (e.g., print, digital, collections, consortia, memberships, etc.).

No additional library resources are needed at this time.

Describe any additional library resources that will be needed to support the request and provide a timeline for acquiring/implementing such services. Where possible, provide a list of the specific resources that the institution intends to acquire, the collaborative arrangements it intends to pursue, and monetary amounts the institution will dedicate to the library budget to support and maintain the proposed program.

No additional library resources are needed at this time.

SECTION 10: BUDGET, RESOURCES, AND FACILITIES

10.1 Resources and facilities

List the facilities/equipment currently available for the program. Where possible, provide a list of the specific resources that the institution intends to acquire, the collaborative arrangements it intends to pursue, and monetary amounts the institution will dedicate th the library budget to support and maintain the proposed program.

This proposed new major requires no additional facilities or equipment beyond those already available within the Department of Mathematics to support the existing .B.S. Mathematics program.

10.2 Budget/financial planning:

Complete the table on the following page to describe the financial plan/budget for the first three years of program operation.

See Appendix.

APPENDICES

Please note that the institution is required, at a minimum, to submit the following the items as part of the review:

Course Catalog: https://bulletin.miamioh.edu/
Student Code of Conduct: Link
Undergraduate Student Policies Link
Accreditation Status: https://miamioh.edu/academic-affairs/accreditation/

Description
CVs of Faculty
CV Department Chair
Gray Associates Marketing and Employment Demand Data for Program
Fiscal Impact Statement
Syllabi

Miami University is committed to continual support of the delivery of the Bachelor of Science in Applied Mathematics. If Miami University decides in the future to close the program, the university will provide the necessary resources and means for matriculated students in the program to complete their degree.

Miami University verifies that the information in the application is truthful and accurate.

Respectfully,

Dr. Elizabeth R. Mullenix
Provost & Executive Vice President
Miami University

Fiscal Impact Statement

	Year 1	Year 2	Year 3	Year 4
I. Projected Enrollment				
Headcount	20	40	60	80
II. Projected Program Income				
Tuition (paid by student or sponsor)	$475,400	$950,800	$1,426,200	$1,901,600
Expected state subsidy	$100,000	$200,000	$300,000	$400,000
Externally funded stipends, as applicable	0	0	0	0
Total Projected Program Income	$575,400	$1,150,800	$1,726,200	$2,301,600
III. Program Expenses				
New Personnel (one full time instructor)	0	$62,775	$64,030	$65,310
New facilities/building/space renovation	0	0	0	0
Scholarship/stipend support	0	0	0	0
Additional library resources	0	0	0	0
Other expenses	0	0	0	0
Total Projected Expenses	$0	$62,775	$64,030	$65,310

Faculty Matrix

Course	Instructor
MTH 252	All faculty
MTH 253	Akhtar, Beros, Ghazaryan, Sarabi
MTH 222	All faculty
MTH 222T	All faculty
MTH 331	All faculty
MTH 331T	All faculty
MTH 347	All faculty
MTH 400	All faculty
MTH 340U	Gaddis, Ghazaryan
MTH 377E or R	Beros
MTH 432	Brezhneva, Sarabi, Ward
MTH 433	Akhtar, DeBiasio, Eckhardt, Gaddis
MTH 435	Ghazaryan, Sukhtayev
MTH 438	DeBiasio, Jiang, Miller, Pritikin
MTH 439	DeBiasio, Jiang, Miller, Pritikin
MTH 441	Brezhneva, DeBiasio, Eckhardt, Dowling, B. and N. Randrianantoanina
MTH 447	Akhtar, Eckhardt, Larson, Miller, Sarabi
MTH 451	Eckhardt, Dowling, B. and N. Randrianantoanina
MTH 453	Brezhneva, Pogan
MTH 455	Ghazaryan, Pogan, Sukhtayev
MTH 495	Ghazaryan, Pogan, Sukhtayev
STA 401	Davis

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E-mail: akhtarr@miamioh.edu
URL: https://reza-akhtar.github.io

Education

1995 A.B. Mathematics *magna cum laude*, Harvard University
Thesis: *Cyclotomic Euclidean Number Fields*
Thesis advisor: Barry Mazur.

1995 S.M. Applied Mathematics, Harvard University.

1997 Sc.M. Mathematics, Brown University.

2000 Ph.D. Mathematics, Brown University
Dissertation: *Milnor K-theory and zero-cycles on algebraic varieties*
Dissertation advisor: Stephen Lichtenbaum
Areas of emphasis: Algebraic geometry, algebraic cycles.

Language Proficiency

Native: English
Professional working knowledge: French
Working knowledge: Latin, Koine Greek, Arabic, Biblical Hebrew, Syriac, German, Urdu.

Employment

July 2012 - present	Professor, Department of Mathematics, Miami University. Permanent Graduate Level A status, December 2018.
July 2006 - June 2012	Associate Professor, Department of Mathematics, Miami University.
August 2000 - June 2006	Assistant Professor, Department of Mathematics, Miami University.

Research Publications

My dissertation and early papers are in algebraic geometry, specifically algebraic cycles. Most of the rest of my work is concerned with questions at the intersection of algebra and combinatorics.

R. Akhtar. Group actions and Messiaen's modes of limited transposition. In preparation.

*R. Akhtar, J. Charboneau, and S. Gagola III. Strong complete mappings for products of 2-groups. In preparation.

*R. Akhtar and S. R. Arvind. On the distribution of the greatest common divisor for number fields. In preparation.

R. Akhtar. Linear operator identities in quasigroups. *Comm. Math. Univ. Carolinae* **63** (2022), no. 1, 1-9.

R. Akhtar and S. Gagola III. Strong complete mappings for 3-groups. *Discrete Math.* **21** (2022), Paper no. 112643.

+R. Akhtar and R. Joshua. Explicit Chow-Lefschetz decompositions of Kummer manifolds. *K-theory: Proc. of the International Colloquium, Mumbai, 2016.* Hindustan Book Agency (2018), 155-194.

R. Akhtar. Symmetric linear operator identities in quaisgroups. *Comm. Math. Univ. Carolinae* **58** (2017), no. 4, 401-417.

R. Akhtar. On generalized associativity in groupoids. *Quasigroups and Rel. Sys.* **24** (2016), 1-6.

*R. Akhtar and L. Lee. Connectivity of the zero-divisor graph for finite rings. *Involve* **9** (2016), no. 3, 415-422.

*R. Akhtar, B. Burns, H. Hoganson, H. Mansfield, O. Sobieska, and Z. Woods. Splitting techniques and the Betti numbers of secant powers. *Involve* **9** (2016), no. 5, 737-750.

*R. Akhtar and M. Forlini. The Linear Chromatic Number of a Sperner Family. *Discrete Applied Mathematics* **171** (2014), 1-8.

R. Akhtar, A. B. Evans, and D. Pritikin. Representation Numbers of Complete Multipartite Graphs. *Discrete Mathematics* **3112** (2012), 1158-1165.

*R. Akhtar, A. Arp, M. Kaminski, J. VanExel, D. Vernon, and C. Washington. The varieties of Bol-Moufang quasigroups defined by a single operation. *Quasigroups and Rel. Sys.* **20** (2012), 1-10.

R. Akhtar. Representation Numbers of Some Sparse Graphs. *Discrete Mathematics* **312** (2012), no. 22, 3417-3423.

R. Akhtar and R. Joshua. Toric Residue Codes: I. *Finite Fields and their Applications* **17** (2011), no. 1, 15-50.

R. Akhtar and P. Larson. Small-sum pairs in abelian groups. *J. de Th. des Nombres de Bordeaux* **22** (2010), no.3, 525-535.

R. Akhtar, A. B. Evans, and D. Pritikin. Representation Numbers of Stars. *Integers* **10** (2010), 733-745.

*R. Akhtar, M. Boggess, T. Jackson-Henderson, I. Jiménez, R. Karpman, A. Kinzel, and D. Pritikin. On the unitary Cayley graph of a finite ring. *Elec. J. of Combinatorics* **16** (2009), no. 1, Research Paper 117, 13 pp.

R. Akhtar and R. Joshua. Lefschetz Decompositions for Quotient Varieties. *Journal of K-theory* **3** (2009), no.3, 547-560.

+R. Akhtar, P. Brosnan, and R. Joshua, eds. *The Geometry of Algebraic Cycles.* Papers from the 2nd Conference on Algebraic Cycles held at the Ohio State University, Columbus, OH. March 25–29, 2008. Clay Mathematics Proceedings **9**.

R. Akhtar, T. Jiang, and Z. Miller. Asymptotic determination of edge-bandwidth of multidimensional grids and Hamming graphs. *SIAM J. on Discrete Mathematics* **22** (2008), no. 2., 425-449.

R. Akhtar, T. Jiang, and D. Pritikin. Edge-bandwidth of the triangular grid. *Elec. J. of Combinatorics* **14** (2007), no. 1, Research Paper 67, 11 pp.

R. Akhtar. A mod-ℓ vanishing theorem of Beilinson-Soulé type. *J. of Pure and Applied Algebra* **208** (2007), no. 2, 555-560.

*R. Akhtar and L. Lee. Homology of zero-divisors. *Rocky Mountain J. of Mathematics* **37** (2007), no. 4, 1105-1126.

R. Akhtar and R. Joshua. Künneth decompositions for quotient varieties. *Indagationes Mathematicae* **17** (2006), no. 3, 319-344.

R. Akhtar. Cycles on curves over global fields of positive characteristic. *Trans. of the Amer. Math. Soc.* **357** (2005), 2557-2569.

R. Akhtar. Adequate equivalence relations and Pontryagin products. *J. of Pure and Applied Algebra* **196** (2005), no. 1, 21-37.

R. Akhtar. Milnor K-theory of smooth varieties. *K-theory* **32** (2004), no. 3, 269-291.

R. Akhtar. Torsion in mixed K-groups. *Communications in Algebra* **32** (2004), no. 1, 295-313.

R. Akhtar. Zero-cycles on varieties over finite fields. *Communications in Algebra* **32** (2004), no. 1, 279-294.

R. Akhtar and A. Lachlan. On countable homogeneous 3-graphs. *Archive for Mathematical Logic* **34** (1995), no. 5, 331-344.

* = joint work with students, + = conference volume

Research Presentations

Quasigroups, generalized associativity, and automatic theorem-proving.
Colloquium, Wright State University, November 2017.

Betti numbers of secant powers of the edge ideal of a graph.
MIGHTY LVII, Wright State University, April 2016.

Explicit motivic decompositions for Kummer varieties and manifolds.
Seminar, Ohio State University, November 2015.

Splitting techniques and the Betti numbers of secant ideals.
Colloquium, Ohio State University, April 2014.

Representation numbers of complete multipartite graphs.
MIGHTY LII, Indiana State University, April 2012.

Bol-Moufang quasigroups defined by a single operation.
SIDIM, University of Puerto Rico - Humacao, February 2011.

Small-sum pairs in abelian groups.
CMS Winter Meeting, Vancouver, BC. December 2010.

The Linear Chromatic Number of a Sperner Family.
MIGHTY L, University of Wisconsin – Superior, October 2010.

The zero-divisor graph: at the intersection of algebra and combinatorics.
Colloquium, Butler University, October 2009.

The Beilinson-Soulé Conjecture with finite coefficients.
Algebraic Cycles Conference II, Ohio State University, March 2008.

Motivic decompositions for quotient varieties.
Algebraic Geometry Seminar, Ohio State University, March 2007.

Chow-Künneth and Lefschetz Decompositions for Quotient Varieties".
CMS Winter Meeting, Toronto, ON. December, 2006.

Elliptic Curves, Arithmetic, and Geometry.
Colloquium, Baldwin-Wallace College, November 2006.

The zero-divisor graph: at the intersection of algebra and combinatorics.
Undergraduate Seminar, Trinity University, September 2006.

Combinatorial methods for studying zero-divisors.
Colloquium, Trinity University, September 2006.

Beyond the zero-divisor graph: a homology theory for zero-divisors.
Colloquium, Wabash College, June 2006.

Edge-bandwidth of the triangular grid.
MIGHTY XLII: Ohio State U. – Marion Campus, April 2006.

A vanishing theorem of Beilinson-Soulé type.
K-theory Seminar, Ohio State University, March 2006.

Cycles, cohomology, and motives.
Colloquium, Miami University, April 2005.

Algebraic cycles on curves over global fields.
Algebraic Geometry Seminar, Ohio State University, April 2005.

Algebraic Cycles on Abelian Varieties.
Colloquium, Rose-Hulman Institute of Technology, November 2004.

Elliptic Curves, Arithmetic and Geometry.
Colloquium, Wabash College, March 2004.

Cycle groups of curves over global fields of positive characteristic.
Joint Mathematics Meetings. Phoenix, AZ, January 2004.

Cycles on Algebraic Varieties.
Colloquium, University of Dayton, October 2002.

Adequate equivalence relations and cycles on abelian varieties.
AMS Regional Meeting, Boston University, October 2002.

Kato-Somekawa groups and higher Chow groups of zero-cycles.
AMS Regional Meeting, Ohio State University, September 2001.

Milnor K-theory of smooth schemes.
AMS Regional Meeting, U. of Kansas, April 2001.

Milnor K-theory and Intersection Theory.
Colloquium, University of Cincinnati, January 2001.

Zero-cycles on algebraic varieties.
Algebra Seminar, University of Pennsylvania, January 2000.

Teaching and Advising

At Brown University

MTH 9, Calculus I: Summer 1998.

MTH 17, A.P. Calculus II: Fall 1998.

At Miami University

MTH 151, Calculus I: Fall 2000, Fall 2001, Fall 2005.

MTH 153, Calculus I: Fall 2009.

MTH 190, First Year Seminar in Mathematics and Statistics: Spring 2013, Fall 2013, Fall 2014.

MTH 222, Linear Algebra: Fall 2000, Fall 2007 (2 sec.), Spring 2013, Fall 2013, Fall 2014, Spring 2016, Spring 2017 (2 sec.), Spring 2022 (2 sec.), Spring 2023 (2 sec.), Fall 2023.

MTH 231, Discrete Mathematics: Spring 2003, Spring 2005 (2 sec).

MTH 245, Differential Equations for Engineers: Spring 2010, Fall 2010, Fall 2011, Fall 2012, Fall 2015, Fall 2017, Spring 2018, Fall 2019, Spring 2020, Spring 2021 (2 sec.), Summer 2021

MTH 247, Financial Mathematics for Actuaries. Spring 2015, Spring 2016.

MTH 249, A.P. Calculus II: Fall 2002, Fall 2003, Fall 2006, Fall 2013, Fall 2020 (2 sec.).

MTH 249H Honors A.P. Calculus II: Fall 2007, Fall 2012.

MTH 251. Calculus II: Spring 2001, Spring 2006, Fall 2008, Spring 2011, Summer 2017 (first third), Fall 2019, Summer 2023 (first half).

MTH 252, Calculus III: Fall 2004, Spring 2007, Spring 2012, Spring 2014, Fall 2017, Fall 2018, Summer 2021, Fall 2021, Summer 2022, Fall 2022.

MTH 252H, Honors Calculus III: Spring 2008.

MTH 347, Differential Equations: Fall 2006.

MTH 420/520, Topics in Algebra: Spring 2004, Summer 2016.

MTH 421/521, Abstract Algebra I: Fall 2001, Spring 2003, Fall 2005, Spring 2007, Fall 2009, Fall 2011, Spring 2012, Fall 2014, Fall 2016, Fall 2018, Spring 2020, Fall 2022, Fall 2023.

MTH 422/522, Abstract Algebra II: Spring 2001, Spring 2010.

MTH 425/525, Number Theory: Fall 2003, Fall 2004, Spring 2014, Spring 2018.

MTH 447/547, Topics in Mathematical Finance: Spring 2011, Spring 2013, Fall 2016, Summer 2018, Summer 2020.

MTH 620, Topics in Algebra: Summer 2003.

MTH 621, Graduate Algebra I: Fall 2002, Fall 2008, Fall 2010, Fall 2015, Fall 2021.

MTH 622, Graduate Algebra II: Spring 2002, Spring 2006, Spring 2019.

Undergraduate advising
Since 2003, I have served as academic advisor for between five and twelve undergraduate students each year studying towards the B.S. in Mathematics. I have completed the first four modules of the Advisor Training program and expect to be formally awarded Level B Advisor status within the next few weeks.

Course development
In 2015, I developed MTH 247 (Financial Mathematics for Actuaries) to provide students with preparation for the second exam in the Society of Actuaries sequence.

Supervised Student Research

Master's Theses
M.A. Thesis advisor for Jeffrey Cooper, August 2009 - April 2010.
Thesis: Product dimension of a random graph.

M.A. Thesis advisor for Daniel Baczkowski, August 2003 - July 2004.
Thesis: Diophantine equations involving arithmetic functions of factorials.

Master's final projects (M.A. or M.S. Mathematics)

Leah Andaloro (September 2022 - May 2023)

Jacob Charboneau (September 2021 - August 2022)

Robyn Campbell (October 2018 - July 2019)

Emmanuel Tamakloe (January 2015 - October 2015)

Christine Stoller (January 2013 - August 2013)

Joshua Fitzgerald (January 2012 - August 2012)

Laura Hoffman (January 2011 - October 2011)

Cory Washington (January 2010 - January 2013)

Carmen Weddell (August 2009 - April 2010)

Joshua Wagner (August 2008 - June 2009)

Benjamin Byer (August 2006 - May 2007, project not completed)

Holly Attenborough (August 2005 - May 2006)

Melody Brickel (January - May 2004)

Deborah Puffer (January - May 2003)

Amy Herron (March - July 2002)

Graduate Independent Studies
Jacob Barahona-Kaamsvag, Anthony Wilkie, Michael Woode, Ruifeng Xu, Summer 2019.

Delaney Aydel, Summer 2017.

Robert Seiver, Fall 2009.

Graduate Examinations

Algebra Comprehensive Exam Committee (18 times since 2000).

Master's Final Exam Committee (2 thesis advisor, 13 final project advisor, 16 final project committee member)

Undergraduate Honors Thesis Reader

Iordan Ganev, Spring 2010.

Undergraduate (Miami) research students

S. Ram Arvind, Summer 2017.

Maxwell Forlini, Summer 2009.

Nathan St. John, Summer 2007.

Lucas Lee, Summer 2003.

Undergraduate SUMSRI research students

2013: Brittany Burns, Haley Mansfield, Ola Sobieska, Zerotti Woods.

2012: Rachel Aldrich, Sarah Drummond, Barbara Hernandez, Hannah Hoganson, Lauren Morey, Marco Tapia-Guilliams, Alicia Velek.

2011: Crystal Altamirano, Stephanie Angus, Lauren Brown, Laura Gioco, Joseph Crawford.

2010: Ashley Arp, Michael Kaminski, Jasmine Van Exel, Davian Vernon.

2009: Daniel Caproni, Joshua Edgerton, Margaret Rahmoeller, Mychael Sanchez, Anna Tracy.

2008: Megan Bernstein, Megan Boggess, Tiffany Jackson-Henderson, Isidora Jiménez, Rachel Karpman.

2007: Katherine Benson, Louis Cruz, Yesenia Cruz, Melissa Tolley, Bryant Watkins.

2006: Chantelle Bicket, Samantha Graffeo, Darragh Ross, Edward Washington.

2005: Camil Aponte, Natalia Córdova, Clyde Gholston, Helen Hauser, Patrice Johnson, Nathan Mims.

2004: Amanda Phillips, Julie Rogers, Kevin Tolliver, Frannie Worek.

Undergraduate Independent Studies

Dylan Palo, Spring 2017.

Kara Ungerman, Fall 2013.

Jonathon Hall, Spring 2008.

Todd Van Woerkom, Fall 2007.

Awards

External funding

Co-principal investigator on NSA grant ($174,572) to support MACRO 2023 and 2024 (pending).

Co-principal investigator on NSA grant ($250,000) to support SUMSRI 2019 and 2020 (not awarded).

Co-principal investigator on NSF grant ($28,900), travel for SUMSRI 2018 and 2019 (not awarded).

Co-principal investigator on NSA grant ($125,000) to support SUMSRI 2018 (awarded).

Co-principal investigator on NSA grant ($118,804) to support SUMSRI 2015 (awarded).

Co-principal investigator on NSF grant ($90,000) to support SUMSRI 2015 (not awarded)

Co-principal investigator on NSA grant ($125,000) to support SUMSRI 2014 (not awarded)

Co-principal investigator on NSF Grant ($175,416) to support SUMSRI 2013 and 2014 (awarded).

Co-principal investigator on NSA Grant ($150,000) to support SUMSRI 2013 (awarded).

Co-principal investigator on NSF Grant ($142,541) to support SUMSRI 2011 and 2012 (awarded).

Co-principal investigator on NSA Grant, ($431,270) to support SUMSRI 2011 and 2012 (awarded).

Co-principal investigator on NSA Grant, ($188,441) to support SUMSRI 2010 (awarded).

Internal Funding

Miami University USS (Undergraduate Summer Scholars) grants for 2003, 2007, 2009, 2017 to supervise student research in algebra and combinatorics.

Miami University College of Arts and Sciences Summer Research Grant ($4000), 2000.

Miami University Committee for Faculty Research Summer Grant ($6000), 2000.

Other awards and recognition

Student Recognition of Teaching Excellence Award, Fall 2020.

M. Pauline Priest Barney fellowship, 2016-2017.
This fellowship is given to a faculty member in the Department of Mathematics for the specific purpose of developing a new course or redesigning an existing mathematics course. In Fall 2014, I was asked to develop a course to prepare Actuarial Science minors for the second exam (Financial Mathematics) in the sequence for professional licensure. I taught this course (MTH 247) for the first time in Spring 2015. I then used the fellowship to study what might be improved in future offerings of the course. I taught the course again in Spring 2016. Unfortunately, in Spring 2017 and Spring 2018, the class had to be canceled due to low enrollment; student demand was assessed to be too low to warrant even putting it on the schedule for Spring 2019 or 2020.

Nominated for Alumni Distinguished Educator Award, 2008.

Exxon-Mobil Project NExT Fellow, 2001.
Project NExT is a professional development program for early-career mathematicians which has been administered by the Mathematical Association of America since 1994. Fellows attend three national conferences, at which sessions are held to discuss and explore various issues of concern to new faculty members. Project NExT also maintains a network of mentors and several mailing lists for further discussion and dissemination of information.

SUMSRI Program

I was heavily involved in the Summer Undergraduate Mathematical Sciences Research Institute (SUMSRI), from early in my career (2002) until discontinuation of the program in 2018. SUMSRI was a seven-week long program, hosted by the Department of Mathematics at Miami University, whose goals was to encourage talented undergraduates – particularly those from underrepresented demographic groups – to pursue research and graduate education in the mathematical sciences. Students recruited from universities across the country were given the opportunity to conduct research in a seminar under the direction of a faculty member in mathematics or statistics; each research seminar was assisted by a graduate student in the mathematical sciences who also served as a mentor to the undergraduates. SUMSRI also offered a sequence of short courses, a colloquium series, and a graduate panel discussion featuring representatives from programs at universities in the general area. Until 2014, students were also given funding to attend the annual Joint Mathematics Meetings the following January to present their research in poster form.

Program Director: (2014, 2018)
I wrote the grant proposals, advertised the program, recruited students, and selected between eight and seventeen students (dependent on the level of funding) from an applicant pool of roughly 200 students each year. I made offers and assigned students to research seminars. I was also responsible for setting the program schedule, inviting colloquium speakers, and organizing other program events.

Program Director and Coordinator: (2015)
As for Program Director, with the additional responsibility of organizing travel for students, processing paychecks, and keeping accounts of all program expenses.

Program co-Director: (2010 - 2013)
As for Program Director, except that duties were shared with Program co-Director Patrick Dowling (Department of Mathematics).

Research Seminar Director: (2003 - 2013)
During the seven weeks of the program, I met with an assigned group of four to seven students and supervised their research on a problem of my choosing. The students wrote up their results in a final paper and delivered a final presentation. In some cases (2008, 2010, 2013), the results were reworked and submitted for publication in a research journal.

Algebra Short Course Instructor: (2002, 2003, 2014, 2015)
I designed and delivered a course of 12 contact hours, on a topic in Algebra appropriate for junior-level Mathematics students.

Departmental Service (major)

Associate Chair: Fall 2016 - present.
Ongoing duties include designing and maintaining the department teaching schedule, managing student enrollment (ROR), and hearing / ruling upon academic dishonesty cases (until Spring 2023). As part of this position, I also designed and implemented a force add request management system (Spring 2017, prior to ROR), designed a research map for the department web page (Summer 2017), organized a department retreat (Fall 2017), and assembled an archive of course materials for the department (Spring - Summer 2019).

Governance Committee: Fall 2017 - present (Chair), 2008-09, 2006-07.
During the 2017-2018 and 2018-19 academic years, I worked with three other faculty members and in consultation with the department to produce a completely new governance document. While many policies were borrowed from the old document, the new document is organized very differently, in a form designed for ease of use and updating. Much work was necessary to eliminate redundancy, update obsolete statements, ensure consistent with university policy, and firm up various definitions. The new document was adopted by the department in March 2019.

Strategic Planning Committee: Fall 2023 - present .

The charge of this committee is to plan for the future of the department, whether through the development of new programs or other activities.

Department self-study co-author: Summer 2016.
I helped Patrick Dowling and Doug Ward write the department self-study document in advance of the program review conducted in October 2016.

Chair of Department Tenure Committee: Fall 2014 - Fall 2017.
My duties were to call and preside at meetings of the committee each Spring to discuss progress and write review letters for probationary faculty members. During the fall, meetings were held to consider and vote upon applications for tenure and promotion to Associate Professor.

Chair of Department Level 2 and Level 3 Promotion Committees: Fall 2018 - present.

My duties are to call and preside at meetings of the committee when needed to evaluate or recommend TCPL faculty members for promotion either to Associate Lecturer / Associate Teaching Professor (Level 2) or Senior Lecturer / Teaching Professor (Level 3).

Department Graduate Committee: Fall 2007 - Spring 2014 and Fall 2001 - Spring 2004.
The Graduate Committee considers all issues pertinent to the department's graduate degree programs, including course approvals, curriculum changes, and assistantship offers to program applicants.

Department web page: design and maintenance, Fall 2009 - Spring 2014.
Prior to the uniformization of university web pages implemented in 2014, the department maintained its own website. I wrote the code for those pages and updated the relevant information each year.

Chair of Oxford Math lecturer search committee: 2013-14.

Oxford Math tenure-track search committee: 2016-17, 2014-15, 2011-12. 2002-03.

Hamilton tenure-track Math search committee: 2009-10.

Mathematics Committee: Chair 2006-08 and Secretary 2002-2006.
This committee, which was in existence from 2002 through 2009 in the (joint) department of Mathematics and Statistics, considered matters specific to mathematics and communicated a recommendation to the department.

Chair of *ad hoc* Committee for Peer Review of Teaching: Spring 2005.
This commitee devised a departmental policy for peer review of teaching (for tenure-track faculty), which was then approved by the department and incorporated into the governance document.

Departmental Service (minor)

Department Assessment Report (author): 2018.
I wrote the part of the report on the capstone MTH 425, which I had taught that year.

Barney Fellowship Selection *ad hoc* Committee: 2016 and 2019.
This committee was convened to consider applications for the M. Pauline Priest Barney Fellowship.

Department Retreat: 2017.
I organized and conducted an on-campus retreat for the Department of Mathematics, in which we discussed various issues of concern, some proceeding from the 2016 program review.

Chair of *ad hoc* Online Teaching Evaluation Committee: Spring 2012 and Fall 2013.
This committee was tasked with drafting or revising department-specific questions on form for student evaluation of teaching, as the university was transitioning from evaluations on paper to online evaluations.

Computer Committee: Fall 2013 - Spring 2023.

Departmental Library Liaison: Fall 2004 - Spring 2006.

Colloquium Committee: Fall 2003 - Spring 2004.

Mathematics Steering Committee: Fall 2000 - Spring 2001.

Service to the University

Graduate Council (alternate), Fall 2019 and Spring 2023.

College of Arts and Sciences Committee on Committees, 2016-2018.

University Library Committee, Fall 2010 - Spring 2013.

CAS Committee for the Review of Chairs and Program Directors: Fall 2010 - Spring 2012.

Graduate Council Financial Assistance Subcommmittee: Fall 2010 - Spring 2012.

Harrison Scholarship Screening Committee, 2009.

Honors and Scholars Program Advisory Committee: Fall 2007 - Spring 2010.

Graduate Council Natural Sciences Subcommittee: Fall 2007 - Spring 2008.

Student-Centered Service

Chapter Advisor to Pi Mu Epsilon: Fall 2005 - Spring 2008 and Fall 2009 - Spring 2010.

Invited oration to Pi Mu Epsilon: Fall 2000, Fall 2004, Fall 2010, Fall 2015.

Service to the State

Ohio Board of Regents Math TAG: (Panel lead since Summer 2013, member since Fall 2010).
The Mathematics Transfer Assurance Guide (TAG) Panel evaluates mid-level mathematics courses (Calculus III, Linear Algebra, Differential Equations) at state-funded institutions within Ohio for appropriateness for transfer credit. The role of panel lead is analogous to that of committee chair.

Program Proposal Reviewer: 2012-2013
In late 2012, Shawnee State University submitted a pre-proposal for a Master's degree program in Mathematics. I wrote a review of the pre-proposal and deemed it solid enough to proceed to a full proposal. The latter was submitted in 2013, and I completed a review of it also.

MAGS Thesis Reviewer: 2010
I wrote a review of a thesis submitted to the Midwest Association of Graduate Schools (MAGS) for an award.

Conference Organization

Co-organizer (with Beata Randrianantoanina and Patrick Dowling) of *Undergraduate Research*: Oxford, OH: September 28-29, 2013.

Co-organizer (with Louis DeBiasio, Tao Jiang, Zevi Miller, and Dan Pritikin) of *MIGHTY LIV*: Oxford, OH; April 6, 2013.

Co-organizer (with Paul Larson and Zevi Miller) of *The Mathematics of Finance*: Oxford, OH; September 30th - October 1st, 2011.

Co-organizer (with Patrick Brosnan and Roy Joshua) of *Algebraic Cycles II: Progress and Prospects*: Columbus, OH: March 24-29, 2008.

Co-organizer (with Paul Larson and Dan Pritikin) of *Recreational Mathematics*: Oxford, OH; September 26-27, 2008.

Co-organizer (with Paul Larson and Bruce Magurn) of *Number Theory* (Miami University Fall Conference): Oxford, OH; September 28-29, 2007.

Co-organizer (with Roy Joshua and Bruce Magurn) of *Conference on Algebraic Cycles*: Oxford, OH; March 5-6, 2003.

Co-organizer (with Linda Eroh and Carmen Schabel) of Project NExT Special Session *Teaching Students to Write Proofs*, MAA MathFest: Burlington, VT; July 31st, 2002.

Other Service to the Profession

Journal referee:
J. of Pure and Applied Algebra, Communications in Algebra, Hokkaido J. of Mathematics, Clay Mathematics Institute Proceedings, Discussiones Mathematicae, Ars Mathematica Contemporanea, American Mathematical Monthly, J. of K-Theory, Semigroup Forum, Involve, Rocky Mountain J. of Mathematics,

Taiwanese J. of Mathematics, Korean J. of Mathematics, Electronic J. of Combinatorics, J. of Integer Sequences, Pacific J. of Mathematics, Hacettepe J. of Mathematics, Punjab J. of Mathematics.

Reviewer for Math Reviews (2 reviews).

Judge for Undergraduate Research Poster Session (Joint Mathematics Meetings), January 2002.

Programming languages

Working knowledge of Python, C++ , Fortran and Matlab.

References

Louis DeBiasio. Department of Mathematics, debiasld@miamioh.edu
Patrick Dowling, Department of Mathematics, dowlinpn@miamioh.edu
Paul Larson. Department of Mathematics, larsonpb@miamioh.edu
Doug Ward. Department of Mathematics, wardde@miamioh.edu.

Laura C. Anderson

Curriculum Vitae
Fall 2023

Miami University
Department of Mathematics
301 S. Patterson Avenue
Oxford, Ohio 45056
513.529.2185
andersL@miamioh.edu

EDUCATION

2008	Miami University, M.S. Mathematics
2006	Muskingum College, B.S. Mathematics, B.S. Computer Science, *Magna Cum Laude*

PROFESSIONAL APPOINTMENTS

2023 - Present	Senior Lecturer, Department of Mathematics, Miami University
2019 - 2023	Associate Lecturer, Department of Mathematics, Miami University
2014 - 2019	Assistant Lecturer, Department of Mathematics, Miami University
2009 - 2014	Instructor, Department of Mathematics, Miami University
2006 - 2008	Graduate Assistant, Department of Mathematics, Miami University

HONORS

2020	Miami University M. Pauline Priest Barney Mathematics Fellowship co-awarded with Dr. Patrick Dowling to support development of Business Calculus
2020	"Student Recognition of Teaching Excellence" Award through the Provost's Office
various	Letters of Commendation, Center for Teaching Excellence, Miami University classes of 2015, 2016, 2018, 2019, 2020, 2022

TEACHING, ADVISING, & CURRICULUM DEVELOPMENT

Courses Taught at Miami University (2006-present)

MTH 025	*Algebra Concepts for Precalculus*, 5 credits
MTH 104	*Precalculus with Algebra*, 5 credits
MTH 119	*Quantitative Reasoning*, 4 credits
MTH 121	*Finite Mathematical Models*, 3 credits
MTH 123	*Precalculus*, 3 credits
MTH 125	*Precalculus*, 5 credits
MTH 141	*Business Calculus*, 5 credits
MTH 151	*Calculus I*, 5 credits, then 4 credits beginning in 2022
MTH 251	*Calculus II*, 4 credits

Advising at Miami University

2017 - present	Lead Departmental Advisor

Curriculum Development

2020	Developed MTH 141, *Business Calculus*, with Dr. Patrick Dowling
2017	Significant course redesign of MTH 104, *Precalculus with Algebra*, with Mr. Andrew Terpstra

DEPARTMENTAL, DIVISIONAL & UNIVERSITY SERVICE

2022 - present	Undergraduate Recruiting Committee, member
2021	Barney Fellow Selection Committee, member
2019 - present	First 50 Days event team, member
2017 - present	Lead Departmental Advisor
2017 - present	Advising Committee, chair
2016 - present	Undergraduate Committee, member
2017 - present	Online Calculus Committee, member
2014 - 2019	Calculus Co-coordinator
2015 - present	Teaching Team Leader for Precalculus and Business Calculus, as assigned
2014 - 2017	Proficiency Exam for MTH 151 Mangagement
2015, 2017	Textbook Selection Committee for Calculus, member
2015, 2022	Department Chair Search Committee, member
2017, 2019	TCPL Search Committee, member
2019 - present	Make-It-Miami days, new student recruitment
2015 - present	Summer Orientation, placement advising and registration
2021 - 2023	College of Arts and Science Advisor searches, ad-hoc "Campus Partners," member
2020	College of Arts and Science Advisor Search Committee, member
2022 - 2023	Date Literacy Institute, member
2021 - 2023	TCPL Mentoring Program, as mentor and mentee
2022 October	CIQS "Careers in Quantitative Skills" Day, presenter
2021 October	Provost's Office TCPL Workshop, panelist
2020 January	TCPL Winter Writing Workship, co-facilitated a roundtable of Associate TCPL

CERTIFICATIONS

Completed at Miami University

2022 May	Completed Miami's online DEI professional development course
2022 April	SafeZone 101 through the Office of Diversity Affairs
2021 March	Change of Program "Processor Training"
2019 March	Change of Program "Approver Training"
2017	Academic Advising Excellence Award, Level-A Advisor Certification

Champike Attanayake

Miami University-Regionals, Middletown, OH 45042
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Education

Doctor of Philosophy, Mathematics Bowling Green State University (BGSU), Bowling Green OH.

Dissertation Topic: "Finite Elements and Practical Error Analysis of Huxley and EFK Equations"

Advisor: Dr. Tong Sun, Department of Mathematics and Statistics.

Master of Science, Applied Mathematics Michigan Technological University (MTU), Houghton MI.

Thesis: "Distributional Properties of Transaction Size in US Equities"

Advisor: Dr. Igor L. Kliakhandler, Department of Mathematical Sciences.

Bachelor of Science, Mathematics University of Kelaniya, Sri Lanka.

Research Project: "Solving General Relativity Problems Using Numerical Methods"

Advisor: Professor S. B. P. Wickramasuriya, Department of Mathematics.

Professional Experience

Assistant Professor, Department of Mathematics, Miami University-Regionals	2008 to 2014
Associate Professor, Department of Mathematics, Miami University-Regionals	2014 to present

Teaching

College Algebra
Elementary Statistics
Pre-Calculus
Linear Algebra
Discrete Mathematics
Calculus
Calculus with Technology
Differential Equations

Service Learning (SL)

Designed, implemented and evaluated a SL project to analyze survey data for *Butler county United Way* (5 weeks long).

Designed, implemented and evaluated a SL project to assist elementary and middle school teachers (semester long).

Implemented and evaluated a SL project to tutor high risk high school students - *Miami Bridges.* (two semester long).

Publications

High-Order Enriched Finite Element Methods for Elliptic Interface Problems with Discontinuous Solutions, C Attanayake, S-H Chou, Q Deng, International Journal of Numerical Analysis and Modeling (Accepted).

Construction of discontinuous enrichment functions for enriched or generalized FEM's for interface elliptic problems in 1D, S-H Chou, C Attanayake, Journal of Computational and Applied Mathematics, 2023, Vol 428.

Convergence for an Immersed Finite Volume Method for Elliptic and Parabolic Interface Problems, C Attanayake, D Senaratne, Journal of Mathematics Research, 2023 Vol 15 no 2.

Superconvergence and Flux Recovery for an Enriched Finite Element Method, C Attanayake, S-H Chou, International Journal of Numerical Analysis and Modeling , 2021, Vol 18, no 5.

A homotopy perturbation method for a class of truly nonlinear oscillators, S-H Chou, C Attanayake, C Thapa, Annals of Mathematical Sciences and Applications, 2021, Vol 6, no 1.

An analytical approach to assess and compare the vulnerability risk of operating systems, P K H Kaluarachchilage, C Attanayake, S Rajasooriya, C P Tsokos, International Journal of Computer Network and Information Security, 2020, Vol 12, no 2.

Flux recovery and super-convergence for quadratic immersed finite element methods, Attanayake C, S-H Chou. International Journal of Numerical Analysis and Modeling, 2017, Vol 14, no 1..

An Immersed Interface Method for Pennes' Bioheat Transfer Equation, Attanayake C, S-H Chou, Discrete and Continuous Dynamical Systems, Series B, 2015, Vol 20, no 2.

Short-Term Service-Learning in an Introductory Mathematics Course, Attanayake C, AURCO Journal, March 2014.

Existence of a Moving Attractor for Parabolic Semilinear Equations, Attanayake C, Senaratne D, Kodippili A. Electronic Journal of Qualitative Theory of Differential Equations, 2013..

On Long Time Error Analysis Technique for Nerve Axon Type Equations, Attanayake C, International Journal of Applied Mathematics, 2013, Vol. 26 no 4.

Service-Learning for Introductory and Developmental Math Students, Attanayake C, Journal of Education and Practice, 2013, Vol. 4, no 8..

Convergence of an Immersed Finite Element method for Semilinear Parabolic Interface Problems, Attanayake C, Senaratne D, Applied Math Sciences, 2011, Vol. 5, no 3..

Rank Revealing QR Algorithm for Near Field Sources, Nizar Tayem, Champike Attanayake, Ayodele Abatan, Proceedings of 2010 Annual Conference & Exposition of American Society for Engineering Education.

Distributional Properties of Transaction Size in US Equities, Attanayake C, Journal of Trading, Fall 2009, Vol. 4, no. 4..

Presentations

Immersed interface Flux Recovery Method for Parabolic Equations, MathFest, Columbus OH, August 2016.

Flux recovery Method for Pennes? Bio Heat Transfer Equation Fall Ohio Section MAA Meeting, Columbus, OH, October 2015.

Analysis of a Immersed Finite Element Method for Semilinear Parabolic Equations, Southeastern Atlantic Regional Conference on Differential Equations (SEARCDE), University of Tennessee, TN, September 2013

Immersed Interface Method for Pennes Bio Heat Transfer Equation, Southeastern Atlantic Regional Conference on Differential Equations (SEARCDE), Wake Forest University, VA, October 2012.

PRESENTATIONS (Continued)

Convergence of an Immersed Finite Element Method for Parabolic Problems in 2D, MathFest, Madison WI, August 2012.

Numerical Method for Semilinear Parabolic Interface Problems, Fall Ohio Section MAA Meeting, Findley, OH, October 2011.

Convergence of an Immersed Finite Element Method for Semilinear Parabolic Interface Problems, MathFest, Lexington KY, August 2011.

Contraction and Smoothing Properties of the Nerve Axon Equation, Southeastern Atlantic Regional Conference on Differential Equations (SEARCDE), Virginia Polytechnic Institute, VA, October 2010.

Long Time Error Estimate Using contraction Properties of the Husley's Equation, Joint Mathematics Meetings, Washington, DC, January 2009.

Contraction Properties and Numerical Approximations of Traveling Waves, Fall Ohio Section MAA Meeting, Columbus, OH, October 2007.

Practical Error Analysis of Numerical Solutions to the Huxley's Equation, Southeastern Atlantic Regional Conference on Differential Equations (SEARCDE), University of Arkansas-Little Rock, AR, October 2008.

Long-time Error Estimation for the Extended Fisher-Kolmogorov Equation, Joint Mathematics Meetings, San Diego, CA, January 2008.

Finite Element Methods for the Extended Fisher-Kolmogorov Equation, Fall Ohio Section MAA Meeting, SpringField, OH, October 2007.

Error Estimation Using Numerical Smoothing Indicator, Southeastern Atlantic Regional Conference on Differential Equations (SEARCDE), Murray, KY, October 2007.

HONORS AND AWARDS

Distinguished Service Award for Faculty Service-Learning, Miami University, 2013.

Summer Research Grant, College of Art and Science, Miami University, 2009.

Fellowship Award, Graduate College, BGSU, 2007-2008.

Certificate of Merit for Outstanding Academic Achievement in Complex Variables, MTU, 2002.

Research Fellowship Award, Department of Mathematical Sciences, MTU, 2001-2002.

UNIVERSITY SERVICES

Chair Search Committies, Miami University, Middletown.

Chair Regional Campus Mathematics Committee, Miami University.

Chair Subcommittee of the Research and Grant committee for grant awards.

Member Tenure and promotion Committee Dept. of Math & Physical Sciences, Middletown.

Member Curriculum Committee, Miami University, Middletown.

Member Research and Grant Committee, Miami University, Middletown.

Member Honors Advisory committee

Member Student of the Month Committee, Miami University, Middletown.

Member Teaching and Learning with Tech Roundtable, Miami University, Middletown.

Achilles A. Beros
Associate Teaching Professor
Department of Mathematics, Miami University

Personal information:

- Email address: berosaa@miamioh.edu
- Year of birth: 1987

Degrees:

- BA in Mathematics from the University of California, Berkeley (2005)
- MA in Mathematics from the University of Wisconsin - Madison (2009)
- PhD in Mathematics from the University of Wisconsin - Madison (2013)

Work experience:

- Teaching assistant at UW Madison, 2005 - 2013
- Postdoctoral Researcher at LINA, Universite de Nantes, 2013 - 2014
- Temporary Assistant Professor at UH Manoā, 2015 - 2019
- Assistant Teaching Professor at Miami University, 2019 - 2023
- Associate Teaching Professor at Miami University, 2023 - present

Courses taught at Miami University:

- MTH 121 (Finite Mathematical Models, 3 credits)
- MTH 122 (College Algebra, 3 credits)
- MTH 125 (Precalculus, 5 credits)
- MTH 141 (Business Calculus, 5 credits)
- MTH 151 (Calculus 1, 5 credits)
- MTH 222 (Introduction to Linear Algebra, 3 credits)
- MTH 231 (Elements Of Discrete Math, 3 credits)
- MTH 252 (Multivariable Calculus, 3 credits)
- MTH 253 (Introduction to Technical Computing, 1 credit)

Research papers:

- *Anomalous Vacillatory Learning*, Journal of Symbolic Logic
- *Learning Theory in the Arithmetic Hierarchy*, Journal of Symbolic Logic
- *A Canonical Semi-Deterministic Transducer* (with Colin de la Higuera), ournal of Machine Learning Research Workshop and Conference Proceedings
- *A DNC Function that Computes No Effectively Bi-Immune Set*, Archive for Mathematical Logic
- *Classifying the Arithmetical Complexity of Teaching Models* (with Ziyuan Gao and Sandra Zilles), International Conference on Algorithmic Learning Theory
- *A Canonical Semi-Deterministic Transducer* (with Colin de la Higuera), Fundamenta Informaticae
- *Effective Bi-Immunity and Randomness* (with Mushfeq Khan and Bjorn Kjos-Hansen), Computability and Complexity
- *Normal numbers and limit computable Cantor series* (with Konstantinos Beros), Notre Dame Journal of Formal Logic
- *Teachers, Learners and Oracles* (with Colin de la Higuera), Notre Dame Journal of Formal Logic

- *A Morphogenetic Cellular Automaton* (with Monique Chyba, Alexandra Fronville and Frederic Mercier), American Control Theory Conference 2018
- *From eventually different functions to pandemic numberings* (with Mushfeq Khan, Bjorn Kjos-Hansen and Andre Nies), Computability in Europe 2018
- *Co-evolving cellular automata for morphegenesis* (with Monique Chyba and Kari Noe), Discrete and Continuous Dynamical Systems - Series B, Special Issue honoring Helmut Maurer, Urszula Ledzewicz and Heinz Schaettler
- *Controlled Cellular Automata* (with Monique Chyba and Oleksandr Markovichenko), Networks and Heterogeneous Media, Special Issue on Systems Biology
- *Completeness for Vacillatory Learning* (with Konstantinos Beros, Daniel Flores, Umar Gaffar, David Webb and Jack Yoon), Archive for Mathematical Logic
- *The number of long words with given automatic complexity* (with Bj{\o}rn Kjos-Hansen and Kaui Daylan Yogi), Proceedings of Theory and Applications of Models of Computation
- *Index Sets of Universal Codes* (with Konstantinos Beros), preprint on arxiv.org
- *Canonical Immunity and Genericity* (with Konstantinos Beros), Fundamenta Mathematicae
- *Thick Homogeneous Closed Sets* (with Mushfeq Khan and Bjorn Kjos-Hansen), unpublished

Konstantinos A. Beros

Associate Teaching Professor
Department of Mathematics
Miami University
Department of Mathematics
email: berosk@miamioh.edu

Education

- BA in Mathematics from the University of California, Berkeley (2005)
- MA in Mathematics from the University of Wisconsin - Madison (2009)
- PhD in Mathematics from the University of Wisconsin - Madison (2013)

Work experience

- Undergraduate Student Instructor, University of California, Berkeley, 2005
- Graduate Teaching Assistant, University of Wisconsin - Madison, 2006-2013
- Postdoctoral Fellow, University of North Texas, 2013-2017
- Lecturer, Miami University, 2017-2019
- Assistant Teaching Professor, Miami University, 2019-2023
- Associate Teaching Professor, Miami University, 2023-

Courses taught (at Miami)

- MTH 025 Algebra for Precalculus
- MTH 122 College Algebra
- MTH 125 Precalculus
- MTH 151 Calculus I
- MTH 251 Calculus II
- MTH 222 Linear Algebra

University and department service (at Miami)

- MTH 125 Precalculus coordinator (Fall 2021 - present)
- MTH BA/BS assessment coordinator (Spring 2019 - present)
- MTH department undergraduate committee (Fall 2017 - present)

Publications

- Universal subgroups of Polish groups, *Journal of Symbolic Logic,* 2014

- Weak Rudin-Keisler reductions on projective ideals, *Fundamenta Mathematicae*, 2016
- Normal numbers and completeness results for difference sets, *Journal of Symbolic Logic*, 2017
- Normal numbers and limit computable Cantor series (with Achilles Beros), *Notre Dame Journal of Formal Logic*, 2017
- Homomorphism reductions on Polish groups, *Archive for Mathematical Logic*, 2018
- Learning theory in the arithmetic hierarchy II (with Achilles Beros, Daniel Flores, Umar Gaffar, David Webb, Soowhan Yoon), *Archive for Mathematical Logic*, 2021
- Canonical immunity and genericity (with Achilles Beros), *Fundamenta Mathematicae*, 2021
- Common hypercyclic vectors for unilateral weighted shifts on l2 (with Paul Larson), *Journal of Operator THeory,* 2022
- Maximal Tukey types, P-ideals and the weak Rudin-Keisler order, to appear in the *Archive for Mathematical Logic*

Curriculum Vitae

Dr. Olga Brezhneva
Department of Mathematics
Miami University, Oxford, OH 45056
Email: brezhnoa@miamioh.edu

Education

Nov 2000 — *Ph.D. in Mathematics*, Russian Academy of Sciences, Moscow. (Advisor: Professor A. A. Tret'yakov.)

June 1990 — *MS in Applied Mathematics* (Summa Cum Laude), Moscow State University,

Professional Experience

2008–present — *Associate Professor*, Department of Mathematics, Miami University.

2014–present — An *affiliate* at the department of Electrical and Computer Engineering, Miami University

2004–2007 — *Assistant Professor*, Department of Mathematics and Statistics, Miami University.

2002–2004 — *Postdoctoral Associate*, Institute for Mathematics and its Applications (IMA), University of Minnesota.

1997–2002 — *Research Scientist*, Russian Academy of Sciences, Computing Center, Department of Nonlinear Analysis, Moscow.

1993–1996 — *Junior Research Scientist*, Russian Academy of Sciences, Institute of High-Performance Computer Systems, Department of Applied Mathematics, Moscow.

1990–1993 — *Research Fellow*, Russian Academy of Sciences, Institute of Cybernetics Problems, Department of Numerical Analysis, Moscow.

Grants and Awards (since 2007)

2022 — The recipient of the Prodesse Quam Conspici Medal, Miami University, Fall 2022.

2022 — The recipient of the Honors College Outstanding Faculty Award, Miami University, Spring 2022.

2018-23 — NSF - LSAMP Ohio Alliance, funded by NSF/ The Ohio State University — OSU (September 1, 2018 - August 31, 2023) ($293,381). Funded — in progress.

2019-21 — Barney Fellowship to develop a new course MTH 246, Linear Algebra and Differential Equations for Engineers (with Dr. Anna Ghazaryan).

2007, 2010, 2014, 2017 — Nominee for the Outstanding Professor Award (Associated Student Government, Miami University)

2009 — DAGSI research grant for Holly Soper: A faculty co-adviser (with Dr. Amit Shukla, MME, Miami University)

Nov 2008 — A recipient of the Greater Cincinnati Consortium of Colleges and Universities Teaching Award for excellence in teaching

Dec 2007 — The recipient of the E. Phillips Knox Teaching Award at Miami University for excellence and innovation in undergraduate teaching. The award is given in December

of every year to only one (or, in some years, to two) faculty at Miami University across all three campuses.

Research Interests

Optimization, numerical methods for solving nonlinear equations and optimization problems, ordinary differential equations

Most recent publications (since 2008)

1. The pth-Order Karush-Kuhn-Tucker Type Optimality Conditions for Nonregular Inequality Constrained Optimization Problems, accepted for publication in *Optimization and Applications*, Lecture Notes in Computer Science, Springer 2023 (in collaboration with Yuri Evtushenko, Vlasta Malkova, and Alexey Tret'yakov).

2. On the Finite Complexity of Solutions in a Degenerate System of Quadratic Equations: Exact Formula, published in *Entropy*, Vol. 25, 1112, 2023, pages 1–29. `https://doi.org/10.3390/e25081112` (in collaboration with Agnieszka Prusinska, and Alexey A. Tret'yakov)

3. Degenerate Equality Constrained Optimization Problems and P-Regularity Theory, published in *Optimization and Applications*, Lecture Notes in Computer Science, Springer, Vol. 13781, 2022, pp. 18–33 (in collaboration with Yuri Evtushenko, Vlasta Malkova, and Alexey Tret'yakov).

4. New Perspective on Some Classical Results in Analysis and Optimization, in *Optimization Methods and Software*, March 2020. (with Yuri G. Evtushenko and Alexey A. Tret'yakov,)

5. When the Karush-Kuhn-Theorem fails: constraint qualifications and higher-order optimality conditions for degenerate optimization problems, *Journal on Optimization Theory and Applications*, Vol. 174, No. 2, pp. 367–387, 2017. (with Alexey A. Tret'yakov).

6. New approach to optimality conditions for degenerate nonlinear programming problems, *Doklady, Mathematics,* Vol. 93, No. 2, pp. 166–169, 2016. (with Alexey A. Tret'yakov).

7. Optimal Sensor Placement Using Chaotic Monkey Search Algorithm, in *Proceedings of the ASME 2015*, Vol. 8, 2015 (with Fuli Zhang and Amit Shukla).

8. New approach to optimality conditions for irregular optimization problems, in *Proceedings of OPTIMA-15, VI International Conference on Optimization Methods and Applications*, pp. 42–43, Montenegro, 2015 (with Alexey A. Tret'yakov).

9. A short elementary proof of the Lagrange multiplier theorem, *Optimization Letters*, Vol. 6, No 8, pp. 1597–1601, 2012 (with S.E. Wright and A.A. Tret'yakov).

10. An elementary proof of the Lagrange multiplier theorem in normed linear spaces, *Optimization*, Vol 61, No 12, pp. 1511–1517, 2012 (with A.A. Tret'yakov).

11. An elementary proof of the Karush-Kuhn-Tucker Theorem in normed linear spaces for problems with a finite number of inequality constraints, *Optimization*, Vol. 60, no. 5, pp. 613–618, 2011 (with A. A. Tret'yakov).

12. The p-th order optimality conditions for degenerate inequality constrained optimization problems, *TWMS J. Pure Appl. Math.*, Vol. 1, no. 2, pp. 198–223, 2010 (with A. A. Tret'yakov).

13. Come back to Lagrange. The p-factor analysis of optimality conditions. *Numerical Functional Analysis and Optimization*, Vol. 31, no. 8, pp. 871–891, 2010 (with A. A. Tret'yakov).

14. Corrigendum: Optimality conditions for degenerate extremum problems with equality constraints, *SIAM Journal on Control and Optimization*, Vol. 48, no. 5, pp. 3670–3673, 2010 (with A. A. Tret'yakov).

15. A simple and elementary proof of the Karush-Kuhn-Tucker theorem for inequality–constrained optimization, *Optimization Letters*, Vol. 3, no. 1, pp. 7–10, 2009 (with A. A. Tret'yakov and S. E. Wright).

16. Strategies to break up the routine of lecture: humorous stories, games, and a play, *Journal on Excellence in College Teaching*, Vol. 19, no. 1, pp. 127–147, 2008.

17. The p-th order optimality conditions for nonregular optimization problems, *Doklady Mathematics*, Vol. 77, no. 2, pp. 163–165, 2008 (with A. A. Tret'yakov).

18. Pattern search in the presence of degenerate linear constraints, *Optimization Methods and Software*, Vol. 23, no. 3, pp. 297-319, 2008 (with M. A. Abramson, J. E. Dennis Jr., and R. L. Pingel).

19. Optimal sensor placement for enhancing sensitivity to change in stiffness for structural health monitoring, *Optimization and Engineering*, Vol. 9, no. 2, pp. 119–142, 2008 (with J. M. Beal, A. Shukla, and M. A. Abramson).

20. The pth order optimality conditions for nonregular optimization problems, *Doklady Mathematics*, Vol. 77, pp. 163–165, 2008 (with A. A. Tret'yakov).

21. Higher-order implicit function theorems and singular nonlinear boundary value problems, *Communications on Pure and Applied Analysis*, Vol. 7, no. 2, pp. 293–315, 2008 (with A. A. Tret'yakov and J. E. Marsden).

Most recent presentations (since 2008)

October 2023	Explicit formulas for degenerate systems of quadratic equations and QP problems, 2023 Midwest Optimization meeting, Ann Arbor, MI.
June 2023	Implementation of MTH 135 at Miami University (an invited presentation), the Ohio Louis Stokes Alliance for Minority Participation.
September 2022	Degenerate Equality Constrained Optimization Problems and P-Regularity Theory, XIII International Conference on Optimization and Applications (OPTIMA-2022), Montenegro, (joint work with Yuri Evtushenko, Vlasta Malkova, and Alexey Tret'yakov. This was an invited presentation given by Alexey Tret'yakov)
April 2022	Introductory Mathematics for Science Applications (an invited presentation), the Ohio Louis Stokes Alliance for Minority Participation.
Feb 2022	MTH 135 at Miami University (an invited presentation), Steering Committee meeting of the Ohio Louis Stokes Alliance for Minority Participation, February 2022.
August 2019	Elementary Proofs of the Karush-Kuhn-Tucker (KKT) Theorem. International Conference on Continuous Optimization, Berlin, 2019.
August 2019	Necessary and Sufficient Optimality Conditions for p-Regular Inequality Constrained Optimization Problems. International Conference on Continuous Optimization, Berlin, 2019.

Spring 2018	Keynote Speaker Presentation: The Power of the Karush-Kuhn- Tucker Theorem and Introduction to the Optimization Theory. The Spring Meeting of the Ohio Section of the MAA, 2018.
May 2016	Karush-Kuhn-Tucker Theorem: From classical to new forms of optimality conditions, Invited research seminar at Carnegie Mellon University, Pittsburgh PA.
July 2015	KKT–type optimality conditions for nonregular optimization problems, *International Symposium on Mathematical Programming*, Pittsburgh PA.
March 2015	Optimality conditions for irregular nonlinear programming problems, *AMS Sectional Meeting, Georgetown University.*
Oct 2014	Optimality conditions for nonregular inequality–constrained optimization problems, *Midwest Optimization Meeting*, Chicago IL.
Sep 2014	Elementary Proofs of the Karush–Kuhn–Tucker and Lagrange Multiplier Theorems, *42nd Annual Mathematics Conference*, Miami University.
July 2013	Short and Elementary Proofs of the Karush–Kuhn–Tucker, Lagrange Multiplier and Implicit Function Theorems, *International Conference on Continuous Optimization*, Lisbon, Portugal.
Oct 2012	Elementary Proofs of Classical Theorems, *The 8th Midwest Optimization Meeting*, Western Michigan University, Kalamazoo, MI.
Sep 2010	New and Old Proofs of the Implicit Function Theorem, presented at *Analysis in Undergraduate Curriculum*, Miami University.
Sep 2009	Games and Other Strategies to Break up the Monotony of Lecture, invited presentation at the conference *The Teaching of Undergraduate Mathematics*, Miami University.
Nov 2009	Using Academic Games in the Classroom: Matching Game Format to Teaching Purpose, a featured presenter at the *29th international Lilly conference on College Teaching*, Oxford, OH.
Oct 2008	A simple and elementary proof of the Karush-Kuhn-Tucker Theorem for inequality-constrained optimization, *AMS Sectional Meeting*, Kalamazoo MI.
Aug 2008	Projects and illustrations that can be used in a Numerical Analysis course, *MathFest 2008*, Madison, WI.
March 2008	Introduction to Optimization and Optimality Conditions, Shawnee State University.
Aug 2008	Designing a numerical analysis course: key elements, ideas and strategies that work, *MathFest 2007*, San Jose, CA.

Teaching and curriculum development

MTH 135	The project leader on developing a new course, "Mathematics for Science Applications." The project is funded by the NSF as a part of "NSF – LSAMP Ohio Alliance – 2018-23." It is a collaborative work with faculty from biology, chemistry, microbiology, and physics departments at Miami University, who helped me with choosing problems and examples coming from science applications, specifically from courses

in biology (BIO 115, BIO 116), chemistry (CHM 141, CHM 142), and physics (PHY 161, 162, 191, and 192), 2018-present.

MTH 151 — The chair of the ad hoc committee to discuss the request from the School of Engineering for possible changes in the calculus courses. One of the recent outcomes is changing MTH 151 to 4 credit hours. Summer 2021-present.

MTH 246 — Developing the contents, a set of lecture notes and other materials for a new course MTH 246, Linear Algebra and Differential Equations for Engineers (with Dr. Anna Ghazaryan). The work on the project is supported by the Barney Fellowship, 2019-2020.

MTH 147 — Revising MTH 190 into a first-year experience course (an alternative of UNV 101), writing all supporting documents and SLOs for the new version of the course. I worked on the course revision in Summer 2017 with the first implementation of the course in Fall 2017.

MTH 453 — Writing and submitting a proposal for MTH 453 (numerical Analysis) to satisfy the CAS quantitative literacy requirement, Summer 2014.

Honors courses — Writing and submitting proposals to the Honors program at Miami university to create an Honors extension of the following MTH courses: MTH 151, MTH 222, MTH 245, MTH 347, and MTH 246. I taught the Honors extensions of those courses in 2016-2020.

Professional Service

Membership in Professional Organizations

Society for Industrial and Applied Mathematics (SIAM); Mathematical Optimization Society (MOS); Mathematical Association of America (MAA).

Other Professional Service

A reviewer on a National Science Foundation Review Panel, 2018.

An external reviewer for the department of Mathematics at Buffalo State College, 2014.

Reviewer for Mathematical Reviews.

Referee for SIAM Journal on Optimization, SIAM Journal on Scientific Computing, Computational Optimization and Applications. SIAM Journal on Scientific Computing, Optimization, Journal of Computational Optimization and Applications, Optimization Letters, Journal of Optimization, Journal of Numerical Algebra, Control and Optimization, The Boundary Value Problems, Journal on Excellence for College Teaching, Schedae Informaticae.

University and Departmental Service

Fall 2023–current — A member of the University Senate, Miami University

Fall 2023-current — A member of the Department Planning & Improvement Committee, Miami University

Fall 2017–2022 — The chair of the undergraduate committee and the director of the undergraduate program in mathematics.

Spring 2020 — The University Senate attendance policy ad hoc committee.

Fall 2018	Search committee for the Vice President for Information Technology (Miami University)
2017-2019	OER/Affordability Committee (Miami University)
2015-2019	Information Technology Policy Committee (Miami University)
2016-2018	Committee for Review of Chairs and Program Directors (College of Arts & Science)
Fall 2015	Program review of the History Department (Miami University).
Fall 2014–2017	A member of the University Senate, Miami University
Fall 2014	A co-director of the 42nd Annual Mathematics Conference, Miami University
2009–2013	The Chief departmental adviser in mathematics
2009/10, 2012/13, Fall 2014, Fall 2019	A mentor for the Alumni Teaching Scholars program at Miami University
2011–2013, 2014–2017	Advising committee of the College of Arts and Sciences
2004–present	Service on several departmental search committees, undergraduate committee, graduate committee, advising committee, awards/honors committee, etc.

Service to students and community

March 2023	Invited presentation at the Talawanda High School
2010, 2013, 2014	Invited presentations given for participants of SUMSRI
2007–2009	A participant of the program "Ask a Mathematician."
2006–2017, 2019	Invited lectures for the students attending the *First Year Seminar in Mathematics for Undergraduate Students* (MTH 190)

DANA CHRISTINE COX

Curriculum vitae
January 2021

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EDUCATION

Ph.D. 2008 **Western Michigan University, Kalamazoo, Michigan**
Dissertation: Understanding Similarity: Bridging numeric and geometric contexts for proportional reasoning

M.A. 2004 **Western Michigan University, Kalamazoo, Michigan**
Masters in Counselor Education and Counseling Psychology
Limited License Professional Counselor (LLPC)
National Certified Counselor (NCC)

B.A. 1997 **Hope College, Holland, Michigan**
Areas: Mathematics and German
Michigan Professional Secondary Teaching Certificate

ACADEMIC EXPERIENCE

Associate Provost for Faculty Affairs, Miami University, 2021-2023

Special Assistant to the Provost for Faculty Affairs, Miami University, 2020-2021, 2023

Professor, Department of Mathematics, Miami University, 2020-Present

Associate Professor, Department of Mathematics, Miami University, 2014-2020

Assistant Professor, Department of Mathematics, Miami University, 2008-2014

Secondary Mathematics Teacher, Portage Public Schools, Portage, Michigan, 1999-2004

Secondary Mathematics Teacher, Black River Public Schools, Holland, Michigan. 1997-1999

PUBLICATIONS

Books

Harper, S.R. & Cox, D.C. (Eds.) (2023). *Modern Math Tasks: Transforming Change through Political, Social, Civic, and Design Literacies.* NCTM.

Book Chapters

Simon, L.M, Harper, S.R. & Cox, D.C (2023). Developing Design Literacy to Support a Culture of Mathematical Modeling. In: Harper, S.R. & Cox, D.C. (Eds.), *Modern Math Tasks: Transforming Change through Political, Social, Civic, and Design Literacies.*

Cirillo, M. & Cox, D.C. (2022). Reasoning is in the Eye of the Lens-Holder: Observations Made through the Lenses of Justification, Argumentation, and Proof at the Secondary Level. In: M. Staples, A. Conner, and K. Bieda (Eds.), *Conceptions and Consequences of Argumentation, Justification and Proof.*

Chapman, O., Kastberg, S., Suazo-Flores, E., Cox, D., & Ward, J. (2020). Mathematics teacher educators' learning through self-based methodologies. In K. Beswick & O. Chapman (eds.), *International Handbook of Mathematics Teacher Education (2nd Edition. Volume 4): The Mathematics Teacher Educator as a Developing Professiona*l (157-187). Leiden, The Netherlands: Brill-Sense Publishers.

Cox, D.C., Harper, S.R., & Edwards, M.T. (2018). Screencasting as a tool to capture moments of authentic creativity. In V. Freiman & J. Tassell, (Eds.), *Creativity and Technology in Mathematics Education* (Vol. 9 in *Mathematics Education in the Digital Era* Series). New York: Springer.

Lopes, C. E. & Cox, D. C. (2018). The Impact of Culturally Responsive Teaching on Statistical and Probabilistic Learning of Elementary Children. In A. Leavy, M. Meletiou-Mavrotheris & E. Paparistodemou (Eds.), *Statistics in Early Childhood and Primary Education*: *Supporting Early Statistical and Probabilistic Thinking* (pp 75-88). Singapore: Springer.

Cox, D. C., Meicenheimer, J., & Hickey, D. (2017). Eliciting and Using Evidence of Student Thinking: Giving Students Voice. In D. A. Spangler & J. J. Wanko (Eds.), *Enhancing Classroom Practice* (pp. 89–98). Reston, VA: National Council of Teachers of Mathematics.

Cox, D.C. & Harper, S.R. (2016). Documenting a developing vision of teaching mathematics with technology. In M.L. Niess, S. Driskell & K. Hollebrands, (Eds.), *Handbook of Research on Transforming Mathematics Teacher Education in the Digital Age* (pp 166-189). Hershey, PA: IGI Global.

Non-Refereed Journal Articles

Fernandez, E., Benzing, A., Snow, M., Grossman, J., Mateas, V., Cox, D., & Bolognese, C. (2019). Motivating Mathematics: Why Do You Do What You Do? *The Mathematics Teacher*, *112*(7), 484-484.

Refereed Journal Articles

Cox, D. C., Harper, S., & Keiser, J. M. (2021). Preservice Elementary Teachers' Beliefs about the Role of Definition in the Learning of Mathematics. Journal of Educational Research and Innovation, 9(1), 4.

Lo, J-J, & Cox, D.C. (2020). Reasoning about Composite Shapes with Transformations. *Mathematics Teacher Learning and Teaching PK-12. 113(12).* 85-90.

Simon, L. M., & Cox, D. C. (2019). The role of prototyping in mathematical design thinking. *The Journal of Mathematical Behavior*, *56*, 100724.

Cox, D.C. (2019). Toward an Empathetic Understanding of Scholarship. *Revista Brasileira de Pesquisa (Auto)biográfica. 4*(10). *68-79.*

Harper, S. R., & Cox, D. C. (2017). Quickfire Challenges to Inspire Problem Solving. *Mathematics Teacher*, *110*(9), 686-692.

D'Ambrosio, B.S. & Cox, D.C. (2015). An Examination of Current Methodologies in Mathematics Education Through the Lenses of Purpose, Participation, and Privilege. *Revista Perspectivas da Educação Matemática 8* (18). 687-708.

Cox, D.C., Naresh, N., D'Ambrosio, B.S., Keiser, J.M. (2014). Repositioning Ourselves: Acknowledging contradiction. *Bolema 28* (49). 990-1011.

Edwards, M.T., Harper, S.R., Quinlan, J., Phelps, S. and Cox, D.C. (2014). Cultivating deductive thinking with angle chasing. *Mathematics Teacher 107* (6). 426-432.

Cox, D.C. & Lo, J-J. (2014). Detecting Distortion: bridging visual and quantitative reasoning on similarity tasks. *Mathematics Education Research Journal, 26* (1). 1-23.

Zelkowsi, J., Gleason, J., Cox, D.C. & Bismarck, S. (2013). Developing and validating a reliable TPACK instrument for secondary mathematics preservice teachers. *Journal of Research on Technology in Education, 46* (2). 173-206.

Beisiegel, M., Chesler, J., Cox, D.C., Kenney, R., Newton, J.A., Stone, J.A. (2013). Reconsidering the mathematics preparation of pre-service secondary mathematics teachers. *Notices of the AMS 60* (8). 1056-1058.

Cox, D.C., Chesler, J. Beisiegel, M., Kenney, R., Newton, J.A., Stone, J.A. (2013). The status of capstone courses for pre-Service secondary mathematics teachers. *Issues in the Undergraduate Mathematics Preparation of Secondary Teachers, Volume 4 (Curriculum).* Retrieved from: http://www.k-12prep.math.ttu.edu/journal/curriculum/beisiegel01/article.pdf.

Cox, D.C. (2013). Similarity at the crossroads of geometry and number. *Mathematical Thinking and Learning*, *15* (1). 3-23.

Edwards, M.T., Harper, S.R. & Cox, D.C. (2013). Authentic tasks in a standards-based world. *Mathematics Teacher*, *106* (5). 346-353.

Cox, D.C & Edwards, M.T. (2012). Sizing up the Grinch's heart. *Mathematics Teaching in the Middle School*, *18* (4). 228-235.

Cox, D.C. & Lo, J.-J. (2012). Discuss similarity using visual intuition. *Mathematics Teaching in the Middle School*, *18* (1), 30-36.

Edwards, M.T. & Cox, D.C. (2011). The frame game. *Journal of Mathematics Education at Teachers College*, *2* (1), 18-25.

Cox, D.C. & Lo, J.-J. (2009). Comparing sizes. *Teaching Children Mathematics*, *16* (4), 204-208.

Reys, R., Cox, D.C., Dingman, S. & Newton, J. (2009). Transitioning to careers in higher education: Reflections from recent Ph.Ds in mathematics education. *Notices of the AMS*, *56* (9), 2-7.

Conference Proceedings

Cox, D. C., Harper, S. R., & Keiser, J. M. (2023). Widening the Epistemological Window. In T. Lamberg & D. Moss (Eds.) Proceedings of the forty-fifth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol. 2)(pp. 267-271). University of Nevada, Reno.

Keiser, J. M., Harper, S. R., & Cox, D. C. (2023). Using number talks to reason about early number concepts in authentic ways.Proceedings of the forty-fifth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol. 2)(pp. 841-842). University of Nevada, Reno.

Cox, D. C., & Harper, S. R. (2022). Empathetic methodologies: opening the epistemological door for others. In G. Cobbs (Ed.) Proceedings of the 50th Annual Meeting of the Research Council on Mathematics Learning.

Harper, S.R. & Cox, D.C. (2020). Influences on early-career mathematics' teachers vision of teaching with technology: A longitudinal study. In A.I. Sacristán & J.C.

Cortés, (Eds.) Proceedings of the *42nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp. 1863-1867)*. Mazatlán, Sinaloa, Mexico: PME-NA. DOI: 10.51272/pmena.42.2020

Cox, D.C. & Lo, J-J. (2019). Measurement and Decomposition: Making Sense of the Area of a Circle. In S. Otten, A.G.Candela, Z. de Araujo, C. Haines & C. Munter, (Eds.) *Proceedings of the 41st Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp.* 802-210). St. Louis, MO: University of Missouri.

Suazo-Flores, E., Kastberg, S.E., Cox, D.C. Ward, J., Chapman, O. and Grant, M. (2019). Mathematics Teacher Educators' exploring Self-Based Methodologies. In S. Otten, A.G.Candela, Z. de Araujo, C. Haines & C. Munter, (Eds.) *Proceedings of the 41st Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* (pp. 2012-2019). St. Louis, MO: University of Missouri.

Cox, D.C., Harper, S.R., & Keiser, J.M. (2018). "Reflecting on the Act of Defining." In *Proceedings of the 40th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, edited by Thomas E. Hodges, George J. Roy, and Andrew M. Tyminski, 735–738. Greenville, SC: PME-NA.

Lo, J-J. & Cox, D.C. (2018). "Developing and Using Definitions for Prisms and Pyramids." In *Proceedings of the 40th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, edited by Thomas E. Hodges, George J. Roy, and Andrew M. Tyminski, 247–254. Greenville, SC: PME-NA.

Suazo-Flores, E., Kastberg, S., Ward, J., Cox, D.C., & Chapman, O. (2018) "Mathematics Teacher Educators Inquiry into Their Practice: Unpacking Methodologies for Professional and Personal Growth." In *Proceedings of the 40th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, edited by Thomas E. Hodges, George J. Roy, and Andrew M. Tyminski, 247–254. Greenville, SC: PME-NA.

Cox, D. C., & Harper, S. R. (2017). Using narratives to articulate mathematical problem solving and posing in a technological environment. In *E. Galindo & J. Newton, (Eds.), Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 985–988). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.

Harper, S.R. & Cox, D.C. (2017). Screencasting to study creative insight and create records of authentic problem solving practice. In J. Foster (Ed.) Proceedings of the Twenty-ninth Annual International Conference on Technology in Collegiate Mathematics [ICTCM]. Available: https://www.pearson.com/us/about/news-events/events/ictcm-archive.html

Cox, D.C. & D'Ambrosio, B.S. (2015). Finding Voice: Teacher Agency and Mathematics Leadership Development. In Bartell, T.G., Bieda, K.N., Putnam, R.T. Bradfield, K., & Dominguez, H. (Eds.) *Proceedings of the 37th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp.640-648). East Lansing, MI: Michigan State University.

Cox, D. C., Naresh, N., D'Ambrosio, B.S., & Keiser, J. M. (2012). Honoring teacher's identity: A journey towards non-evaluative listening. In L.R. Van Zoest, J.-J. Lo, & J.L. Kratky (Eds.) *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp.417-422). Kalamazoo, MI: Western Michigan University. Available: http://www.pmena.org/2012/

Harper, S.R. & Cox, D.C. (2012). Developing TPACK alongside professional vision of teaching mathematics with technology. In L.R. Van Zoest, J.-J. Lo, & J.L. Kratky (Eds.) *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1073-1080). Kalamazoo, MI: Western Michigan University. Available: http://www.pmena.org/2012/

Chesler, J., Cox, D., Beisiegel, M., Kenney, R., Newton, J., & Stone, J. (2012). The status of capstone courses in the preparation of secondary mathematics teachers. *Proceedings of the 15th Annual Conference on Research in Undergraduate Mathematics Education*, 1, 108–122.

Cox, D.C. (2010). Proportion and Distortion: Exploring the potential of complex figures to *develop reasoning on similarity tasks. In P. Brosnan, Erchick, D., & Flevares, L.* Proceedings of the Thirty-Second Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp 590-598). *Columbus, OH: The Ohio State University.*

Cox, D.C. (2009). Blending Perspectives: Student mediations of geometric and numeric reasoning to make sense of similarity, In Swars, S. L., Stinson, D. W., & Lemons-Smith, S. (Eds.). *Proceedings of the Thirty-First Annual Meeting of the North American Chapter*

of the International Group for the Psychology of Mathematics Education (pp 551-559). Atlanta, GA: Georgia State University.

Sutter, A., Cox, D. C., & Fonkert, K. L. (2008). Reflections on assessment. In Z. Usiskin (Ed.), *Proceedings of the First CSMC International Conference on Mathematics Curriculum.* Charlotte, NC: Information Age Publishing, Inc. *Invited CSMC publication.*

Cox, D. C., Lo, J., & Mingus, T.(2007) Low-ability middle school students' conceptions of 'same shape'. In PME-NA (Ed.), *Proceedings of the Twenty Ninth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* Reno, NV.

Hirsch, C. (with Cox, D. C., Kasmer, L., Madden, S., & Moore, D.). (2007). Analysis of curriculum recommendations. In: Center for the Study of Mathematics Curriculum (Ed.), *K–12 Mathematics: What Should Students Learn and When Should They Learn It? Conference Highlights.* Center for the Study of Mathematics Curriculum.

Lo, J., Cox, D. C., & Mingus, T. (2006). A conceptual-based curricular analysis of the concept of similarity. In S. Alatorre, J. L. Cortina, M. Sáiz, & A. Méndez (Eds.), *Proceedings of the Twenty Eighth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* Mérida, Mexico: Universidad Pedagógica Nacional.

Lo, J., Mingus, T., Cox, D. C., Hervas, D., & Thomas, T. (2005). A curriculum analysis framework for conceptual understanding of mathematics. In G. M. Lloyd, M. Wilson, J. L. Wilkins, & S. L. Behm (Eds.), *Proceedings of the 27th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* [CD-ROM]. Eugene, OR: All Academic.

Other Publications

Cox, D.C. (2010). *Ratios and rates: Beyond speed and conversion.* Professional development module developed for the Michigan Mathematics Rural Initiative Project.

Lo, J.-J. & Cox, D.C. (2009). Proportional Reasoning I. Professional development module developed for the Michigan Mathematics Rural Initiative Project.

Lo, J.-J. & Cox, D.C. (2009). Proportional Reasoning II. Professional development module developed for the Michigan Mathematics Rural Initiative Project.

INVITED TALKS

Cox, D. C. (2018). T*oward Understanding Research and Teaching as Empathetic Activities.* Keynote address given at the Seventh Annual Indiana Mathematics Education Research Symposium. March 2.

Cox, D.C. (2014). *Learning To Lead: Lessons from Project DOVETAIL.* Western Michigan University Mathematics Department Colloquium Series. October 24.

Cox, D.C. (2014). *Project DOVETAIL: Developing Ownership and Vision, Empowering Teachers as Instructional Leaders.* Co-facilitated breakout session on Training Teacher Leaders and Coaches at the Federal Mathematics and Science Partnerships Conference. Washington D.C. September 30-October 1.

Harper, S.R. & Cox, D.C. (2014). *Changing Perspective: Supporting secondary preservice mathematics teachers in developing a vision of teaching with technology.* Wittenberg University Robert Noyce Colloquium (Invited Talk). September 29.

Otten, S. (Producer). (2013). Conversations with Mathematics Education Researchers, Episode 1310: Dana Cox [Audio podcast]. Retrieved from http://mathed.podomatic.com/

Cox, D.C., Harper, S.R. & Edwards, M.T. (2010). *Project EFFECT: Strengthening preservice teacher mathematical content knowledge.* Invited talk given for the Wright State Mathematics Department Colloquium Series. May 14.

Cox, D.C., Newton, J.A., & Kasten, S. (2010). *Looking toward careers in mathematics education in colleges/universities—Some lessons learned by recent graduates.* Invited talk given for the Michigan State University Mathematics Learning Research Group. February 9.

CONFERENCE ACTIVITY/PARTICIPATION

Harper, S.R., Cox, D.C., Simon, L.M., Glassmeyer, D. (2023). Modern Math Tasks: Transforming Change through Political, Social, Civic, and Design Literacies. Session presented at the NCTM Annual Meeting & Exposition. Washington D.C.

Cox, D. C., Harper, S. R., & Keiser, J. M. (October 2023). Widening the epistemological window. Session presented at the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Reno, NV.

Keiser, J. M., Harper, S. R., & Cox, D. C. (October 2023). Using number talks to reason about early number concepts in authentic ways. Session presented at the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Reno, NV.

Harper, S.R., Cox, D.C., Simon, L., Kurtz, B., & Glassmeyer, D. (Accepted). Putting Math into Action: Developing Political, Social, Civic, and Design Literacies in Context. Session to be presented at the National Council of Teachers of Mathematics Conference in October 2023, Washington, D.C.

Harper, S.R. & Cox, D.C. (2023) Empathetic Methodologies: Opening the Epistemological Door for Others. Presented at the Annual Conference of the Research Council on Mathematics Learning. Las Vegas, NV. March 2023.

Harper, S.R. & Cox, D.C. (2021) Influences on Early-Career Mathematics' Teachers Vision of Teaching with Technology: A Longitudinal Study. Presented at the 42nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Mazatlán, Sinaloa, Mexico. June 2021.

Cox, D.C. & Harper, S.R. (2020). Engaging Alumni: Linking Longitudinal Research to Program Evaluation and Innovation. Presented at the 24th Annual Meeting of the Association of Mathematics Teacher Educators. Phoenix, AZ. February 6-8, 2020.

Cox, D.C. & Lo, J.J. (2019). Measurement and Decomposition: Making Sense of the Area of a Circle. Presented at the 41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. St. Louis, MO. November 14-17.

Suazo-Flores, E., Kastberg, S.E., Cox, D.C. Ward, J., Chapman, O. and Grant, M. (2019). Mathematics Teacher Educators' exploring Self-Based Methodologies. Presented at the 41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. St. Louis, MO. November 14-17.

Harper, S.R. & Cox, D.C. (2019). A Longitudinal Study of Inservice Teachers' Vision for Teaching with Technology. Presented at the 41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. St. Louis, MO. November 14-17.

Cox, D.C. & Harper, S.R. (2019). The geometry of gerrymandering. Session presented at the Careers Involving Quantitative Skills (CIQS) Conference, Miami University, Oxford, OH.

Lo, J-J. & Cox, D.C. (2018). Developing and Using Definitions for Prisms and Pyramids. Presented at the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Greenville, SC. November 15-18.

Cox, D.C., Harper, S.R., & Keiser, J.M. (2018). Reflecting on the Act of Defining. Presented at the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Greenville, SC. November 15-18.

Suazo-Flores, E., Kastberg, S., Ward, J., Cox, D.C., & Chapman, O. (2018) Mathematics Teacher Educators Inquiry into Their Practice: Unpacking Methodologies for Professional and Personal Growth. Presented at the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Greenville, SC. November 15-18.

Corotis, K. & Cox, D.C. (2018). Topology as Art: Designing an Educational Display Case. Presented at the Miami University Department of Mathematics Annual Fall Conference, Miami University, Oxford, OH. September 21-22.

Cox, D. C., Harper, S. R., & Keiser, J. M. (2018, February). Reflecting on the act of defining. Poster presented at the Association of Mathematics Teacher Educators. Houston, TX.

Harper, S. & Cox, D. (2017). Using mathematical quickfire challenges as opportunities for modeling, problem solving, and formative assessment. Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Columbus, OH. October 20, 2017.

Cox, D. & Harper, S. (2017). Connecting via Twitter: Which one doesn't belong? Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Columbus, OH. October 20, 2017.

Cox, D.C. & Harper, S.R. (2017). Using narratives to articulate mathematical problem solving and posing in a technological environment. Presented at the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Indianapolis, IN. October 7.

Harper, S.R. & Cox, D.C. (2017). Using Geogebra to Explore the Geometry of Integration. Presented at *Algebra and Connections to Geometry*, the Miami University Department of Mathematics Conference. Oxford, OH. September.

Harper, S.R. & Cox, D.C. (2017). Screencasting to study creative insight and create records of authentic problem solving practice. Presented at the Twenty-ninth Annual International Conference on Technology in Collegiate Mathematics. March 9-12.

Cox, D.C. & Harper, S.R. (2017). *Screencasting as a Tool to Create Records of Authentic Problem Solving Practice.* Presented at the Twenty-first Annual Meeting of the Association of Mathematics Teacher Educators. Irvine, CA. February 9-11.

Cirillo, M., Hummer J. & Cox, D.C. (2017). *Common Core Geometry: Preparing Teachers Across the Grades*. Presented at the Twenty-first Annual Meeting of the Association of Mathematics Teacher Educators. Irvine, CA. February 9-11.

Lo, J-J & Cox, D.C. (2016). *What's So Hard About 3-D Composite Shapes?* Presented at the 2016 Teaching Mathematics Content Courses. Ann Arbor, MI. October 29.

Cox, D.C., Meicenheimer, J. & Hickey, D. (2016). *Giving students voice: Eliciting and using evidence of student thinking*. Presented at the 2016 National Council of Teachers of Mathematics Annual Meeting & Exposition. San Francisco, CA. April 13-16.

Harper, S.R. & Cox, D.C. (2016). *Get on board with Geogebra*. Presented at the 2016 National Council of Teachers of Mathematics Annual Meeting & Exposition. San Francisco, CA. April 13-16.

Cox, D.C., Lo. J.J., Cirillo, M. & Rathauz, M. (2016). *Preparing preservice teachers (K-8) to teach geometry*. Presented at the Twentieth Annual Meeting of the Association of Mathematics Teacher Educators. Irvine, CA. January 28-30.

Cox, D.C. & Galbreath, V. (2015). *Coteaching calculus*. Session presented at the Ohio Council of Teachers of Mathematics, Cincinnati, OH. October 15-16.

Harper, S.R. & Cox, D.C. (2015). *Function and preCalculus investigations using GeoGebra*. Session presented at the Ohio Council of Teachers of Mathematics, Cincinnati, OH. October 15-16.

Cox, D.C. & Harper, S.R. (2015). *Getting our feet wet: Exploring GeoGebra tube*. Presented at the Midwest Geogebra Conference, Oxford, OH. June 20.

Harper, S.R. & Cox, D.C. (June 2015). *From the ground up: Constructing your own GeoGebra files*. Presented at the Midwest Geogebra Conference, Oxford, OH. June 20.

Keiser, J.M, Naresh, N, Edwards, M.T., Harper, S.R., D'Ambrosio, B.S, Suiter, D. & Cox, D.C. (2015). *Straddling two worlds: Co-creating teaching-centered professional development.* Presented at the Nineteenth Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL. February 11-14.

Cox, D.C. & Harper, S.R. (2014). *Developing a course in mathematical problem solving with technology for preservice secondary teachers.* Presented at the Eighteenth Annual Meeting of the Association of Mathematics Teacher Educators. Irvine, CA. February 6-8.

Kastberg, S., Harkness, S.S., Naresh, N., Cox, D. C., & Keiser, J. M. (2013). *Developing as a mathematics teacher educator: Living contradictions*. Presented at the Seventeenth Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL. January 24-26.

Cox, D. C., Naresh, N., D'Ambrosio, B.S., & Keiser, J. M. (2012). *Honoring teacher's identity: A journey towards non-evaluative listening.* Presented at the Thirty-fourth Annual Meeting of PME-NA. Kalamazoo, MI. November 1-4.

Harper, S.R. & Cox, D.C. (2012). *Developing TPACK alongside professional vision of teaching mathematics with technology.* Presented at the Thirty-fourth Annual Meeting of PME-NA. Kalamazoo, MI. November 1-4.

Cox, D.C. & Harper, S.R. (2012). *Creating opportunities for TPACK development in preservice secondary mathematics teachers.* Presented at the Sixteenth Annual Meeting of the Association of Mathematics Teacher Educators. Fort Worth, TX. February 9-11.

Beisiegel, M., Cox, D.C., Chesler, J., Newton, J.A., Kenney, R. (2012). *Uncovering the capstone.* To be presented at the Sixteenth Annual Meeting of the Association of Mathematics Teacher Educators. Fort Worth, TX. February 9-11.

Beisiegel, M. & Cox, D.C. (2012). *Uncovering the capstone.* Presented at the Joint Mathematics Meetings of the Mathematical Association of America and American Mathematical Society. Boston, MA. January 4-7.

Harper, S.R., Edwards, M.T. & Cox, D.C. (2011). *Kick it up a notch: Transform procedural problems into opportunities.* Presented at the 61st Annual Conference of the Ohio Council of Teachers of Mathematics. Toledo, OH. October 13-14.

Landreman, R. & Cox, D.C. (2011). *When math becomes a balancing act.* Presented at the National Council of Teachers of Mathematics Annual Meeting & Exposition. San Indianapolis, IN. April 13-16.

Cox, D.C. *Measuring the value of listening to students.* Presented at the National Council of Teachers of Mathematics Annual Meeting & Exposition. San Indianapolis, IN. April 13-16.

Cox, D.C. (2011). *Project EFFECT: Early and Focused Field Experiences for Candidate Teachers.* Poster presented at the Association for Mathematics Teacher Educators STaR Presession. Irvine, CA. January 28.

Zelkowsi, J. & Cox, D.C. (2011). *Developing a TPACK instrument for secondary mathematics preservice teachers.* Poster presented at the Association for Mathematics Teacher Educators STaR Presession. Irvine, CA. January 28.

Reys, R., Cox D.C., Dingman, S., & Newton, J.A. (2010). *Looking toward careers in mathematics education in colleges/universities—Some lessons learned by recent graduates.* Presented at the Annual Meeting of the Association of Mathematics Teacher Educators. Irvine, CA. January 28-30.

Cox, D.C. & Edwards, M.T. (2010). *Two Sizes Too Small? Geometry meets The Grinch.* Presented at the National Council of Teachers of Mathematics Annual Meeting &

Exposition. San Diego, CA. April 21-24.

Cox, D.C. (2010). *Proportion and distortion: Exploring the potential of complex figures to develop reasoning on similarity tasks*. Presented at the Thirty-second Annual Meeting of PME-NA. Columbus, OH. October 28-31.

Cox, D.C., D'Ambrosio, B., Keiser, J. M. & Naresh, N. (2010). *Exploring children's mathematical voices as input for improving the teaching of mathematics*. Poster presented at the Thirty-second Annual Meeting of PME-NA. Columbus, OH. October 28-31.

Cox, D.C. *Distortion detectives!* (2009). Presented at the fifty-ninth annual conference of the Ohio Council of Teachers of Mathematics. Cincinnati, OH. November 12-14.

Cox, D.C. (2009). *Blending perspectives: Student mediations of geometric and numeric reasoning to make sense of similarity.* Presented at the Thirty-first Annual Meeting of PME-NA. Atlanta, GA. September 23-26.

Cox, D.C. & Edwards, M.T. (2009). *Two sizes too small! Solving the Grinch Heart Task from multiple perspectives*. Presented at the University of Chicago Laboratory Schools and Metropolitan Mathematics Club Conference of Workshops. Chicago, IL. January 28.

Cox, D.C. (2008). *Similarity: An exploration of the conceptualization of proportion in a geometric context*. Roundtable presentation at the 2008 Annual Meeting of the American Educational Research Association. New York, NY. March 24-28.

Cox, D.C. (2008). *The perception of proportion: Designing the Similarity Perception Test*. Poster presented at the Center for the Study of Mathematics Curriculum Research Conference. Phoenix, AZ.

Cox, D.C. (2008). *What a drag! Using MSWord to explore the continuity of scaling.* Presented at Math In Action. Grand Valley, MI. February 27.

GRANTS RECEIVED

2017 **Towards Equity in Mathematics: Understanding the intersection between mathematics and special education.** ($7535, Funded). College of Education Heath and Society's Interdisciplinary Research Seed Grant, Principal Investigator. PI: Sarah Watt (Educational Psychology), Dana C. Cox, & Wayne Nirode (Department of Mathematics, Miami University). Accepted February 28, 2017.

2013 – 2015 **Project DOVETAIL: Developing Ownership & Vision: Empowering Teachers As Instructional Leaders.** ($696,568.49, Funded). Ohio Mathematics and Science Partnership [Program Solicitation ODE], Principal Investigator. PI: Dana C. Cox & Nirmala Naresh (Department of Mathematics, Miami University); Co-PI: Jane Keiser, Suzanne Harper & Beatriz D'Ambrosio (Department of Mathematics, Miami University) & M. Todd Edwards (Department of Teacher Education, Miami University). Accepted September 16, 2013.

2008 **Invented Strategies for Similarity Problems: Documenting the ways middle school students visualize geometric proportional growth.** ($5,000, Funded). Grant sponsored by the College of Arts and Sciences New Tenure-Track Faculty Summer Research Grant Program, October 2008.

PROFESSIONAL HONORS

2022 **Prodesse Quam Conspici Award**
Miami University

2021 **Miami University Presidential Medallion.**
Gregory P. Crawford, President, Miami University

2018 **Outstanding Professor Award Top 10 Nominee.**
Miami University Associated Student Government.

2014 **Barney Fellowship**
The Barney Fellowship is a departmental honor that supports a major teaching project for one year. I used the fellowship to design an online course for our M.A.T. program titled, "Interpretation and Application of Research in Mathematics Education."

2012 – 2020 **Letters of Commendation**
Sent from the Center for the Enhancement of Learning, Teaching and Undergraduate Assessment, these recognitions indicated that graduating students identified me as someone who made a positive impact on their learning and development while at Miami University.

COURSES TAUGHT

Undergraduate Level Courses

Mathematics for Elementary School Teachers I (4 credit hours)
Mathematics for Elementary School Teachers II (4 credit hours)
Pre-Calculus (3 credit hours)
Calculus (5 credit hours)
Mathematics for Middle Childhood Teachers: Structure of Arithmetic and Algebra (3 credit hours)
Geometry for Middle Childhood Teachers (3 credit hours)
Introduction to Proof (3 credit hours)
Mathematical Problem Solving with Technology (3 credit hours)
Mathematical Structures Through Inquiry (3 credit hours)
School Mathematics from an Advanced Perspective (1 credit hours)

Graduate Level Courses

Mathematical Problem Solving with Technology (3 credit hours)
Mathematics Teaching and Learning for Understanding (3 credit hours)
Mathematics Content Through Lesson Study, K-2 (3 credit hours)
Topics in Mathematical Sciences for Teachers: Number and Operation (K-2) (3 credit hours)
Research in Mathematics Education (3 credit hours)
Algebra for Secondary Teachers (3 credit hours)

WORKSHOPS PRESENTED

Cox, D.C. (with Naresh, N., Keiser, J., D'Ambrosio, B.S., Harper, S.R. and Edwards, M.T.) *Developing Ownership and Vision: Empowering Teachers As Instructional Leaders.* Designed and conducted a two year-long Leadership seminar and accompanying Summer Conference for Talawanda School District and McGuffey Montessori School. Oxford, OH. September 2013 – June 2015.

Cox, D.C. *Miami University Partnership for Enhancing the Teaching of Mathematics.* Designed and conducted a workshop utilizing a lesson study model for Hamilton City Schools' Elementary School teachers. Hamilton, OH. September 2009 – April 2010.

Cox, D.C. *Miami University Partnership for Enhancing the Teaching of Mathematics.* Designed and conducted over 46 hours of instruction for Hamilton City Schools' Elementary School teachers. Hamilton, OH. August 3-13, 2009.

Cox, D.C. *Miami University Partnership for Enhancing the Teaching of Mathematics.* Designed and conducted a workshop utilizing a lesson study model for Hamilton City Schools' Elementary School teachers. Hamilton, OH. September 2008 – April 2009.

Cox, D.C. *Miami University Partnership for Enhancing the Teaching of Mathematics.* Designed and conducted over 46 hours of instruction for Hamilton City Schools' Elementary School teachers. Hamilton, OH. August 4-14, 2008.

Cox, D. C. (with Kasmer, L.). *MiGlance training.* Planned and conducted a countywide training session for sixth grade teachers based on the published MiGlance materials. Kalamazoo, MI. August 14–15, 2006.

Cox, D. C. (with VanZoest, L. R., & Fonkert, K.). *VideoCases for Mathematics Professional Development (VCMPD).* Planned and conducted a series of eight professional development sessions for secondary teachers using the VCMPD curriculum. Kalamazoo, MI. September 2002–May 2003.

Cox, D. C. (with Kasmer, L.). *Using curriculum as a basis for developing a professional learning community.* Designed a series of six after-school professional development seminars for mathematics teachers at W. K. Kellogg Middle School, Battle Creek, MI. September 2002–May 2003.

Cox, D. C. (with Kasmer, L.). *Using curriculum as a basis for developing a professional learning community: A follow-up.* Designed and conducted a follow-up session to previous work with mathematics teachers at W. K. Kellogg Middle School, Battle Creek, MI. September 2003.

Cox, D. C. *Teaching a Connected Mathematics Project (CMP) Unit: Filling and Wrapping.* Designed and conducted a series of professional development seminars including one full day and two half-day sessions for Kalamazoo Public Schools mathematics teachers intended to be an introduction to the Connected Mathematics Project and a detailed look at one unit. Kalamazoo, MI. August–September 2002.

Horner, D. *Connected Mathematics Project* 7th Grade Workshop. Designed and presented a weeklong introduction and training for 7th grade teachers using the *CMP* 7th grade materials. Kalamazoo, MI. June 1998.

SERVICE TO THE PROFESSION

Leadership Positions

Co-Chair, Publicity Committee, OCTM. This is a 19-month appointment from April 2019-October 2020. It is my responsibility to publicize and market the 2020 OCTM conference. This includes multiple strategies and campaigns across a variety of media.

Chair, Ad-hoc Program Committee, AMTE. This was a six-month appointment from February-July 2019. This committee was convened to examine policies and related to the AMTE annual conferences and consider restructuring the conference to meet the needs of an expanded membership. As chair I was in charge of setting the agenda, scheduling meetings, and reporting to the Board of Directors.

Associate Vice President of Conference Program, AMTE. This is a three-year appointment from 2018-2020. This leadership position helps to guide the program committee as we solicit, accept, review and schedule conference proposals for the Annual meeting. My duties in this role are to assist in the chairing of this committee for the 2018 and 2020 Annual Meetings, but to take the head role for the 2019 Annual Meeting.

Editorial Panel: Mathematics Teacher (NCTM). This was a three-year appointment from 2017-2019. As a member of the editorial panel, I worked to ensure a cohesive and consistent vision for the NCTM flagship journal, *Mathematics Teacher*. I reviewed manuscripts and peer reviews and made decisions on a range of manuscripts intended for publication. I communicated, through the editor-in-chief, with authors. I worked directly with authors to improve their manuscripts over time, and I served as a liaison to the co-editors of the *Connecting Research to Teaching* department. I was given the honor of leading the editorial panel on the final issue in the final volume of this journal, the May 2019 Focus Issue: *Motivating Mathematics.*

Co-planner of the 2018 Miami University Fall Mathematics Conference. This was a one-year appointment in 2018. In this position I co-planned the conference *Making Mathematics Visible*. We solicited, reviewed, and scheduled proposed sessions, brought in keynote speakers, publicized the conference, and helped coordinate logistics during the event.

Strand Leader, 37th Annual Meeting, PME-NA. As an appointed Strand Leader, I managed the reviewing process for the Geometry and Measurement strand and made recommendations to the Local Organizing Committee for the 2015 conference in East Lansing, MI.

Co-Editor (December 2014-April 2017).
"Connecting Research To Practice" department, *Mathematics Teacher*, National Council of Teachers of Mathematics Publication. Co-editor with Laurie Cavey, Associate Professor of Mathematics Education at Boise State University and Michael Weiss, Assistant Professor of Mathematics Education at Michigan State University.

Conference Registration Chair (2015)
65th Annual Meeting of the Ohio Council of Teachers of Mathematics. October 15-16, 2015.

Additional Committee Participation and Service to the Profession

Program Committee Member, AMTE. This was a three-year appointment from 2014-2017. As an appointed member of the program committee I helped to identify potential keynote speakers, review proposals and ensure the success of the 2015, 2016 and 2017 Annual Meetings.

STaR Institute Program Committee. This was a 1-year appointment from February 2010 to January 2011.

CSMC 2010 Doctoral Fellows Symposium Planning Committee. This was a 1-year appointment from August 2009 to April 2010.

Co-leader of the CSMC 2008 Graduate Student Retreat Planning Committee. This was a 1-year appointment from July 2007 to July 2008.

Selection Committee for the Southwest District OCTM Classroom Teacher Award. This was a 2-year appointment from January 2009-2011.

CSMC 2008 Research Conference Planning Committee This was a half-year appointment from September 2007 to February 2008.

Reviewer of Manuscripts—Grants
National Science Foundation (NSF) Division of Research on Learning in Formal and Informal Settings (DRL), Discovery Research K-12 (DRK-12) program.

Reviewer of Manuscripts—Journals

Mathematical Thinking and Learning, Taylor & Francis
Mathematics Teacher, National Council of Teachers of Mathematics
Mathematics Teaching in the Middle School, National Council of Teachers of Mathematics
Mathematics Education Research Journal, Taylor & Francis
North American Geogebra Journal
Contemporary Issues in Technology and Teacher Education
Eurasia Journal of Mathematics, Science and Technology Education

Reviewer of Manuscripts—Conference Proposals

The North American Chapter of the Psychology of Mathematics Education
Association of Mathematics Teacher Educators

SERVICE TO THE UNIVERSITY

Committee Participation

Mathematics Department Newsletter Co-editor, 2014-2017;
NCATE/CAEP Steering Committee, 2014-2016
NCATE/CAEP Administrator for the MAT program in Mathematics Education, 2014-2016
NCATE/CAEP Committee Member for the Integrated Mathematics Program, 2016
Mathematics Department Colloquium Committee, 2010-2014;
Mathematics Department Workload Committee, 2009-2010;
Mathematics Department Undergraduate Committee, 2009-2012;
Mathematics Education Committee, 2008-present; and
Mathematics Education Seminar, 2008-present.

Other University and Departmental Service

2019-2020	Chair, Executive Committee of the University Senate, Miami University
2018-2019	Chair-elect, Executive Committee of the University Senate, Miami University
2018-2021	Academic Policy Committee, Miami University
2017-present	University Senate, Mathematics and Statistics Departmental Representative
2015 – 2019	Selection Committee, MU Alumni Association 18 of Last 9 Award Program.
2010	Research Consultant, 2010 Cohort of Choose Ohio First Scholarship recipients.

2010, 2012, 2018	Presenter, Miami University Mathematics Department Honors Banquet.
2009, 2014, 2017, 2018	Marshall, Miami University Commencement.
2016	University Marshall for the Presidential Inauguration of Dr. Gregory Crawford,
2009	Facilitator, Miami University Summer Reading Program.

PROFESSIONAL AFFILIATIONS

Center for the Study of Mathematics Curriculum (CSMC)
North American Association for the Psychology of Mathematics Education (PME-NA)
National Council for Teachers of Mathematics (NCTM)
Ohio Council of Teachers of Mathematics (OCTM)
Association of Mathematics Teacher Educators (AMTE)
National Council of Supervisors of Mathematics (NCSM)

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Employment

Professor, Miami University, July 2022 - present

Associate Professor, Miami University, July 2017 - July 2022

Assistant Professor, Miami University, August 2011 - July 2017

Teaching Assistant, Arizona State University, Fall 2005 - Spring 2009, Spring 2010, Spring 2011

Research Assistant, Arizona State University, Fall 2009, Fall 2010

Education

Ph.D. Mathematics, Arizona State University, July 2011

Advisors: Hal Kierstead and Andrzej Czygrinow

M.A. Mathematics, Arizona State University, 2007

B.S. Mathematics, Arizona State University, 2004

Publications

Submitted

36. Large monochromatic components in expansive hypergraphs (with Deepak Bal)
35. Large monochromatic components in hypergraphs with large minimum codegree (with Deepak Bal)
34. Unavoidable structures in infinite tournaments (with Alistair Benford and Paul Larson)
33. Density of monochromatic infinite subgraphs II (with Jan Corsten and Paul McKenney)

Published

32. New lower bounds on the size-Ramsey number of a path, *Electronic Journal of Combinatorics* **29**, no. 1 (2022), P1.18 (with Deepak Bal)
31. Powers of Hamiltonian cycles in multipartite graphs, *Discrete Mathematics* **345**, no. 4, April 2022, 112747 (with Ryan Martin and Theo Molla)
30. Covering 2-colored complete digraphs by monochromatic d-dominating digraphs, *Journal of Graph Theory* **100**, no. 4 (2022), 721-726 (with András Gyárfás)
29. Generalizations and strengthenings of Ryser's conjecture, *Electronic Journal of Combinatorics* **28**, no. 4 (2021), P4.37 (with Yigal Kamel, Grace McCourt, and Hannah Sheats)
28. On Hamiltonian cycles in balanced k-partite graphs, *Discrete Mathematics* **344**, no. 11 (2021), 112583 (with Nicholas Spanier)
27. A note about monochromatic components in graphs of large minimum degree, *Discussiones Mathematicae Graph Theory* https://doi.org/10.7151/dmgt.2390 (with Robert A. Krueger)

26. Transitive tournament tilings in oriented graphs with large minimum total degree, *SIAM Journal on Discrete Mathematics* **35**, no. 1 (2021), 250-266. (with Allan Lo, Theodore Molla, and Andrew Treglown)

25. Ramsey numbers of path-matchings, covering designs and 1-cores, *Journal of Combinatorial Theory, Series B* **146**, (2021), 124-140. (with András Gyárfás and Gábor N. Sárközy)

24. Large monochromatic components in 3-edge-colored Steiner triple systems, *Journal of Combinatorial Designs* **28**, no. 6 (2020), 428-444. (with Michael Tait)

23. Upper density of monochromatic infinite paths, *Advances in Combinatorics*, 2019:4, 16pp. (with Jan Corsten, Ander Lamaison, and Richard Lang)

22. Large monochromatic components in multicolored bipartite graphs, *Journal of Graph Theory* **94**, no. 1 (2020), 117-130. (with Robert A. Krueger and Gábor N. Sárközy)

21. Long monochromatic paths and cycles in 2-colored bipartite graphs, *Discrete Mathematics* **343**, no. 8 (2020), 111907 (with Robert A. Krueger)

20. Spanning trees with few branch vertices: *SIAM Journal on Discrete Mathematics* **33**, no. 3 (2019), 1503-1520. (with Allan Lo)

19. Hamiltonian cycles in k-partite graphs; *Journal of Graph Theory* **94**, no. 1 (2020), 92-112. (with Robert A. Krueger, Dan Pritikin, and Eli Thompson)

18. Monochromatic balanced components, matchings, and paths in multicolored complete bipartite graphs, *Journal of Combinatorics* **11**, no. 1 (2020), 35-45. (with András Gyárfás, Robert A. Krueger, Miklós Ruszinkó, and Gábor N. Sárközy).

17. Density of monochromatic infinite subgraphs, *Combinatorica* **39**, no. 4 (2019), 847-878. (with Paul McKenney)

16. Partitioning edge-coloured complete symmetric digraphs into monochromatic complete subgraphs, *Discrete Mathematics* **341**, no. 11 (2018), 3134-3140. (with Carl Bürger, Hannah Guggiari, and Max Pitz)

15. Large monochromatic components in random hypergraphs, *European Journal of Combinatorics* **76**, (2019), 123-137. (with Patrick Bennett, Andrzej Dudek, and Sean English)

14. Tiling directed graphs with tournaments; *Forum of Mathematics, Sigma* Vol. 6, e2, (2018), 53 pages. (with Andrzej Czygrinow, Theo Molla, and Andrew Treglown)

13. Partitioning random graphs into monochromatic components; *Electronic Journal of Combinatorics* **24**, no. 1 (2017), P1.18. (with Deepak Bal)

12. Monochromatic cycle partitions of graphs with large minimum degree; *Journal of Combinatorial Theory, Series B* **122**, (2017), 634–667. (with Luke Nelsen)

11. Semi-degree threshold for anti-directed Hamiltonian cycles: *Electronic Journal of Combinatorics* **22**, no. 4 (2015), # P4.34. (with Theo Molla)

10. Arbitrary orientations of Hamilton cycles in digraphs; *SIAM Journal on Discrete Mathematics* **29**, no. 3 (2015), 1553–1584. (with Daniela Kühn, Theo Molla, Deryk Osthus, and Amelia Taylor)

9. An extension of the Hajnal-Szemerédi theorem to directed graphs: *Combinatorics, Probability, and Computing* **24**, no. 5 (2015), 754–773. (with Andrzej Czygrinow, H.A. Kierstead, and Theo Molla)

8. Ore-degree threshold for the square of a Hamiltonian cycle; *Discrete Mathematics and Theoretical Computer Science* **17**, no. 1 (2015), 13–32.. (with Safi Faizullah and Imdadullah Khan)

7. Improved degree conditions for 2-factors with k cycles in hamiltonian graphs; *Discrete Mathematics* **320** (2014), 51–54. (with Mike Ferrara and Tim Morris)
6. On the co-degree threshold for the Fano plane; *European Journal of Combinatorics* **36**, (2014), 151–158. (with Tao Jiang)
5. Tiling 3-uniform hypergraphs with $K_3^4 - 2e$; *Journal of Graph Theory* **75**, no. 2 (2014), 124–136. (with Andrzej Czygrinow and Brendan Nagle)
4. A note on bipartite graph tiling, *SIAM Journal on Discrete Mathematics* **25**, no. 4 (2011), 1477–1489. (with Andrzej Czygrinow)
3. Pósa's Conjecture for graphs of order at least 2×10^8, *Random Structures Algorithms* **39**, no. 4 (2011), no. 4, 507–525. (with Phong Châu and H.A. Kierstead)
2. 2-factors of bipartite graphs with asymmetric minimum degrees, *SIAM Journal on Discrete Mathematics* **24**, No. 2, (2010), pp. 486–504. (with Andrzej Czygrinow and H.A. Kierstead)

Unpublished manuscripts

1. Tiling in bipartite graphs with asymmetric minimum degrees, appears in my Ph.D. thesis *Optimal degree conditions for spanning subgraphs.* (with Andrzej Czygrinow)

Presentations

Invited Research Talks

54. Quantitative problems in infinite graph Ramsey theory, *Rutgers discrete math seminar*; October 3, 2022.
53. Monochromatic linear forests, *AMS Fall Eastern Sectional Meeting*; Amherst, MA; Oct 1-2, 2022.
52. Infinite graph-Ramsey theory, *7th Lake Michigan Workshop on Combinatorics and Graph Theory*, University of Illinois at Chicago, Chicago, IL: May 14-15, 2022.
51. Monochromatic components, *SIAM DM21: Minisymposium on Extremal problems involving colouring*. Spokane, WA; July 20-23, 2021. (virtual)
50. The size-Ramsey number of a path, *Graph theory and combinatorics seminar*, University of Illinois, Champaign, IL; April 21, 2020. (virtual)
49. The size-Ramsey number of a path, *WMU Combinatorics Seminar*; Kalamazoo, MI; November 20, 2019.
48. Monochromatic components, *AMS Fall Central Sectional Meeting*; University of Wisconsin, Madison, WI; September 14-15, 2019.
47. Infinite graph-Ramsey theory, *ASU Discrete Math Seminar*; Arizona State University, Tempe, AZ; January 9, 2019.
46. Monochromatic structures in edge-colored bipartite graphs, *AMS Fall Central Sectional Meeting*, University of Michigan, Ann Arbor, MI: Oct 20-21, 2018.
45. Infinite graph-Ramsey theory, *UVM Math Department Colloquium*; University of Vermont, Burlington, VA: October 10, 2018.
44. Spanning trees with few branch vertices, *Rio Workshop on Extremal and Structural Combinatorics* IMPA, Rio de Janeiro, Brazil: January 15-19, 2018.
43. Robust expansion and Hamiltonian cycles in k-partite graphs, *AMS Fall Eastern Sectional Meeting*. SUNY Buffalo, Buffalo, NY: Sep 16-17, 2017.
42. Infinite graph-Ramsey theory, *Recent Advances in Extremal Combinatorics*, Tsinghua Sanya International Mathematics Forum, Sanya, China; May 22-26, 2017.

41. Coloring Digraphs, *Combinatorics Seminar*, Zhejiang Normal University, Jinhua, China: May 19, 2017.

40. Infinite graph-Ramsey theory, *Graph theory and combinatorics seminar*, University of Illinois, Champaign, IL; May 2, 2017.

39. Infinite graph-Ramsey theory, *Atlanta Lecture Series XIX*, Georgia State University, Atlanta, GA; Apr 22-23, 2017.

38. Robust expansion and Hamiltonian cycles in k-partite graphs, *4th Lake Michigan Workshop on Combinatorics and Graph Theory*, Western Michigan University, Kalamazoo, MI; Apr 15-16, 2017.

37. Infinite graph-Ramsey theory, *AMS Spring Central Sectional Meeting*, Indiana University, Bloomington, IN; Apr 1-2, 2017.

36. Infinite graph-Ramsey theory, *Combinatorics Seminar*, University of Wyoming, Laramie, WY; Mar 2, 2017.

35. Density of infinite monochromatic subgraphs, *New York Combinatorics Seminar*, Graduate Center, CUNY; Nov 18, 2016.

34. Hamiltonian cycles in digraphs, *Discrete Mathematics Seminar*, UC Denver, Denver, CO; Sep 23, 2016.

33. Covering by monochromatic subgraphs – a survey, *SIAM Discrete Math 2016*, Georgia State University, Atlanta, GA; June 6-10, 2016.

32. 2-factors with k cycles in Hamiltonian graphs, *Combinatorics seminar*, Vanderbilt University, Nashville, TN; Mar 29, 2016.

31. Covering by monochromatic subgraphs – a survey, *Combinatorics seminar*, Western Michigan University, Kalamazoo, MI; Mar 25, 2016.

30. Monochromatic partitioning of non-complete graphs, *Graph Theory in the Andes*, Los Andes, Chile; Dec 7-11, 2015.

29. Coloring digraphs, *Combinatorics seminar*, Virginia Commonwealth University, Richmond, VA; Oct 5, 2015.

28. Covers of (pseudo)random graphs by monochromatic subgraphs, *Combinatorics seminar*, University of Birmingham, Birmingham, England; July 14, 2015.

27. Monochromatic cycle partitions, *Colloquium*, University of Louisville, Louisville, KY; Apr 20, 2015.

26. The absorbing method, *Center for Applied and Computational Mathematics seminar*, Rochester Institute of Technology, Rochester, NY; April 2014.

25. Covering 2-edge colored graphs with a pair of cycles, *Discrete Mathematics seminar*, Arizona State University; April 2014.

24. Extending theorems of Dirac and Hajnal-Szemeredi to directed graphs, *Graph Theory seminar*, Georgia State University, Atlanta, GA; March 2014.

23. Covering 2-edge colored graphs with a pair of cycles, *Graph Theory and Combinatorics Seminar*, University of Illinois Urbana-Champaign; Feb 25, 2014.

22. The absorbing method, *Discrete Mathematics Seminar*, UC Denver, Denver, CO; Feb 2013.

21. Semi-degree threshold for anti-directed Hamilton cycles, *AMS Fall Central Sectional Meeting*, University of Akron, Akron, OH; October 2012.

20. The co-degree threshold of the Fano plane, *colloquium*, University of Dayton, Dayton, OH; March 2012.

19. Exact codegree condition for the Fano plane via digraphs, *AMS Spring Eastern Sectional Meeting*, George Washington University, Washington, DC; March 2012.

18. Exact codegree condition for the Fano plane via digraphs, *AMS Spring Southeastern Sectional Meeting*, University of South Florida, Tampa, FL; March 2012.
17. Tiling 3-uniform hypergraphs, *AMS Fall Eastern Sectional Meeting*, Wake Forest University, Winston-Salem, NC; September 2011.
16. Pósa's conjecture, *AMS Western Sectional Meeting*, Las Vegas, NV; April 2011.
15. Some problems and techniques in extremal graph theory, *job talk*, Miami University, Oxford, OH; March 2011.

Contributed Research Talks

14. Monochromatic linear forests, *29th British Combinatorial Conference*; Lancaster, England: July 11-15, 2022.
13. Robust expansion and Hamiltonian cycles in k-partite graphs, *19th International Conference on Random Structures and Algorithms*, ETH, Zurich, Switzerland; July 15-19, 2019.
12. Monochromatic paths and cycles in bipartite graphs I, *30th Cumberland Conference on Combinatorics, Graph Theory, and Computing*, Marshall University, Huntington, WV; May 19-20, 2018.
11. Spanning trees with few branch vertices, *MIGHTY LVIII*, Grand Valley State University, Allendale, Mi: Oct 6-7 2017.
10. Covering by monochromatic subgraphs – a survey, *MIGHTY LVII*, Wright State University, Dayton, OH; Apr 8-9, 2016.
9. Arbitrarily oriented Hamilton cycles: an extension of Dirac's theorem to digraphs, *Random Structures and Algorithms*, Carnegie Mellon University, Pittsburgh, PA: July 27-31, 2015.
8. Covers of (pseudo)random graphs by monochromatic subgraphs, *25th British Combinatorial Conference*, University of Warwick, Coventry, England; July 6-10 2015.
7. Covering 2-edge colored graphs with a pair of cycles, *SUMMIT:240 conference*, Budapest, Hungary; July 2014.
6. 2-factors with k cycles in Hamiltonian graphs, *27th Cumberland conference*, Morgantown, WV; May 2014.
5. Degree thresholds for bipartite graph tiling, *MIGHTY LIII*, Iowa State University, Ames, IA; September 2012.
4. Pósa's square cycle conjecture, *International Conference on Cycles in Graphs*, Vanderbilt University, Nashville, TN; June 2012.
3. Pósa's Conjecture, *Random Structures and Algorithms*, Emory University, Atlanta, GA; May 2011.
2. A degree condition for spanning cycles in bipartite graphs, *Joint Mathematics Meetings*, San Francisco, CA; January 2010.

Posters

1. Semi-degree threshold for anti-directed Hamiltonian cycles *Erdős Centennial Conference*, Hungarian Academy of Sciences, Budapest, Hungary; July 2013.

Expository talks

- What is... the chromatic number of a graph, *Colloquium*, Wittenberg University, Springfield, OH: Nov 7, 2016.
- What is the chromatic number of a graph and why is it important?, *Colloquium*, Wabash College, Crawfordsville, IN; Nov 4, 2014.

- Structure in Chaos. *SUMSRI colloquium*, Miami University, Oxford, OH; July 2014.
- Minimum degree thresholds for subgraphs. *SUMSRI colloquium*, Miami University, Oxford, OH; June 2013.
- Minimum degree thresholds for subgraphs. *SUMSRI colloquium*, Miami University, Oxford, OH; June 2012.

Conferences/ Sessions Organized

Special Session on *Ramsey Theory*, AMS Eastern Fall Sectional Meeting, UMass Amherst; Amherst, MA; October 1-2, 2022. (with Gábor Sárközy)

Special Session on *Probabilistic and Extremal Graph Theory*, AMS Central Spring Sectional Meeting, Ohio State University; Columbus, OH; March 17-18, 2018. (with Tao Jiang)

Minisymposium on *Monochromatic covering and Ramsey-type problems*, SIAM conference on Discrete Mathematics, June 6-10, 2016. (with Alexey Pokrovskiy)

Special Session on *Extremal Graph Theory: Hypergraphs, Directed Graphs, and Other Generalizations* AMS Central Spring Sectional Meeting, Michigan State University; East Lansing, MI; March 14-15, 2015. (with Theo Molla)

Special Session on *Extremal Graph Theory*, AMS Southeastern Fall Sectional Meeting, University of Louisville; Louisville, KY; October 5-6, 2013. (with Jozsef Balogh and Tao Jiang)

MIGHTY LIV, Miami University; April 6, 2013. (with Reza Akhtar, Tao Jiang, Zevi Miller, and Dan Pritikin)

Grants

2020-2023 NSF Grant DMS-1954170, Pseudorandom Structures in Graphs and Combinatorics, $91,675

2013-2018 Simons Collaboration Grant for Mathematicians, SimonsCollab 2013, $35,000

College of Arts and Sciences Summer Research Grant, Miami University (for Summer 2013).

Committee on Faculty Research (CFR) Grant - Summer Research Appointment, Miami University (for Summer 2012).

IPAM travel award to attend the workshop "Topics in Graphs and Hypergraphs," Institute for Pure and Applied Mathematics, November 2 - 6, 2009

Graduate College Travel Grant, Arizona State University, Spring 2011

SoMSS Summer Research Grant recipient, Arizona State University, 2008 & 2010

Graduate & Professional Student Association Travel Grant, Arizona State University, Spring 2008 & Fall 2010

Citations

Google Scholar: 286 citations, h-index 10, i10-index 11

MathSciNet: 128 citations

Teaching Experience

Assistant/Associate/Full Professor - Miami University

- Calculus 1 (151), Calculus 2 (249, 251), Calculus 3 (252), Discrete Mathematics (231), Linear Algebra (222), Honors Linear Algebra (222T/H), Proof: Introduction to Higher Mathematics (331), Honors Proof: Introduction to Higher Mathematics (331T/H), Geometry (411/511), Abstract Algebra (421/521), Real Analysis (441/541) Combinatorics (439/539), Graph Theory (438/538), Advanced Graph Theory (638)

Instructor of Record - Arizona State University

- Calculus 1 for Engineers, Calculus 2 for Engineers, Calculus 1, College Mathematics, Precalculus

Teaching Assistant - Arizona State University

- Mathematical Structures, Graph Theory

Advising

Member of Luke Nelsen's Ph. D. committee (UC Denver) 2016- 2019

Chair of Grace McCourt's master's research project committee in 2019.

Chair of Nick Bruno's master's thesis committee in 2015.

Chair of Luke Nelsen's master's research project committee in 2014.

Served on Nathan Graber's master's research project committee in 2014.

Served on Clayton Collier-Cartiano's master's research project committee in 2014.

Served on Derrek Yager's master's research project committee in 2012.

Honors & Awards

Graduate Student Research Award, Arizona State University, 2011

Robert G. Maule Excellence in Teaching Mathematics Award, Arizona State University, 2010

Professional Activities

2012-2013 Project NeXT Fellow

46 manuscripts refereed for: *Combinatorica, Random Structures and Algorithms, Advances in Combinatorics, Combinatorics Probability and Computing, Journal of Combinatorial Theory, Series A,Journal of Combinatorial Theory, Series B, SIAM Journal on Discrete Mathematics, European Journal of Combinatorics, Electronic Journal of Combinatorics, Discrete Mathematics, Graphs & Combinatorics, Order, Ars Combinatoria, Discussiones Mathematicae Graph Theory, Science China, Bulletin of the Australian Mathematical Society, Journal of the London Mathematical Society*

18 reviews written for AMS Mathematical Reviews (starting 2013) – expert reviewers are selected by a staff of professional mathematicians to write reviews of the current published literature: over 80,000 reviews are added to the database each year.

Reviewer for NSA Mathematical Sciences Grant Program

Judge for the MAA Undergraduate Student Poster Session – 2013 Joint Mathematics Meetings; San Diego, CA

Judge for the MAA Undergraduate Student Paper Sessions – 2012 MathFest; Madison, WI

Taught the session "Extremal graph theory and knight's tours" - Math Circle at ASU, Oct 12, 2010 & Jan 25, 2011

Activity leader - MSRI Julia Robinson Math Festival, Tempe, AZ, March 13, 2010

Reviewer for the Teaching Excellence Award - ASU Graduate & Professional Student Association, Fall 2010

TA Training workshop leader – ASU, Summer 2009 & 2010

Patrick N. Dowling

Professor of Mathematics

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dowlinpn@muohio.edu

Education

1979	B.Sc.	Mathematics, University College Dublin, Dublin, Ireland
1980	M.Sc.	Mathematics, University College Dublin, Dublin, Ireland
1986	Ph.D.	Mathematics, Kent State University, Kent, Ohio

Professional Academic Employment

1986-1989	Research Instructor	Ohio State University	Columbus, OH
1989-1992	Assistant Professor	Miami University	Oxford, OH
1992-1994	Associate Professor	Miami University	Oxford, OH
1994- present	Professor	Miami University	Oxford, OH
9/08- 7/09	Interim Chair	Miami University	Oxford, OH
7/09- 6/22	Chair	Miami University	Oxford, OH

TEACHING

I have taught the following courses at Miami:

Calculus (MTH 151, MTH 249, MTH 251, MTH 252)

Differential Equations (MTH 245, MTH 347)

Real and Complex Analysis (MTH 441, MTH 442, MTH 451, MTH 641, MTH 651)

Because I teach 400 and 600 level analysis courses so frequently, I have been part of real analysis and complex analysis comprehensive examination committees almost every year. For the same reason, I have been a member of several masters student's committees over the years.

RESEARCH

My research area is functional analysis. In particular, I have published papers dealing with various aspects of Banach Space Theory, such as, real and complex geometry of Banach spaces, renormings of Banach spaces, geometric and analytic properties of function spaces, isometric and isomorphic theory of Banach spaces, and applications of Banach space geometry to fixed point theory and harmonic analysis.

Presentations at Conferences

Conference on Banach Space Theory, St. Lawrence University, Canton, NY, August 1984

International Conference on Modern Analysis, University of Illinois, Urbana-Champaign, March 1987

Regional American Mathematical Society Meeting, Kent State University, Kent, OH, April 1987

American Mathematical Society Annual Meeting, Louisville, KY, January 1990

Conference on Functional Analysis, Holomorphy and Approximation Theory, Campinas, Brazil, July 1990

Regional American Mathematical Society Meeting, North Texas State University, Denton, TX, November 1990

International Research Workshop on Banach Space Theory, Merida, Venezuela, January 1992

Regional Functional Analysis Meeting, Kent State University, October 1992

American Mathematical Society Annual Meeting, San Antonio, TX, January 1993

Conference on Algebras in Analysis, Kent State University, Kent, OH, September 1993

Function Spaces (second conference), Southern Illinois University at Edwardsville, Edwardsville, Il, May 1994

Conference on the Interaction between Functional Analysis, Harmonic Analysis and Probability, University of Missouri, Columbia, MO, May/June 1994

Regional American Mathematical Society Meeting, Kent State University, Kent, OH, November 1995

American Mathematical Society Annual Meeting, Orlando, FL, January 1996

Regional American Mathematical Society Meeting, University of Missouri, Columbia, MO, November 1996

The Pelczynski Conference, Kent State University, Kent, OH, December 1996

Workshop on Fixed Point Theory, Kazimierz Dolny, Poland, June 1997 (gave a series of three talks)

Regional American Mathematical Society Meeting, Georgia Tech., Atlanta, GA, October 1997

Regional American Mathematical Society Meeting, University of Louisville, Louisville, KY, March 1998

Function Spaces (third conference), Southern Illinois University at Edwardsville, Edwardsville, Il, May 1998

International Conference on Mathematical Analysis and its Applications, National Sun Yat-sen University, Kaoshiung, Taiwan, January 2000

American Mathematical Society Annual Meeting, New Orleans, LA, January 2001

Regional American Mathematical Society Meeting, University of South Carolina, Columbia, SC, March 2001

American Mathematical Society Annual Meeting, San Diego, CA, January 2002

Function Spaces (fourth conference), Southern Illinois University at Edwardsville, Edwardsville, Il, May 2002

American Mathematical Society Annual Meeting, Baltimore, MD, January 2003

Seminario de Analisis de Matematico, University of Sevilla, Sevilla, Spain, February 2004 (I gave a series of three talks)

Regional American Mathematical Society Meeting, Ohio University, Athens, OH, March 2004

Regional American Mathematical Society Meeting, University of Pittsburgh, Pittsburgh, PA, November 2004

Infinite Dimensional Analysis, Kent State University, Kent, OH, February 2005

Regional American Mathematical Society Meeting, Florida International University, Miami, FL, April 2006

The Third International Symposium on Banach and Function Spaces 2009, Kyushu Institute of Technology, Kitakyushu, Japan, September 2009.

Regional American Mathematical Society Meeting, University of Richmond, Richmond, VA, November 2010.

Regional American Mathematical Society Meeting, University of Mississippi, Oxford, MS, March 2013.

Invited Colloquia/Invited Talks

Oakland University, Rochester, MI, October 1989

York University, Toronto, Canada, October 1990

University of Pittsburgh, Pittsburgh, PA, September 1993

University of Louisville, Louisville, KY, December 1993

University of Northern Iowa, Cedar Falls, IA, March 1995

University of Pittsburgh, Pittsburgh, PA, November 1997

Case Western Reserve University, Cleveland, OH, November 1998

Cleveland State University, Cleveland, OH, February 2001

Defiance College, Defiance, OH, October 2003

Bowling Green State University, Bowling Green, OH, October 2003

University of Pittsburgh, Pittsburgh, PA, March 2004

Oakland University, Rochester, MI, October 2004

Taylor University, Upland, IN, November 2005

Butler University, Indianapolis IN, November 2007.

Shawnee State University, Portsmouth OH, February 2008.

Hanover College, Hanover IN, March 2008.

Oakland University, Rochester, MI, April 2011.

University of Northern Iowa, Cedar Falls, IA, April 2013.

Refereed Research Publications

1. Patrick N. Dowling, Representable operators and the analytic Radon-Nikodým property in Banach spaces, Proc. Roy. Irish Acad. Sect. A, **85** (1985), 143–150.
2. Patrick N. Dowling, The analytic Radon-Nikodým property in Lebesgue Bochner function spaces, Proc. Amer. Math. Soc., **99** (1987), 119–122.
3. Alain Belanger and Patrick N. Dowling, Two remarks on absolutely summing operators, Math. Nachr., **136** (1988), 229–232.

4. P.N. Dowling and G.A. Edgar, Some characterizations of the analytic Radon-Nikodým property in Banach spaces, J. Funct. Anal., **80** (1988), 349–357.

5. Patrick N. Dowling, Complemented copies of c_0 in vector valued Hardy spaces, Proc. Amer. Math. Soc., **107** (1989), 251–254.

6. Patrick N. Dowling, Riesz sets and the Radon-Nikodým property, J. Austral. Math. Soc. Ser. A, **49** (1990), 303–308.

7. Patrick N. Dowling, Radon-Nikodým properties associated with subsets of countable discrete abelian groups, Trans. Amer. Math. Soc., **327** (1991), 879–890.

8. Patrick N. Dowling, Some applications of convolution of operators on Banach spaces, Proc. Amer. Math. Soc., **116** (1992), 191–195.

9. P.N. Dowling and C.J. Lennard, Kadec-Klee properties of vector-valued Hardy spaces, Math. Proc. Cambridge Philos. Soc., **111** (1992), 535–544.

10. Patrick N. Dowling, A stability property of a class of Banach spaces not containing c_0, Canad. Math. Bull., **35** (1992), 56–60.

11. Patrick N. Dowling, Duality in some vector-valued function spaces, Rocky Mountain J. Math., **22** (1992), 511–518.

12. P. N. Dowling and C. J. Lennard, Uniform Kadec-Klee-Huff properties of vector-valued Hardy spaces, Math. Proc. Cambridge Philos. Soc., **114** (1993), 25–30.

13. Patrick N. Dowling, The maximum principle for Banach space valued harmonic functions, J. Math. Anal. Appl., **173** (1993), 255–257.

14. Patrick N. Dowling, Rosenthal sets and the Radon-Nikodým property, J. Austral. Math. Soc. Ser. A, **54** (1993), 213–220.

15. Patrick N. Dowling, Zhibao Hu, and Mark A. Smith, Extremal structure of the unit ball of $C(K, X)$, In *Banach spaces (Mérida, 1992)*, pages 81–85. Amer. Math. Soc., Providence, RI, 1993.

16. P. N. Dowling and C. J. Lennard, On uniformly H-convex complex quasi-Banach spaces, Bull. Sci. Math., **118** (1994), 455–463.

17. M. Besbes, S. J. Dilworth, P. N. Dowling, and C. J. Lennard, New convexity and fixed point properties in Hardy and Lebesgue-Bochner spaces, J. Funct. Anal., **119** (1994), 340–357.

18. Patrick N. Dowling, Zhibao Hu, and Mark A. Smith, Geometry of spaces of vector-valued harmonic functions, Canad. J. Math., **46** (1994), 274–283.

19. Patrick N. Dowling, Zhibao Hu, and Douglas Mupasiri, Some measures of convexity in Banach spaces, In *Function spaces (Edwardsville, IL, 1994)*, pages 111–115. Dekker, New York, 1995.

20. Patrick N. Dowling, Zhibao Hu, and Mark A. Smith, MLUR renormings of Banach spaces, Pacific J. Math., **170** (1995), 473–482.

21. P. G. Dodds, T. K. Dodds, P. N. Dowling, C. J. Lennard, and F. A. Sukochev, A uniform Kadec-Klee property for symmetric operator spaces, Math. Proc. Cambridge Philos. Soc., **118** (1995), 487–502.

22. Patrick N. Dowling, Extensions of the maximum principle for vector-valued analytic and harmonic functions, J. Math. Anal. Appl., **190** (1995), 599–604.

23. P. N. Dowling, C. J. Lennard, and B. Turett, Reflexivity and the fixed-point property for nonexpansive maps, J. Math. Anal. Appl., **200** (1996), 653–662.

24. Patrick N. Dowling, Zhibao Hu, and Douglas Mupasiri, Complex convexity in Lebesgue-Bochner function spaces, Trans. Amer. Math. Soc., **348** (1996), 127–139.

25. P. N. Dowling and C. J. Lennard. Every nonreflexive subspace of $L_1[0,1]$ fails the fixed point property, Proc. Amer. Math. Soc., **125** (1997), 443–446.

26. P. N. Dowling, W. B. Johnson, C. J. Lennard, and B. Turett, The optimality of James's distortion theorems, Proc. Amer. Math. Soc., **125** (1997), 167–174.

27. P.N. Dowling, C.J. Lennard and B. Turett, Asymptotically perturbed norms of classical sequence spaces with applications to fixed point theory, Annales Universitatis Mariae Curie-Sklodowska Sect. A, Volume **51** (1997), 67-98.

28. Patrick N. Dowling, Asymptotically isometric copies of c_0 and renormings of Banach spaces, J. Math. Anal. Appl., **228** (1998), 265–271.

29. Patrick N. Dowling, Narcisse Randrianantoanina, and Barry Turett, Remarks on James's distortion theorems, Bull. Austral. Math. Soc., **57** (1998), 49–54.

30. P. N. Dowling, C. J. Lennard, and B. Turett, Asymptotically isometric copies of c_0 in Banach spaces, J. Math. Anal. Appl., **219** (1998), 377–391.

31. Patrick N. Dowling, Narcisse Randrianantoanina, and Barry Turett, Remarks on James's distortion theorems II, Bull. Austral. Math. Soc., **59** (1999), 515–522.

32. Patrick N. Dowling, The fixed point property for subsets of $L_1[0,1]$, Function spaces (Edwardsville, IL, 1998), pages 131–137. Amer. Math. Soc., Providence, RI, 1999.

33. P.N. Dowling and N. Randrianantoanina, Spaces of compact operators on a Hilbert space with the fixed point property, J. Funct. Anal., **168** (1999), 111–120.

34. P.N. Dowling, C.J. Lennard and B. Turett, Some fixed point results in ℓ^1 and c_0, Nonlinear Anal., **39** (2000), 929–936.

35. P.N. Dowling and N. Randrianantoanina, Asymptotically isometric copies of ℓ^∞ in Banach spaces and a theorem of Bessaga and Pełczyński, Proc. Amer. Math. Soc., **128** (2000), 3391–3397.

36. Patrick N. Dowling, Isometric copies of c_0 and ℓ^∞ in duals of Banach spaces, J. Math. Anal. Appl., **244** (2000), 223–227.

37. Patrick N. Dowling, On ℓ^∞ subspaces of a Banach space, Collect. Math., **51** (2000), 255–260.

38. P.N. Dowling, C.J. Lennard and B. Turett, Renormings of ℓ^1 and c_0 and fixed point properties, In *Handbook of Metric Fixed Point Theory*, pages 269–297. Kluwer Academic Publishers, 2001.

39. P.N. Dowling and N. Randrianantoanina, Asymptotic isometric copies of c_0 and ℓ^1 in Bochner-spaces, J. Math. Anal. Appl., **262** (2001), 419–434.

40. P.N. Dowling, C.J. Lennard and B. Turett, The fixed point property for subsets of some classical Banach spaces, Nonlinear Anal., **49** (2002), 141–145.

41. Q. Bu and P.N. Dowling, Observations about the projective tensor product of Banach spaces, III — $L^p[0,1]\hat{\otimes}X$, $1 < p < \infty$, Quaestiones Math., **25** (2002), 303–310.

42. P.N. Dowling, C.J. Lennard and B. Turett, Characterizations of weakly compact sets and new fixed point free maps in c_0, Studia Math., **154** (2003), 277–293.

43. P.N. Dowling and N. Randrianantoanina, Riemann-Lebesgue Properties of Banach spaces associated with subsets of countable discrete abelian groups, Glasgow Math. J., **45** (2003), 159–166.

44. P.N. Dowling, C.J. Lennard and B. Turett, Some more examples of subsets of c_0 and $L^1[0,1]$ failing the fixed point property, Contemporary Math., **328** (2003), 171–176.

45. Patrick N. Dowling, On convexity properties of ψ-direct sums of Banach spaces, J. Math. Anal. Appl., **288** (2003), 540–543.

46. Q. Bu, J. Diestel, P.N. Dowling and E. Oja, Types of Radon-Nikodym properties for the projective tensor product of Banach spaces, Illinois J. Math. **47** (2003), 1303–1326

47. P.N. Dowling, C.J. Lennard and B. Turett, Weak compactness is equivalent to the fixed point property in c_0, Proc. Amer. Math. Soc. **132** (2004), 1659–1666.

48. Patrick N. Dowling, Stability of Banach space properties in the projective tensor product, Quaestiones Math. **27** (2004), 1–7.

49. P.N. Dowling, Subsets of classical Banach spaces failing the fixed point property, Seminar of Mathematical Analysis (Malaga/Seville, 2003/2004), 21–30, Colecc. Abierta, 71, Univ. Sevilla Secr. Publ., Seville, 2004.

50. P.N. Dowling, Some properties of the projective tensor product $U\hat{\otimes}X$ derived from those of U and X, Bull. Austral. Math. Soc. **73** (2006), 37–45.

51. P.N. Dowling and M. Robdera, On the near differentiability property of Banach spaces, J. Math. Anal. Appl. **323** (2006), 1300–1310.

52. Patrick N. Dowling, On a fixed point result of Amini-Harandi in strictly convex Banach spaces, Acta Math. Hungar. **112 (1-2)** (2006), 85–88.

53. Patrick N. Dowling and Barry Turett, Complex strict convexity of absolute norms on $\mathbb{C}^n$ and direct sums of Banach spaces, J. Math. Anal. Appl. **323** (2006), 930–937.

54. P.N. Dowling, C.J. Lennard and B. Turett, New fixed point free nonexpansive maps on weakly compact, convex subsets of $L^1[0,1]$, Studia Math. **180** (2007), 271–284.

55. P.N. Dowling, S. Photi and S. Saejung, Kadec-Klee and related properties of direct sums of Banach spaces, Journal of Nonlinear and Convex Analysis **8** (2007), 463–469.

56. P.N. Dowling and S. Saejung, Extremal structure of the unit ball of direct sums of Banach spaces, Nonlinear Analysis **68** (2008), 951–955.

57. P.N. Dowling, B. Randrianantoanina and B. Turett, The fixed point property via dual space properties, J. Funct. Anal. **255** (2008), 768–775.

58. P.N. Dowling and B. Turett, Coordinatewise star-shaped sets in c_0, J. Math. Anal. Appl. **346** (2008), 39–40.

59. P.N. Dowling and S. Saejung, Non-squareness and uniform non-squareness of Z-direct sums, J. Math. Anal. Appl. **369** (2010), 53–59.

60. P.N. Dowling, Pei-Kee Lin and B. Turett, Direct sums of renormings of ℓ^1 and the fixed point property, Nonlinear Analysis **73** (2010), 591–599.

61. P.N. Dowling, C.J. Lennard and B. Turett, Failure of the FPP inside an asymptotically isometric-free copy of c_0, Nonlinear Analysis **73** (2010), 1175–1179.

62. Patrick N. Dowling, Coordinatewise star-shaped sets in some sequence spaces and the fixed point property, Banach and Function Spaces III (2011), 89–98.

63. P.N. Dowling, C.J. Lennard and B. Turett, New non-weak*-compact, closed, bounded, convex sets in $(\ell^1, \|\cdot\|_1)$ with and without the fixed point property for nonexpansive maps, preprint

64. P.N. Dowling, D. Freeman, C.J. Lennard, E. Odell, B. Randrianantoanina and B. Turett, A weak Grothendieck compactness principle, J. Funct. Anal. **263** (2012), 1378–1381.

65. Patrick N. Dowling, A note on the extremal structure of the set of absolute norms on $\mathbb{R}^2$ and a theorem of Grząślewicz, Journal of Nonlinear and Convex Analysis **14** (2013), 493–495.

66. P.N. Dowling, D. Freeman, C.J. Lennard, E. Odell, B. Randrianantoanina and B. Turett, A weak Grothendieck compactness principle for Banach spaces with a symmetric basis, Positivity **18** (2014), 147–159.

67. P.N. Dowling and D. Mupasiri, A Grothendieck Compactness Principle for the dual Mackey topology, J. Math. Anal. Appl. **410** (2014), 483–486.

68. P.N. Dowling and B. Turett, Lindenstrauss-Phelps spaces and the optimality of a theorem of Fonf, Journal of Nonlinear and Convex Analysis **17** (2016), 2339–2342.

69. F.E. Castillo-Sántos, P.N. Dowling, H. Fetter, M. Japón, C.J. Lennard, B. Sims and B. Turett, Near-infinity concentrated norms and the fixed point property for nonexpansive maps on closed, bounded, convex sets, J. Funct. Anal. **275** (2018), 559–576.

70. Guillermo Curbera, Patrick Dowling, Jan Fourie, To the memory of Joe Diestel and his mathematical legacy [Editorial note], Quaest. Math. **43** (2020), 583-590.

External Research Grant Proposals

From 2001 until 2017, I was a co-PI, with Dennis Davenport, Vasant Waikar and Reza Akhtar, on National Science Foundation and National Security Agency Grants to fund Miami University's Summmer Undergraduate Mathematical Sciences Research Institute (SUMSRI), with some matching funds from Miami University. We obtained approximately $3 million in funding from the NSA and NSF.

Editorial Work

I am a member of the editorial board of the following journals:

Linear and Nonlinear Analysis

Annals of Functional Analysis

MOST RECENT TEACHING AND STUDENT MENTORING

Over the last few years I have taught a number of upper level/graduate level courses in mathematics including, real analysis I and II, complex analysis, graduate complex analysis, measure theory and a topics in analysis course (which was about approximation theory and wavelets).

I have been a member of the following Ph.D. committees:

- Douglas Mupasiri, Math Department, Northern Illinois University, Defense July 1992
- Jerry Day, Math Department, University of Pittsburgh, Defense August 2007
- Daniel Radelet, Math Department, University of Pittsburgh, Defense July 2009.
- Alfred Dahma, Math Department, University of Pittsburgh, Defense July 2009.
- Veysel Nezir, Math Department, University of Pittsburgh, Defense July 2012.
- Thomas Everest, Math Department, University of Pittsburgh, Defense November 2012.
- Jeromy Sivek, Math Department, University of Pittsburgh, Defense August 2014.
- Torrey Gallagher, Math Department, University of Pittsburgh, Defense July 2016.
- Roxana Popescu, Math Department, University of Pittsburgh, Defense July 2018.
- Pamela Delgado, Math Department, University of Pittsburgh, Defense July 2020.
- Robed Beauvile, Math Department, University of Pittsburgh, Defense November 2023.
- Adam Stawski, Math Department, University of Pittsburgh, Defense November 2023.

- Stuart Cullender, Math Department, University of Witwatersrand, South Africa, External Examiner 2007.
- Salthiel Maepa, Math Department, University of Pretoria, South Africa, External Examiner 2007.
- Gusti Van Zyl, Math Department, University of Pretoria, South Africa. External Examiner 2009.

In 2010, I was the research advisor for Douglas Smith, a masters student in mathematics at Miami University.

Caleb Eckhardt

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Web: http://https://sites.miamioh.edu/calebeckhardt
Citizenship: USA

Mail: Miami University
Department of Mathematics
150 N. Patterson Ave.
Oxford, OH 47906

Research Interests

- Operator algebras, Operator Spaces, Finite dimensional approximation properties of C*-algebras, Unitary Representations

Work Experience

- **Miami University, Oxford, OH** — August 2018-Present
  Associate Professor of Mathematics
- **Miami University, Oxford, OH** — August 2012-2018
  Assistant Professor of Mathematics
- **Purdue University, West Lafayette, IN** — August 2010-July 2012
  Golomb Assistant Professor of Mathematics
- **Université de Franche-Comté, Besançon, France** — September 2009-August 2010
  Postdoctoral Researcher

Education

- **University of Illinois at Urbana-Champaign** — October 2009
  Ph.D. in Mathematics.
  Thesis advisor: Zhong-Jin Ruan
- **University of Florida at Gainesville** — May 2002
  M.S. in Mathematics
- **Truman State University, Kirksville, MO** — May 2000
  B.S. in Mathematics

Honors / Awards

- **Barney Fellowship**; \$12,000 — 2021-2022
  To design the new course "Applied Linear Algebra"
- **NSF Grant DMS-1764137**; \$40,000 — 2018-2019
  "Great Plains Operator Theory Symposium 2018"; Principal Investigator
  Co-PIs: Narcisse Randrianantoanina and Paul McKenney
- **Simons Foundation Grant**; \$35,000 — 2015-2022
  "Classification and Representations of C-algebras"*

- **University Summer Scholars Grant**; \$3,600(student and mentor) Summer 2016
  "C-rigidity of group C*-algebras"*
- **NSF Grant DMS-1101144**; \$105,000 2011-2015
  "Approximation Properties of C-algebras"; Principal Investigator*
- **Invited Visiting Researcher**; CRM, Barcelona, Spain June 2017
  Operator Algebras:Dynamics and Interactions
- **Invited Visiting Researcher**; Mittag-Leffler Institute, Djursholm, Sweden Feb. 2016
  Classification of Operator Algebras
- **Invited Visiting Researcher**; CRM, Barcelona, Spain June 2011
  The Cuntz Semigroup and Classification of C-algebras*
- **Invited Visiting Researcher**; The Fields Institute, Toronto, ON Sept.-Dec. 2007
  Funded Participant in Thematic Program on Operator Algebras

Publications

[1] On $\mathcal{OL}_\infty$ structure of nuclear, quasidiagonal C^*-algebras, *J. Funct. Anal.*, 258; 1-19, (2010).

[2] Perturbations of finite rank maps and strong NF algebras, *Proc. Lond. Math. Soc. (3)*,101; 795-820, (2010).

[3] A noncommutative Gauss map, *Math Scand.*, 108; 233-250, (2011).

[4] Free products and the lack of state preserving approximations of nuclear C*-algebras, *Proc. Amer. Math. Soc.*, 141 (2013), no. 8, 2719-2727.

[5] (w/ J. Carrion and M. Dadarlat)On groups with quasidiagonal C*-algebras, *J. Funct. Anal.* 265 (2013), no. 1, 135-152.

[6] Quasidiagonal representations of nilpotent groups, *Adv. Math.* 254 (2014), 15-32

[7] A note on strongly quasidiagonal groups, *J. Operator Theory* 73 (2015), no. 2, 417-424.

[8] (w/ C. Kleski and P. McKenney)Classification of C*-algebras generated by representations of the unitriangular group $UT(4,\mathbb{Z})$. *J. Funct. Anal.* 271 (2016), no. 4, 1022-1042.

[9] (w/ E. Gillaspy)Irreducible representations of nilpotent groups generate classifiable C*-algebras. *Münster J. Math.* 9 (2016), no. 1, 253-261.

[10] (w/ P. McKenney) Finitely generated nilpotent group C* -algebras have finite nuclear dimension. *J. Reine Angew. Math.* 738 (2018), 281–298.

[11] (w/ S. Raum) C*-superrigidity of 2-step nilpotent groups. *Adv. Math.* 338 (2018), 175–195.

[12] Free groups and quasidiagonality. *Houston J. Math.* 44 (2018), no. 4, 1241–1267.

[13] (w/ E. Gillaspy and P. McKenney) Finite decomposition rank for virtually nilpotent groups *Trans. Amer. Math. Soc.* 371 (2019), no. 6, 3971–3994.

[14] (w/ K. Fieldhouse, D. Gent, E. Gillaspy, I. Gonzales, D. Pask) Moves on k-graphs preserving Morita equivalence. *Canad. J. Math.* 74 (2022), no. 3, 655–685.

[15] (w/ T. Shulman) On amenable Hilbert-Schmidt stable groups *J. Funct. Anal.* 285 (2023), no. 3, Paper No. 109954, 31 pp.

- **Related publication**

[16] (Appendix to) A tracially AF-algebra which is not $\mathcal{Z}$-absorbing by Z. Niu and Q. Wang *Münster J. Math.* 14(2021), no.1, 41–57.

Submitted Articles

[17] C*-algebras generated by representations of virtually nilpotent groups, arXiv:2307.08841, 2023

Conference Talks

- **Special Week on Operator Algebras** at Research Center for Operator Algebras, East China Normal University, July 2023 (declined for family reasons)
- **Nebraska-Iowa Functional Analysis Seminar**, University of Nebraska, March 2023
- **Workshop on C*-algebras: Structure and Dynamics**, Sde-Boker, Israel, May 2022 (declined for family reasons)
- **International Conference on the structure and classification of C*-algebras**, Hebei Normal University, Shijiazhuang, August 2020 (cancelled)
- **CMS winter meeting**, Vancouver, Canada, December 2018
- **Symposium on K-theory and non-commutative topology**, San Juan, Puerto Rico, October 2018
- **Mini-Course speaker at NCGOA 2018: C*-algebras and Dynamics**, WWU Münster, Germany, May 2018
- **Wabash Modern Analysis Seminar**, Wabash College, Crawfordsville, IN; April 2018
- **Barcelona conference on C*-algebras**, CRM, Bellaterra, Spain, June 2017
- **OHIO**, Ohio State University, Columbus, OH, April 2017
- **Structure and Classification of C*-algebras**, IM PAN, Warsaw, Poland, November 2016
- **Colloquium** at Texas Christian University, Fort Worth, TX, April 2016
- **Colloquium** at University of Dayton, Dayton, Ohio, March 2016
- **Master class speaker at Quasidiagonality and Classification of C*-algebras**, Institut Mittag-Leffler, Djursholm, Sweden, February 2016
- **Geometry and Actions**, University of Münster, Münster, Germany; July 2015
- **Great Plains Operator Theory Symposium** , Purdue University, West Lafayette, IN; May 2015

- **Dynamics of C*-algebras: Amenability and Soficity**, Banff International Research Station, Banff, Alberta; October 2014
- **East Coast Operator Algebras Symposium**, Fields Institute, Toronto, Ontario; October 2014
- **SUMIRFAS**, Texas A&M, College Station, TX; July 2014
- **Model Theory and C*-algebras**, University of Münster, Münster, Germany; July 2014
- **Wabash Modern Analysis Seminar**, Wabash College, Crawfordsville, IN; April 2014
- **Korean Math Soc. Fall Meeting**, Seoul University, Seoul, S. Korea; October 2013
- **Colloquium** at Ulsan University, Ulsan, S. Korea; October 2013
- **The structure and classification of nuclear C*-algebras** International Center for the Mathematical Sciences, Edinburgh, Scotland; April 2013
- **6 lectures at the Appalachian Set Theory Workshop**, Fields Institute, Toronto, ON; September 2012
- **Descriptive Set Theory and Functional Analysis**, Banff International Research Station, Banff, Alberta;; June 2012
- **Wabash Modern Analysis Seminar**, Wabash College, Crawforsville, IN; November 2011
- **East Coast Operator Algebras Symposium**, Dartmouth University, Hanover, NH; October 2010
- **Workshop on von Neumann algebras and group actions**, Copenhagen University, Copenhagen, Denmark; January 2010
- **Lecturer at IMAR School on Operator Algebras**, Institute of Mathematics of the Romanian Academy, Bucharest, Romania; October 2009
- **AMS Sectional Meeting**, University of Illinois, Urbana, IL; March 2009

Seminar Talks

- **Analysis Seminar**, University of Gothenburg, December 2022
- **UK virtual operator algebras seminar**, November 2020
- **Analysis Seminar**, Wuhan University; March 2016
- **Classification of Operator Algebras Seminar**, Institut Mittag-Leffler; February 2016
- **Analysis Seminar**, Purdue University; May 2014
- **Analysis Seminar**, Wayne State University; November 2013
- **C*-Seminar**, Penn State University; November 2013
- **Noncommutative Geometry Seminar**, Penn State University; November 2013
- **Analysis Seminar**, University of Bordeaux; April 2013

- **Analysis Seminar**, Miami University; September 2012
- **Operator Seminar**, University of Virginia; November 2011
- **Ergodic Theory Seminar**, University of Illinois; March 2011
- **Linear Analysis Seminar**, Texas A & M University; October 2010
- **Operator Algebras Seminar**, Purdue University; September 2010
- **Functional Analysis Seminar**,Université de Franche-Comté; October 2009
- **Analysis Seminar**,University of Illinois; April 2009
- **Analysis Seminar**,University of Illinois; October 2008

Contributed Talks

- **Great Plains Operator Theory Symposium**, Washington University, St. Louis, MO; May 2022
- **Great Plains Operator Theory Symposium**, Texas Christian University, Ft. Worth, TX; May 2017
- **C*-algebras, Dynamics and Classification**, Centre de Recerca Matemàtica, Bella Terra, Spain; June 2011
- **Great Plains Operator Theory Symposium**, Arizona State University, Phoenix, AZ; May 2011
- **Great Plains Operator Theory Symposium**, University of Cincinnati, Cincinnati, OH; June 2008

Conference Organization

- **Co-Organizer; East Coast Operator Algebra Symposium**, Purdue University October 2011
- **Co-Organizer; Great Plains Operator Theory Symposium**, Miami University May 2018

Graduate Advising

Supervisor for Master's degree projects for the following students

1. Dylan Harker, *Ranking NFL Teams Using Keener's Method with Variations on the Skew Function*, 2023
2. Nathan Wright, *Distances between finite dimensional Banach spaces via the John Ellipsoid*, 2022
3. David Li, *Unitary representations and the primitive ideal space*, 2022
4. Dane Linsky, *Cartan subalgebras in twisted group C* algebras*, 2021
5. Kyle Loftus, *The Prime Number Theorem and Riemann's Hypothesis*, 2021
6. Wonjin Song, *Application of Martingales in Financial Mathematics*, 2020
7. Garrett Tresch, *Calculating Entropy for Ergodic Systems*, 2018
8. Kevin Wood, *Scraping Data and Ranking* , 2017
9. Shawn Farris, *Simple Amenable Groups*, 2015

Teaching Experience

- **Miami University** August 2012-Present
  - Applied LInear Algebra; Fall 2022, Fall 2023
  - Differential Eqns/Linalg for Engineers; Fall 2019, Sp 2023, Fall 2023
  - Topology: Fall 2019
  - Differential Geometry: Sp 2019
  - Proof: Sp 2018, Fall 2018, Sp 2019
  - Abstract Algebra: Fall 2017
  - Linear Algebra: Fall 2015, Sp 2017,Sp 2018,Fall 2018, Sp 2021
  - Graduate Real Analysis: Fall 2015
  - Complex Analysis: Fall 2014, Fall 2016, Sp 2020, Sp 2021
  - Calculus III: Fall 2014, Fall 2016,Sp 2020, Fall 2020 (2), Fall 2021
  - Independent Study: Spring 2014, Fall 2014, Spring 2015, Spring 2017
  - Calculus II: Fall 2013, Spring 2014, Fall 2017, Sp 2022, Sp 2023
  - Graduate Complex Analysis: Spring 2013, Spring 2016
  - Real Analysis: Fall 2012, Fall 2013, Spring 2017
  - Calculus I: Fall 2012
- **Purdue University** August 2010-May 2012
  - Linear Algebra II with Applications: Spring 2012
  - Foundations of Analysis: Fall 2011
  - Elementary Linear Algebra: Spring 2011
  - Ordinary Differential Equations: Fall 2010

Daniel S. Farley

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	Miami University
	Oxford, OH 45056
Office Phone:	(513)529-3555
E-mail:	farleyds@miamioh.edu

Education

Ph.D. in Mathematics. Binghamton University (SUNY). Binghamton, NY; May 2000.
Dissertation title: *Finiteness and CAT(0) properties of diagram groups.*
Advisor: Ross Geoghegan.

M.S. in Mathematics. Binghamton University (SUNY); May 1996.

B.A. in Mathematics. Binghamton University (SUNY); May 1994.

Professional Experience

Associate Professor, Department of Mathematics.
Miami University, Oxford, OH: August 2014 to present.

Assistant Professor, Department of Mathematics.
Miami University, Oxford, OH: August 2010 to July 2014.

Visiting Assistant Professor, Department of Mathematics.
Miami University, Oxford, OH: August 2006 to August 2010.

Guest at Max Planck Institute for Mathematics.
Bonn, Germany: February 2006 to July 2006.

Visitor at University of Muenster
Muenster, Germany: October 2005 to January 2006.

Visiting Assistant Professor, Department of Mathematics.
University of Illinois at Urbana-Champaign, Urbana, IL; Fall 2003 to Summer 2005.

Chowla Postdoctoral Fellow, Department of Mathematics.
The Pennsylvania State University, State College, PA; Fall 2000 to Spring 2003.

Teaching Assistant, Department of Mathematical Sciences.
Binghamton University (SUNY), Binghamton, NY; Fall 1994 to Spring 2000.

Selected Publications

- D. S. Farley *Expansion Sets and Finiteness Properties* (50 pages). (submitted).
- D. S. Farley *Finiteness Properties of some groups of piecewise projective homeomorphisms* (45 pages as a preprint), arXiv:2204.03278.
- D. S. Farley, C. B. Hughes. *Finiteness Properties of Locally Defined Groups* (61 pages as a preprint), arXiv:2010.08035.
- D. S. Farley, *Local similarity groups with context-free co-word problem. Topological methods in group theory*, 67-91, London Math. Soc. Lecture Note Ser., 451, *Cambridge Univ. Press, Cambridge*, 2018.
- D. S. Farley, *Braided diagram groups and local similarity groups. Geometric and cohomological group theory*, 15-33, London Math. Soc. Lecture Note Ser., 444. *Cambridge Univ. Press, Cambridge*, 2018.
- Audino, Samuel; Aydel, Delaney R.; Farley, Daniel, *Quasiautomorphism groups of type F_∞*. *Algebr. Geom. Topol.* 18 (2018), no. 4, 2339-2369.
- D. S. Farley, I. J. Ortiz, *Algebraic K-theory of Crystallographic Groups: The Three-Dimensional Splitting Case* (x+148 pages) volume 2113 in *Lecture Notes in Mathematics* (Springer), 2014.
- D. S. Farley, C. B. Hughes, *Finiteness Properties of Some Groups of Local Similarities*, *Proc. Edinb. Math. Soc. (2)* **58** (2015), no. 2, 379-402.
- D. S. Farley. *Constructions of $E_{\mathcal{VC}}$ and $E_{\mathcal{FBC}}$ for CAT(0) groups. Algebraic and Geometric Topology* **10** (2010), 2229-2250.
- D. S. Farley, *The Action of Thompson's Group on a CAT(0) Boundary*, *Groups Geom. Dyn.* **2** (2008), no. 2, 185-222.
- D. S. Farley, L. Sabalka, *On the Cohomology Rings of Tree Braid Groups*, *J. Pure Appl. Algebra* **212** (2008), no. 1, 53-71.
- D. S. Farley. *Presentations for the Cohomology Rings of Tree Braid Groups*, *Topology and Robotics* 145-172, Contemp. Math., 438, Amer. Math. Soc., Providence, RI, 2007.
- D. S. Farley, *Homology of Tree Braid Groups*, *Topological and asymptotic aspects of group theory*, 101–112, Contemp. Math., 394, Amer. Math. Soc., Providence, RI, 2006.
- D. S. Farley, L. Sabalka, *Discrete Morse Theory and Graph Braid Groups*, *Algebr. Geom. Topol.* **5** (2005), 1075–1109 (electronic).
- D. S. Farley, *Homological and Finiteness Properties of Picture Groups*, *Trans. Amer. Math. Soc.* **357** (2005), no. 9, 3567–3584 (electronic).
- D. S. Farley, *Actions of Picture Groups on CAT(0) Cubical Complexes*, *Geom. Dedicata* **110** (2005), 221–242.
- D. S. Farley, *Proper Isometric Actions of Thompson's Groups on Hilbert Space*, *International Mathematical Research Notices*, 2003, no.45, p. 2409-2414.
- D. S. Farley, *Finiteness and CAT(0) Properties of Diagram Groups*, *Topology* **42** 2003, p. 1065-1082.

Jason Gaddis

Curriculum Vitae

Education

2009–2013 **PhD in Mathematics**, *University of Wisconsin-Milwaukee (UWM)*, Advisor: Dr. Allen Bell
Dissertation Title: *PBW deformations of Artin-Schelter regular algebras and their homogenizations*
2007–2009 **MS in Mathematics**, *UWM*
1999–2003 **BA in Journalism and Mathematics**, *Indiana University*, Bloomington

Employment

2023–present **Associate Professor of Mathematics**, *Miami University (MU)*
2017–2023 **Assistant Professor of Mathematics**, *Miami University (MU)*
2014–2017 **Teacher-Scholar Postdoctoral Fellow**, *Wake Forest University (WFU)*
2013–2014 **Teaching Visitor**, *University of California, San Diego (UCSD)*
2010–2013 **Summer Instructor - Forte Bridge Program**, *UWM College of Engineering & Applied Science*
2007–2013 **Graduate Teaching Assistant**, *UWM Department of Mathematical Sciences*
2006–2007 **High School Mathematics Teacher**, *Pikesville High School*, Pikesville, MD
2003–2006 **High School Mathematics Teacher**, *Carver Vocational Technical High School*, Baltimore, MD

Research Interests

Noncommutative invariant theory and its interactions with noncommutative algebraic geometry.

Articles under review

1. (w/ T. Lamkin, T. Nguyen, C. Wright) *Quivers on four vertices supporting twisted graded CY algebras*, 2023, arXiv:2305.06418.
2. *The Weyl algebra and its friends: a survey*, 2023, arXiv:2305.01609.

Journal publications

1. (w/ K. Chan, R. Won, J. Zhang) *Ozone groups and centers of skew polynomial rings*, 2023, to appear in International Mathematics Research Notices, arXiv:2302.11471.
2. (w/ D. Rosso, R. Won) *Weight modules over Bell-Rogalski algebras*, Journal of Algebra, 2023, 633, 270-297.
3. (w/ P. Veerapen, X. Wang) *Reflection groups and rigidity of quadratic Poisson algebras*, Algebras and Representation Theory, 2023, 26, 329-358.
4. (w/ J. Barahona Kamsvaag) *Auslander's Theorem for dihedral actions on preprojective algebras of type A*, Canadian Mathematical Bulletin, 2023, 66 (1), 324-339.
5. (w/ D. Rosso) *Fixed rings of twisted generalized Weyl algebras*, Journal of Pure and Applied Algebra, 2023, 227 (4), 107257-107287.
6. (w/ X. Wang, D. Yee) *Cancellation and skew cancellation for Poisson algebras*, Mathematische Zeitschrift, 2022, 301, 3503-3523.
7. (w/ R. Won) *Pointed Hopf actions on quantum generalized Weyl algebras*, Journal of Algebra, 2022, 601, 312-331.
8. (w/ K. Chan, R. Won, J. Zhang) *Reflexive hull discriminants and applications*, Selecta Mathematica (New Series), 2022, 28 (2), Paper No. 40.
9. *Prime and semiprime quantum linear space smash products*, Glasgow Mathematical Journal, 2021, 63 (3), 503-514.
10. (w/ D. Rogalski) *Quivers supporting twisted Calabi-Yau algebras*, Journal of Pure and Applied Algebra, 2021, 225 (9), 106645-106678.
11. *Isomorphisms of graded path algebras*, Proceedings of the American Mathematical Society, 2021, 149 (4), 1395-1403.
12. (w/ L. Ferraro, R. Won) *Simple $\mathbb{Z}$-graded domains of Gelfand-Kirillov dimension two*, Journal of Algebra, 2020, 562, 433-465.
13. (w/ P. Ho) *Fixed rings of quantum generalized Weyl algebras*, Communications in Algebra, 2020, 48 (9), 4051-4064.
14. (w/ X. Wang) *The Zariski cancellation problem for Poisson algebras*, Journal of the London Mathematical Society, 2020, 101 (3), 1250-1279.

16. (w/ R. Won) *Fixed rings of generalized Weyl algebras*, Journal of Algebra, 2019, 536, 149-169.
17. (w/ R. Won, D. Yee) *Discriminants of Taft algebra smash products and applications*, Algebras and Representation Theory, 2019, 22 (4), 785-799.
18. (w/ D. Yee) *Congenial algebras: Extensions and examples*, Communications in Algebra, 2019, 47 (10), 4347-4357.
19. (w/ E. Kirkman, W. F. Moore, R. Won) *Auslander's Theorem for permutation actions on noncommutative algebras*, Proceedings of the American Mathematical Society, 2019, 147 (5), 1881-1896.
20. *The isomorphism problem for quantum affine spaces, homogenized quantized Weyl algebras, and quantum matrix algebras*, Journal of Pure and Applied Algebra, 2017, 221 (10), 2511-2524.
21. (w/ E. Kirkman, W. F. Moore) *On the discriminant of twisted tensor products*, Journal of Algebra, 2017, 477, 29-55.
22. (w/ K. Price) *Some algebras similar to the Jordanian matrix algebra*, Communications in Algebra, 2017, 45 (5), 2091-2104.
23. *Two-parameter analogs of the Heisenberg enveloping algebra*, Communications in Algebra, 2016, 44 (11), 4637-4653.
24. *PBW deformations of Artin-Schelter regular algebras*, Journal of Algebra and its Applications, 2016, 15 (4), 1650064, 15pp.
25. *Two-generated algebras and standard-form congruence*, Communications in Algebra, 2015, 43 (4), 1668-1686.

Refereed conference proceedings

1. (w/ T. Lamkin) *Centers and automorphisms of PI quantum matrix algebras*, to appear in Geometric and Algebraic Aspects of Quantum Groups and Related Topics (AMS Contemporary Mathematics), 2023, in press (arXiv:2207.11956).
2. *Isomorphisms of some quantum spaces*, Ring Theory and Its Applications (AMS Contemporary Mathematics), 2014, 609, 107-116.

Awards and Funding

2019 **Outstanding Professor Award**, Nominated by graduating senior
2019 **Summer Research Grant, $5,000**, Award from CAS to conduct summer research
2018 **Summer Research Appointment, $6200**, MU Committee on Faculty Research award for summer research
2013 **AMS Sectional Meeting Graduate Student Travel Grant**, Funds to travel to an AMS sectional meeting
2013 **JMM Graduate Student Travel Grant**, Funds to travel to the annual meeting in San Diego, CA
2012 **UWM Graduate Student Travel Award**, Funds to present research at conferences
2011,2012 **Mark Lawrence Teply Award**, Recognition of research potential
2010 **Ernst Schwandt Teaching Award**, Recognition of outstanding teaching

Professional Talks

2024

TBD, Joint Mathematics Meeting, San Francisco, CA.

2023

TBD, Nonassociative Day Online, held virtually.

TBD, LSU Algebra and Number Theory seminar, Baton Rouge, LA

Poisson Invariant Theory, University of Washington guest lecture, Seattle, WA.

Centers and automorphisms of PI quantum matrix algebras, AMS Western Sectional Meeting, Fresno, CA.

Ozone groups and centers of skew polynomial rings, Seattle Noncommutative Algebra Day, Seattle, WA.

2022

An introduction to quantum symmetry (expository talk), Pi Mu Epsilon seminar, Oxford, OH.

Weight modules over Bell–Rogalski algebras, Auslander International Conference, Woods Hole, MA.

Pointed Hopf actions on quantum generalized Weyl algebras, Banff International Research Station, Banff, Canada.

The Weyl algebra and its friends, History of Mathematics, Oxford, OH.

Cancellation and skew cancellation for Poisson algebras, Joint Mathematics Meeting, Seattle, WA (cancelled).

2021

Reflexive hull discriminants and applications, Online Noncommutative Algebra Seminar, held virtually.

Cancellation and skew cancellation for Poisson algebras, AMS Southeastern Sectional Meeting, held virtually.

Dihedral actions on type A preprojective algebras, AMS Central Sectional Meeting, held virtually

Reflexive hull discriminants and applications, UWM Algebra Seminar, held virtually.

Reflexive hull discriminants and applications, Joint Mathematics Meeting, held virtually.

2020

Invariant theory of twisted generalized Weyl algebras, Seattle Noncommutative Algebra Day, held virtually.

Actions of quantum linear spaces on quantum algebras, AMS Western Sectional Meeting, Fresno, CA (cancelled).

Translation principle for generalized Weyl algebras, DePaul Algebra, Combinatorics and Number Theory Seminar, Chicago, IL.

2019

Translation principle for generalized Weyl algebras, Noncommutative Algebraic Geometry workshop, Shanghai, China.

Invariant theory of generalized Weyl algebras, AMS Eastern Sectional Meeting, Gainesville, FL.

Hopf algebras (expository talk), OSU Quantum Symmetries workshop, Columbus, OH.

2018

Quivers supporting graded Calabi-Yau algebras, University of Washington Algebra Seminar, Seattle, WA.

Isomorphisms of graded path algebras, AMS Western Sectional Meeting, Portland, OR.

Auslander's Theorem for permutation actions on (-1)*-skew polynomial rings*, Wright State Math. Colloquium, Dayton, OH.

Quivers supporting graded Calabi-Yau algebras, Joint Mathematics Meeting, San Diego, CA.

2017

Auslander's Theorem for permutation actions on (-1)*-skew polynomial rings*, UWM Math. Colloquium, Milwaukee, WI.

Auslander's Theorem for permutation actions on (-1)*-skew polynomial rings*, Loyola U. Algebra Seminar, Chicago, IL.

A birational equivalence between non-commutative analogs of $\mathbb{P}^2$ *and* $\mathbb{P}^1 \times \mathbb{P}^1$, Algebra and Connections to Geometry, Oxford, OH.

Quivers supporting graded Calabi-Yau algebras, AMS Central Sectional Meeting, Denton, TX.

A birational equivalence between non-commutative analogs of $\mathbb{P}^2$ *and* $\mathbb{P}^1 \times \mathbb{P}^1$, AMS Central Sectional Meeting, Denton, TX.

Discriminants of Taft algebra smash products and applications, Algebra Extravanganza!, Philadelphia, PA.

Isomorphism problems in noncommutative algebra, AMS Western Sectional Meeting, Pullman, WA.

Auslander's Theorem for permutation actions on (-1)*-skew polynomial rings*, Joint Mathematics Meeting, Atlanta, GA.

2016

Recent results on quantum rigidity, A Celebration of Mathematics at UW-Milwaukee, Milwaukee, WI.

On the discriminant of twisted tensor products, AMS Western Sectional Meeting, Denver, CO.

2015

Algebras similar to the Jordanian matrix algebra, AMS Western Sectional Meeting, Las Vegas, NV.

Algebras similar to the Jordanian matrix algebra, AMS Eastern Sectional Meeting, Washington, DC.

Blowups of 4-dimensional Sklyanin algebras, AMS Central Sectional Meeting, East Lansing, MI.

2013

Analogs of the harmonic oscillator problem, UCSD Algebra Seminar, San Diego, CA.

PBW deformations of Artin-Schelter regular algebras, AMS Central Sectional Meeting, Ames, IA.

Analogs of the harmonic oscillator problem, University of Wisconsin Lie Theory Seminar, Madison, WI.

PBW deformations of Artin-Schelter regular algebras, Joint Mathematics Meeting, San Diego, CA.

2012

Analogs of the harmonic oscillator problem, UWM Mathematics Colloquium, Milawaukee, WI.

Noncommutative Geometric Algebras, Midwest Algebraic Geometry Graduate Conference, Madison, WI.

Homogenizations and skew homogenizations of Artin-Schelter regular algebras, DePaul Algebra Seminar, Chicago, IL.

Essentially regular algebras, Algebra, Combinatorics, Dynamics, and Applications, Belfast, Northern Ireland, UK.

Essentially regular algebras, Denison Conference 31, Columbus, OH.

Professional activities

Ongoing Referee for Algebras and Representation Theory, Bulletin of the London Mathematical Society, Canadian Mathematical Bulletin, Czechoslovak Mathematical Journal, Communications in Algebra, Communications in Mathematics and Statistics, Communications of the Korean Mathematical Society, International Electronic Journal of Algebra, Involve, Journal of Algebra, Journal of Mathematical Physics, Journal of Pure and Applied Algebra, Pacific Journal of Mathematics, Proceedings of the American Mathematical Society, Springer's Association for Women in

Ongoing Mathematical review writer for AMS Math Reviews and zbMATH.

Ongoing Session co-organizer for AMS Sectional meetings

- 2023 Spring Central, *Interactions Between Noncommutative Ring Theory and Algebraic Geometry*, with Robert Won.
- 2022 Spring Central, *Combinatorics and Representations of Noncommutative Algebras*, with Daniele Rosso.
- 2021 Spring Central, *Interactions between Representation Theory, Poisson Geometry, and Noncommutative Algebra*, with Padmini Veerapen and Xingting Wang.
- 2019 Fall Central, *Noncommutative Algebra and Algebraic Geometry*, with Dennis Keeler.
- 2018 Spring Central, *Noncommutative Algebra and Noncommutative Algebraic Geometry*, with Robert Won.
- 2016 Fall Eastern, *Noncommutative Ring Theory and Noncommutative Algebra*, with Manuel Reyes.

May 2023 Chaired a session at the AMS Spring Western Sectional Meeting

April 2023 Participated in an AMS engaged pedagogy workshop 'Mathematical Foundations for Democratic Processes'

March 2023 Chaired a session at Seattle Noncommutative Algebra Day

Dec 2023 Reviewed a book proposal for Cambridge University Press

August 2022 Reviewed thesis proposal for Universidad Nacional de Colombia

May 2021 Chaired a session at Seattle Noncommutative Algebra Day

March 2021 Reviewed a book proposal for CRC Press.

2018-2019 Alumni Teaching Scholar

2018 Completed SafeZone 101 training

2017,2018 New Faculty Research Community

2017 New Faculty Teaching Community

Professional Affiliations

American Mathematical Society, Association for Women in Mathematics

Service

Ongoing Chair of Undergraduate Recruitment Committee (Fall 2022-present)

Ongoing Alumni Relations Committee/Departmental Social Media Manager (Fall 2021-present)

Ongoing Maintain a load of up to 13 major advisees. Advisor Level A

Ongoing Master's Thesis/Project committee member (* indicates my advisee)

- 2023 Leah Andaloro, Dylan Harker, Andy Moawad
- 2022 Emeline Root
- 2021 Jacob Barahona Kamsvaag*
- 2020 Anthony Wilkie
- 2018 Delaney Aydel*

Ongoing Guest lectures: STA147, MTH147, MTH190, PSY112

2022-2023 Graduate Committee

2017-2022 Awards/Honors Committee

2018-2021 Algebra Comprehensive Exam Committee (Winter 2018, 2019, 2020, 2021, Summer 2019)

2018,2019 Math/Stat awards banquet presenter

2018,2019 Summer Reading Program Facilitator

2018 Miami Algebra seminar organizer

2018 Algebra short course instructor for SUMSRI REU

2018 Panelist for GSC 603 discussion on the academic job market

Graduate Research Supervised

Jacob Barahona Kamsvaag: Auslander's Theorem for preprojective algebras of type A_n. Publication in *Canadian Mathematical Bulletin*. 2019-2021.

Delaney Aydel: Actions of general quantum linear groups on path algebras of quivers. 2017-2018.

Undergraduate Research Supervised

Daryl Zazycki: Isomorphisms of twisted Calabi-Yau algebras of global dimension two. Ongoing

Thomas Lamkin, Thy Nguyen, Caleb Wright: Quivers on four vertices supporting twisted graded Calabi-Yau algebras. Publication submitted. Spring 2022

Thomas Lamkin: Automorphisms of quantum matrix algebras. Publication to appear in *AMS Contemporary Mathematics*. Fall 2021-Spring 2022

Thomas Lamkin: Enveloping algebras of Poisson superalgebras. Publication submitted. Summer 2020

Phuong Ho: Fixed rings of quantum generalized Weyl algebras. Publication in *Communications in Algebra*. Summer 2019.

Regan Kapalko: Guided reading assignments in Calculus III. Spring 2019.

Ke Liang: Four vertex quivers supporting graded Calabi-Yau algebras of global dimension 3. Summer 2016.

Siqi Li: Stabilizer groups for standard forms under matrix congruence. Summer 2016.

Courses Taught at Miami

Math 621	Abstract Algebra (graduate), Fall 2018, Fall 2022
Math 421	Introduction to Abstract Algebra, Fall 2017, Fall 2019, Spring 2021, Spring 2022, Fall 2023
Math 411	Foundations of Geometry, Spring 2018, Fall 2020
Math 410	Voting Theory, Spring 2023
Math 252	Calculus III, Spring 2019
Math 251	Calculus II, Spring 2018, Fall 2019, Spring 2023
Math 231	Elements of Discrete Mathematics, Fall 2022, Fall 2023
Math 222T/331T	Intro to Proofs/Linear Algebra (honors), Fall 2021
Math 222	Intro to Linear Algebra, Fall 2017, Fall 2020, Fall 2021

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EDUCATION

University of Virginia
Ph.D., Mathematics Education

Florida State University
M.S., Mathematics Education

Hollins College
B.A. with honor, Mathematics, Computer Science

PROFESSIONAL EXPERIENCE

Miami University
Professor, Department of Mathematics — *2014 - present*
Associate Professor, Department of Mathematics — *2008 - 2014*
Assistant Professor, Department of Mathematics & Statistics — *2002 - 2008*

University of Virginia — *2001-2002*
Lecturer, Department of Curriculum, Instruction & Special Education
Taught *Secondary Mathematics Teaching Associateship* seminar and *Secondary Mathematics Field Projects* course

University of Virginia — 1997- 2001
Graduate Fellow, Center for Technology and Teacher Education
Developed materials to prepare pre-service teachers to effectively integrate technology in middle and secondary mathematics

Graduate Assistant, Curry School of Education
Co-taught *Secondary Mathematics Methods* and *Elementary Mathematics Methods* courses; and supervised secondary mathematics student teachers

Hollins College — *Fall 1997*
Lecturer, Department of Mathematics & Statistics
Taught Pre-Calculus and Mathematical Ideas

Florida State University *1993- 1995*
Graduate Teaching Assistant, Department of Mathematics
Taught College Algebra, Trigonometry, Pre-Calculus and Business Calculus

HONORS, AWARDS & RECOGNITION

Ohio Council of Teachers of Mathematics Kenneth Cummins Award for University Faculty awarded to a college-level teacher of mathematics or mathematics education in the state of Ohio for exemplary mathematics teaching, 2021.

Miami University Center for Teaching Excellence Faculty Commendations, Miami University asks graduating students to complete a survey regarding their experience. Students are specifically asked about faculty or staff members who made a positive impact on their learning and development while at Miami. Miami personnel that are singled out are sent a letter commending them for their service and influence, 2021, 2020, *Top 100 Faculty* 2019, 2018, *Top 100 Faculty* 2017, 2016, 2015, 2014, 2013, *Top 100 Faculty* 2012, & 2010.

Permanent Graduate Level A Standing, the Miami University Graduate School grants Level A faculty standing to individuals who provide evidence of disciplinary contributions that represent the highest achievements in scholarship, awarded December 2020.

Provost's Excellence in Academic Advising Award Nominee, awarded to faculty and staff members who spend a significant portion of their time providing exemplary direct delivery of academic advising services to undergraduate students and have exhibited exceptional leadership in advancing academic advising at Miami University, 2020 & 2019.

Academic Advising Excellence Award, Master Advisor Certification, designated for Miami University faculty who complete all academic advisor training modules and also demonstrate evidence of excellence in advising, 2020.

Miami University Outstanding Professor Award Nominee by the Miami University Associated Student Government. This university honor is for faculty who made a significant difference in students' lives and careers, 2019.

Miami University M. Pauline Priest Barney Mathematics Fellowship awarded to Wayne Nirode and Suzanne Harper of the Department of Mathematics to support a major teaching project, 2018.

Institute for Miami Leadership Development, a competitively-selected Leadership Development Institute for faculty and staff at Miami University. The curriculum covers General Leadership Principles, Innovation and Higher Education Trends, Development and University Advancement, Wellness and Work/Life Balance, Collaborative Leadership and Communication, Lifecycle of Student Success, and Budgets and Financial Statements. Sessions are taught by leaders in their fields, as well as campus administrators. Successful

completion of the Institute requires participants to complete a Leadership Project related to their role at the Institution, and to engage in introspection and skill development surrounding their own leadership roles and identity as a leader, August 2017 - December 2018.

Academic Advising Excellence Award, Level-A Advisor Certification, designated for Miami University faculty who complete academic advisor training modules (1-6), 2016.

Academic Advising Excellence Award, Level-B Advisor Certification, designated for Miami University faculty who complete academic advisor training modules (1-4), 2015.

National Technology Leadership Initiative Fellowship for Mathematics Education, co-sponsored by the Society for Technology and Teacher Education and Association of Mathematics Teacher Education, for best research paper "Teachers' statistical problem solving with dynamic technology: Research results across multiple institutions," 2012.

National Society of Leadership and Success Excellence in Teaching Award, awarded to faculty members who teach with passion, inspire students beyond the classroom, and make a lasting difference in the lives of students, 2012.

Miami University M. Pauline Priest Barney Mathematics Fellowship awarded to a member of the Department of Mathematics to support a major teaching project, 2011.

Miami University Alumni Association Effective Educator Award Nominee, awarded to Miami University faculty or staff member whose impact extends far beyond the traditional parameters of education, 2010-11.

Miami University Alumni Association Effective Educator Award Nominee, awarded to Miami University faculty or staff member whose impact extends far beyond the traditional parameters of education, 2008-09.

National Technology Leadership Initiative Fellowship for Mathematics Education, co-sponsored by the Society for Technology and Teacher Education and Association of Mathematics Teacher Education, for best research presentation "Implementing performance-based technology standards in mathematics education courses," 2004.

Phi Beta Kappa, Iota of Virginia, Honor Society, recognizes outstanding scholarship and broad interests in liberal studies, inducted 1993.

Sigma Xi, Scientific Research Society, emphasizes the pursuit of knowledge through research in the sciences and mathematics, inducted 1993.

Elise Deyerle Lewis Award for Excellence in Mathematics, awarded to a student at Hollins College showing great promise in mathematics, 1992.

Omicron Delta Kappa, Leadership Honor Society, fosters the development of responsible leadership and promotes involvement on campus and in the surrounding community, inducted 1992.

CERTIFICATIONS

ACUE Managing the Impact of Biases, Association of College and University Educators Module, October 2023.

ACUE Reducing Microaggressions, Association of College and University Educators Module, October 2023.

Human Research, Humans as Subjects IRB Basic Course, and Refresher 2 Course, CITI Program, valid December 2021 - December 2024.

Campus Security Authority Recertification Course, valid January 2022 - February 2023 (renewed annually).

Diversity, Equity and Inclusion, completed online professional development course created by Miami University, Spring 2022.

Safe Zone Training, a campus-wide program designed to educate students, faculty, and staff on LGBTQ identities and experiences and build their skills in actively creating a Miami community that is inclusive for people of all sexual orientations and gender identities and expressions, February 2012.

PUBLICATIONS

Simon, L., **Harper, S.**, & Cox, D. (2023). Developing design literacy to support a culture of mathematical modeling. In S. Harper & D. Cox (Eds.) *Modern tasks to provoke transformational thinking* (pp. 1-21). National Council of Teachers of Mathematics.

Harper, S., & Cox, D. (Eds.) (2023). *Modern tasks to provoke transformational thinking.* National Council of Teachers of Mathematics.

Cox, D. C., **Harper, S. R.**, & Keiser, J. M. (2023). Widening the epistemological window. In T. Lamberg & D. Moss (Eds.) Proceedings of the forty-fifth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol. 2) (pp. 267-271). University of Nevada, Reno.

Keiser, J. M., **Harper, S. R.**, & Cox, D. C. (2023). Using number talks to reason about early number concepts in authentic ways.Proceedings of the forty-fifth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol. 2) (pp. 841-842). University of Nevada, Reno.

Cox, D.C., **Harper, S.R.**, & Keiser, J.M. (2021). Preservice elementary teachers' beliefs about the role of definition in the learning of mathematics. *Journal of Educational Research and Innovation*, 9(1), 1-23 (article 4).

Harper, S.R. & Driskell, S.O. (2021). Prospective mathematics teachers' geometric definitions and conceptions about properties of two-dimensional shapes. In D. Olanoff, K. Johnson, & S. Spitzer (Eds.) *Proceedings of the 43rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 973-978). Philadelphia, PA.

Harper, S.R. & Cox, D.C. (2020). Influences on early-career mathematics teachers' vision of teaching with technology: A longitudinal study. In Sacristán, A.I., Cortés-Zavala, J.C. & Ruiz-Arias, P.M. (Eds.), *Proceedings of the 42*nd *annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1863-1867), Mazatlán, Sinaloa, Mexico.

Harper, S.R., Cox, D.C., & Keiser, J.M. (Accepted, 2019). The impact of defining activity on the beliefs of prospective elementary teachers. Submitted to the Topic Study Group 28: Preservice Mathematics Teacher Education at Primary Level of the *14th International Congress on Mathematical Education* Conference Proceedings. Shanghai, China. Conference was postponed.

Harper, S.R. & Cox, D.C. (2019). A longitudinal study of inservice teachers' vision for teaching with technology. In Otten, S., Candela, A. G., de Araujo, Z., Haines, C., & Munter, C. (Eds.), *Proceedings of the 41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 599-600). St. Louis, MO: University of Missouri.

Cox, D., **Harper, S.R.**, & Keiser, J.M. (2018). Reflecting on the act of defining. In T.E. Hodges, G. J. Roy, & A. M. Tyminski, (Eds.), *Proceedings of the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 735-738). Greenville, SC: University of South Carolina & Clemson University.

Cox, D.C., **Harper, S.R.**, & Edwards, M.T. (2018). Screencasting as a tool to capture moments of authentic creativity. In V. Freiman & J. Tassell, (Eds.), *Creativity and Technology in Mathematics Education* (Vol. 9 in *Mathematics Education in the Digital Era* Series) (pp. 33-57). New York: Springer.

Harper, S.R. & Cox, D.C. (2018). Screencasting to study creative insight and create records of authentic problem solving practice. In J. Foster (Ed.), *Proceedings of the 29th Annual International Conference on Technology in Collegiate Mathematics.*

Cox, D.C. & **Harper, S.R.** (2017). Using narratives to articulate mathematical problem solving and posing in a technological environment. In E. Galindo & J. Newton, (Eds.), *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 985-988). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.

Harper, S.R. & Cox, D.C. (2017). Quickfire challenges to inspire problem solving. *Mathematics Teacher, 110*(9), 686-692. [cover article]

Cox, D.C. & **Harper, S.R.** (2016). Documenting a developing vision of teaching mathematics with technology. In M.L. Niess, S. Driskell & K. Hollebrands, (Eds.), *Handbook of Research on Transforming Mathematics Teacher Education in the Digital Age* (pp. 166-189). Hershey, PA: IGI Global.

Naresh, N., **Harper, S.R.**, Keiser, J.M., & Krumpe, N. (2014). Probability explorations in a cultural context. *Mathematics Teacher, 108*(3), 184-192.

Lee, H.S., Kersaint, G., **Harper, S.R.**, Driskell, S.O., Jones, D., Leatham, K., Angotti, R., & Adu-Gamfi, K. (2014). Teachers' use of transnumeration in solving statistical tasks with dynamic statistical software. *Statistics Education Research Journal, 13*(1), 25-52.

Edwards, M.T., **Harper, S.R.**, Quinlan, J., Phelps, S., & Cox, D. (2014). Cultivating deductive thinking with angle chasing. *Mathematics Teacher, 107*(6), 426-431.

Edwards, M.T., **Harper, S.R.**, & Cox, D. (2013). Authentic tasks in a standards-based world. *Mathematics Teacher, 106*(5), 346-353.

Edwards, M. T., **Harper, S.R.**, & Klein, R.M. (2013). And now this . . . problem: Neil Postman, technology, and the secondary school mathematics curriculum. In M. Clough, J. Olson & D. Niederhauser, (Eds.), *The Nature of Technology: Implications for Teaching and Learning* (pp. 163-188). Boston, MA: Sense Publishers.

Harper, S.R. & Cox, D.C. (2012). Developing TPACK alongside professional vision of teaching mathematics with technology. In L.R. Van Zoest, J.-J. Lo, & J.L. Kratky (Eds.) *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1073-1080). Kalamazoo, MI: Western Michigan University.

Edwards, M.T., **Harper, S.R.**, Shay, N., & Edwards, J.F. (2012). Sample course 4: Adolescent mathematics II. In J.W. Nutta, K. Mokhtari, & C. Strebel (Eds.), *Preparing every teacher to reach English learners: A practical guide for teacher educators* (pp. 163-166). Cambridge, MA: Harvard Education Press. Awarded the American Association of Colleges for Teacher Education 2013 Outstanding Book Award.

Lee, H.S., Kersaint, G., **Harper, S.**, Driskell, S.O., & Leatham, K.R. (2012). Teachers' statistical problem solving with dynamic technology: Research results across multiple institutions. *Contemporary Issues in Technology and Teacher Education, 12*(3). Manuscript was awarded the National Technology Leadership Initiative Award.

Harper, S.R. & Edwards, M.T. (2011). A new recipe: No more cookbook lessons. *Mathematics Teacher 105*(3), 180-188. [cover article]

Lee, H.S., Driskell, S.O., **Harper, S.R.**, Leatham, K., Kersaint, G., & Agnotti, R. (2011). Prospective teachers' use of representations in solving statistical tasks with dynamic statistical software. In L. Wiest & Lamberg, T. (Eds.) Proceedings of the *33rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 268-275). Reno, NV: University of Nevada, Reno.

Harper, S.R., Klein, R., & Edwards, M.T. (2010). On using technology to confront information overload in a mathematics classroom. *Journal of the Research Center for Educational Technology, 6*(2), pp. 48-62.

Edwards, M.T. & **Harper, S.R.** (2010). Paint bucket polygons: Explorations of meaningful mathematical definitions. *Teaching Children Mathematics, 16*(7), 220-228.

Wanko, J.J., **Harper, S.R.**, Edwards, M.T., Johnson, I.D., & deSaint-Rat, M. (2010). Listening to learn, learning to listen: Fostering practitioner pedagogical content knowledge with Thinker-Doer tasks. In P. Brosnan, Erchick, D.B., & Flevares, L. (Eds.) *Proceedings of the 32nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1298-1307). Columbus, OH: The Ohio State University.

Niess, M.L., Ronau, R.N., Shafer, K.G., Driskell, S.O., **Harper S.R.**, Johnston, C., Browning, C., Özgün-Koca, S.A., & Kersaint, G. (2009). Mathematics teacher TPACK standards and development model. *Contemporary Issues in Technology and Teacher Education*, *9*(1), 4-24.

Harper, S.R. & Edwards, M.T. (2009). Purposeful dragging: Motivating deeper mathematical understanding through dynamic geometry exploration. In J. Foster (Ed.) *Proceedings of the Twenty-first Annual International Conference on Technology in Collegiate Mathematics* [ICTCM], (pp. 123-127).

Harper, S.R. & Driskell, S. (2006, July 10). An investigation of historical geometric constructions. *Convergence: Where mathematics, history and teaching interact*, Article 1207.

Rodrigues, M., **Harper, S.R.**, & Driskell, S.O. (2006). Sliders and parameters extend interactive software. *Mathematics Teacher, 99*(9), 627-631.

Harper, S.R. & Driskell, S.O. (2006). Using the iterate command to construct recursive geometric sketches. *Mathematics Teacher, 99*(6), 442-445.

Harper, S.R. & Driskell, S.O. (2005). Capturing video of dynamic computer activity. *Mathematics Teacher, 99*(2), 126-130.

Stohl, H. & **Harper, S.R.** (2004). Technology tips: Capturing and using computer images. *Mathematics Teacher, 98*(3), 200-204.

Harper, S.R. (2004). Mathematics, technology in K-12 content areas. In A. Kovalchick & K. Dawson (Eds.), *Education and Technology: An Encyclopedia* (Vol. 2) (pp. 427-430). Santa Barbara, CA: ABC-CLIO.

Stohl, H. & **Harper, S.R.** (2004). Technology tips: Graphing functions, tangents, and derivatives in Geometer's Sketchpad. *Mathematics Teacher, 98*(2), 136-140.

Harper, S.R. (2004). Students' interpretations of misleading graphs. *Mathematics Teaching in the Middle School, 9*(6), 340-343.

Harper, S.R. (2003). Enhancing elementary pre-service teachers' knowledge of geometric transformations through the use of dynamic geometry computer software. In C. Crawford, N. Davis, J. Price, R. Weber, & D.A. Willis (Eds.) *Proceedings of Society for Information Technology & Teacher Education International Conference 2003* (pp. 2909-2916). Chesapeake, VA: Association for the Advancement of Computing in Education.

Harper, S.R. (2002). *Enhancing elementary pre-service teachers' knowledge of geometric transformations* (Publication No. 3030678) [Doctoral dissertation, University of Virginia]. ProQuest Dissertations Publishing, 1-533.

Harper, S.R., Schirack, S.O., Stohl, H.D., & Garofalo, J. (2001). Learning mathematics and developing pedagogy with technology: A reply to Browning and Klespis. *Contemporary Issues in Technology and Teacher Education, 1*(3), 346-354.

Harper, S.R. (2001). Exploring infinite series using Baravelle spirals. *Virginia Mathematics Teacher, 27*(2), 46-54.

Garofalo, J., Drier, H.S., **Harper, S.R.**, Timmerman, M.A., & Shockey, T.L. (2000). Promoting appropriate uses of technology in mathematics teacher preparation. *Contemporary Issues in Technology and Teacher Education, 1*(1), 66-88.

Garofalo, J., Shockey, T.L., **Harper, S.R.**, & Drier, H.S. (1999). Impact Project at Virginia: Promoting appropriate uses of technology in mathematics. *Virginia Mathematics Teacher, 25*(2), 14-15.

Invited Journal Articles and Publications

Harper, S.R. (2021). SWOCTM blog post: Key elements of a good student teaching experience. *#SWOCTMlearns Blast*, Southwest Ohio Council of Teachers of Mathematics Monthly Newsletter.

Cox, D., **Harper, S.** & Keiser, J. (2019). On the shoulders of giants: Beatriz Silva D'Ambrosio. *Ohio Council of Teachers of Mathematics eNewsletter.*

Edwards, M.T. & **Harper, S.R.** (March 2008). Nspiring Times, Inquiring Minds: Fostering Critical Examinations of Curriculum with Handheld Graphing Technology. *Texas Instruments Mathematics Teacher Education eNewsletter.*

PRESENTATIONS

Harper, S.R., Cox, D.C., Simon, L., & Glassmeyer, D. (October 2023). *Modern Math Tasks: Transforming Change through Political, Social, Civic, and Design Literacies.* Session presented at the National Council of Teachers of Mathematics Conference, Washington, D.C.

Gorsuch, R., **Harper, S.R.**, & Mamar, J. (October 2023). *Ins(pi)reUp: A community for early-career and prospective mathematics teachers: Part 2.* Session presented at the Ohio Council of Teachers of Mathematics Conference, Sandusky, OH.

Gorsuch, R., **Harper, S.R.**, & Mamar, J. (October 2023). *Ins(pi)reUp: A community for early-career and prospective mathematics teachers: Part 1.* Session presented at the Ohio Council of Teachers of Mathematics Conference, Sandusky, OH.

Cox, D. C., **Harper, S. R.**, & Keiser, J. M. (October 2023). *Widening the epistemological window.* Session presented at the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Reno, NV.

Keiser, J. M., **Harper, S. R.**, & Cox, D. C. (October 2023). *Using number talks to reason about early number concepts in authentic ways.* Poster session presented at the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Reno, NV.

Mamar, J., **Harper, S.R.**, & Gorsuch, R. (April 2023). *"Our ability to lead is impacted by what we know": Come collaborate and grow with us as we explore division with whole numbers, decimals, & fractions.* Ins(pi)reUp session presented at the Ohio Council of Teachers of Mathematics Connector Event, virtual session.

Cox, D.C. & **Harper, S.R.** (March 2023). *Empathetic methodologies: Opening the epistemological door for others.* Session presented at the 50th Annual Meeting of the Research Council on Mathematics Learning, Las Vegas, NV.

Harper, S.R., Mamar, J., & Gorsuch, R. (January 2023). *Using games to promote mathematical thinking.* Ins(pi)reUp session presented at the Ohio Council of Teachers of Mathematics Connector Event, virtual session.

Koestler, C., Gorsuch, R., **Harper, S.R.**, & Mamer, J. (October 2022). *Ins(pi)reUp Opening Session.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Sharonville, OH.

Harper, S.R. (September 2022). *Using Hippias' quadratrix to trisect an angle.* Session presented at the 48th Annual Miami University Mathematics Conference: *History of Mathematics*, Oxford, OH.

Harper, S.R. (April 2022). *Ins(pi)reUp: Reflecting on Mathematics Leadership.* Session presented at the Ohio Council of Teachers of Mathematics Connector Event, virtual session.

Harper, S.R., Cox, D.C., Abel, T., Alyami, H., Desai, S., Glassmeyer, D., Safi, F., Knurek, R., & Hudson, R. (February 2022). *Developing the mathematical literacy of prospective secondary mathematics teachers through interdisciplinary and relevant contexts.* Session presented at the Association of Mathematics Teacher Educators, Henderson, NV.

Caniglia, J., Gorsuch, R., Koestler, C., & **Harper, S.** (October 2021). *Ins(pi)reUp 2.0 follow up.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, virtual conference.

Harper, S.R. & Driskell, S.O. (October 2021). *Prospective mathematics teachers' geometric definitions and conceptions about properties of two-dimensional shapes.* Session presented at the 43rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, hybrid conference in Philadelphia, PA.

Caniglia, J., Gorsuch, R., Koestler, C., & **Harper, S.** (October 2021). *Ins(pi)reUp 2.0.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, virtual conference.

Harper, S.R. & Cox, D.C. (May 2021). *Influences on early-career mathematics teachers' vision of teaching with technology: A longitudinal study.* Session presented at the 42nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, hybrid conference in Mazatlán, Sinaloa, Mexico.

Harper, S.R. & Cox, D.C. (February 2021). *Desmos activity builder at the intersection of content and practice.* Session presented at the Association of Mathematics Teacher Educators, virtual conference.

Harper, S.R. & Cox, D.C. (accepted for October 2020). *Illustrating tools to create records of authentic problem solving practice.* Submitted to the Ohio Council of Teachers of Mathematics, Sharonville, OH. [Session canceled]

Harper, S.R., Cox, D.C., & Keiser, J.M. (accepted for July 2020). *The impact of defining activity on the beliefs of prospective elementary teachers.* Submitted to the Topic Study Group 28: Preservice Mathematics Teacher Education at Primary Level of the 14^{th} *International Congress on Mathematical Education* Conference Proceedings. Shanghai, China. [Session canceled]

Harper, S.R. & Cox, D.C. (February 2020). *Engaging alumni: Linking longitudinal research to program evaluation and innovation.* Session presented at the Association of Mathematics Teacher Educators, Phoenix, AZ.

Harper, S.R. & Cox, D.C. (November 2019). *A longitudinal study of inservice teachers' vision for teaching with technology.* Session presented at the Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, St. Louis, MO.

Harper, S.R., Keiser, J.M., & Cox, D.C. (February 2019). *Incorporating mathematical empathy and fluidity in the teaching of definition.* Session presented at the Association of Mathematics Teacher Educators, Orlando, FL.

Cox, D.C. & **Harper, S.R.** (January 2019). *The geometry of gerrymandering.* Session presented at the Careers Involving Quantitative Skills (CIQS) Conference, Miami University, Oxford, OH.

Cox, D., **Harper, S.R.**, & Keiser, J.M. (November 2018). *Reflecting on the act of defining.* Session presented at the Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Greenville, SC.

Harper, S.R. (September 2018). *Visualizing proof ... without words.* Session presented at the Miami University Department of Mathematics Conference: *Making Mathematics Visible*, Oxford, OH.

Cox, D.C., **Harper, S.R.**, & Keiser, J.M. (February 2018). *Reflecting on the act of defining.* Poster Session presented at the Association of Mathematics Teacher Educators, Houston, TX.

Keiser, J.M. & **Harper, S.R.** (February 2018). *Infusing mathematics with history: A capstone course for prospective secondary mathematics teachers.* Session presented at the Association of Mathematics Teacher Educators, Houston, TX.

Harper, S.R. & Cox, D. (October 2017). *Using mathematical quickfire challenges as opportunities for modeling, problem solving, and formative assessment.* Session to be presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Columbus, OH.

Cox, D. & **Harper, S.** (October 2017). *Connecting via Twitter: Which one doesn't belong?* Session to be presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Columbus, OH.

Cox, D.C. & **Harper S.R.** (September 2017). *Using GeoGebra to Explore the Geometry of Integration.* Session presented at the Miami University Department of Mathematics Conference, Oxford, OH.

Harper, S.R. (September 2017). *Mathematics Education at Miami University.* Session presented to the Miami University Council of Teachers of Mathematics, Miami University, Oxford, OH.

Cox, D.C. & **Harper, S.R.** (October 2017). *Using narratives to articulate mathematical problem solving and posing in a technological environment.* Paper presented at the Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Indianapolis, IN.

Brezhneva, O., Tai, H., Walsh, K., & **Harper, S.R.** (March 2017). *Understanding culturally-based mathematics algorithms.* Session presented to the Miami University Council of Teachers of Mathematics, Miami University, Oxford, OH.

Harper, S.R. & Cox, D.C. (March 2017). *Screencasting to study creative insight and the problem solving process.* Session presented at the International Conference on Technology in Collegiate Mathematics, Chicago, IL.

Cox, D.C. & **Harper, S.R.** (February 2017). *Screencasting as a tool to create records of authentic problem solving practice.* Session presented at the annual meeting of the Association of Mathematics Teachers Educators, Orlando, FL.

Harper, S.R. & Cox, D.C. (April 2016). *Get on board with GeoGebra.* Session presented at the annual conference of the National Council of Teachers of Mathematics, San Francisco, CA.

Edwards, M.T., **Harper, S.R.**, Özgün-Koca, A.S., Lapp, D., & Mohr-Schroeder, M. (January 2016). *Transforming an idea into an AMTE Publication Manuscript: Contemporary Issues in Technology and Teacher Education Journal.* Workshop session presented at the annual meeting of the Association of Mathematics Teacher Educators, Irvine, CA.

Harper, S.R. & Cox, D.C. (October 2015). *Function and precalculus investigations using GeoGebra.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Cincinnati, OH.

Cox, D.C. & **Harper, S.R.** (June 2015). *Getting our feet wet: Exploring GeoGebra tube.* Session presented at the annual meeting of the GeoGebra Midwest Regional Conference, Oxford, OH.

Harper, S.R. & Cox, D.C. (June 2015). *From the ground up: Constructing your own GeoGebra files.* Session presented at the annual meeting of the GeoGebra Midwest Regional Conference, Oxford, OH.

Keiser, J.M., Naresh, N., Edwards, T., **Harper, S.R.**, Cox, D.C., D'Ambrosio, B.S., & Suiter, D.C. (February 2015). *Straddling two worlds: Co-Creating teaching centered professional development.* Session presented at the annual meeting of the Association of Mathematics Teachers Educators, Orlando, FL.

Cox. D.C. & **Harper, S.R.** (February 2014). *Developing a course in mathematical problem solving with technology for preservice secondary teachers.* Session presented at the annual meeting of the Association of Mathematics Teachers Educators, Irvine, CA.

Driskell, S.O. & **Harper, S.R.** (November 2013). *Using dynamic shapes to explore properties of shapes.* Session presented at the regional meeting of the National Council of Teachers of Mathematics, Louisville, KY.

Harper, S.R., Cox, D.C., & Edwards, M.T. (October 2013). *Developing deductive reasoning with angle chasing.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Dayton, OH.

Walsh, K. & **Harper, S.R.** (August 2013). *Optimization with Geogebra.* Session presented at the Geogebra Dynamic Mathematics North American Conference, Oxford, OH.

Naresh, N. & **Harper, S.R.** (January 2013). *Secondary teacher candidates' perceptions of teaching and learning mathematics using multicultural activities.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Orlando, FL.

Harper, S.R. & Cox, D. (November 2012). *Developing TPACK alongside professional vision of teaching mathematics with technology.* Session presented at the annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Kalamazoo, MI.

Harper, S.R. & Driskell, S.O. (June 2012). *Using Geogebra to enhance prospective middle school teachers' classification of two-dimensional shapes.* Session presented at the annual meeting of the Geogebra Midwest Regional Conference, Oxford, OH.

Harper, S.R. & Driskell, S.O. (April 2012). *Exploring middle grades geometry using Google SketchUp.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, Philadelphia, PA.

Cox, D.C. & **Harper, S.R.** (January 2012). *Creating opportunities for TPACK development in preservice secondary mathematics teachers.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Fort Worth, TX.

Lee, H.S., Adu-Gyamfi, K., Driskell, S.O., **Harper, S.R.**, Kersaint, G., & Leatham, K.R. (January 2012). *Teachers' statistical problem solving with dynamic technology: Research results across multiple institutions.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Fort Worth, TX.

Driskell, S.O. & **Harper, S.R.** (October 2011). *Geometry and pre-calculus investigations using GeoGebra.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Toledo, OH.

Harper, S.R., Cox, D.C., & Edwards, M.T. (October 2011). *Kick it up a notch - transform procedural problems into opportunities.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Toledo, OH.

Lee, H.S., Driskell, S.O., **Harper, S.R.**, Leatham, K.R., Kersaint, G., & Angotti, R.L. (October 2011). *Prospective teachers' use of representations in solving statistical tasks with dynamic statistical software.* Session presented at the annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Reno, NV.

Wanko, J.J., **Harper, S.R.**, Edwards, M.T., Johnson, I.D., & deSaint-Rat, M. (October 2010). *Listening to learn: fostering practitioner pedagogical content knowledge with thinker-doer tasks.* Session presented at the Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Columbus, OH.

Cox, D., Edwards, M.T., & **Harper, S.R.** (May 2010). *Project EFFECT: Strengthening pre-service teacher mathematical content knowledge.* Colloquium presented to the Department of Mathematics at Wright State University, Dayton, OH.

Harper, S.R. & Edwards, M.T. (April 2010). *Paint bucket polygons: Geometry concepts in high definition.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, San Diego, CA.

Johnston, C., Browning, C., Driskell, S., Özgün-Koca, S.A., **Harper, S.**, & Mathews, S. (January 2010). *Developing teachers' mathematics TPACK: Showcasing exemplary technology tools and their uses in mathematics education.* Workshop presented at the annual meeting of the Association of Mathematics Teacher Educators, Irvine, CA.

Driskell, S.O. & **Harper, S.R.** (November 2009). *Fostering spatial visualization ability through hands-on and technology-based activities.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Cincinnati, OH.

Farmer, T., Pritikin, D., & **Harper, S.R.** (September 2009). *Redesigning Calculus I.* Session presented at the Miami University Department of Mathematics Conference, Oxford, OH.

Edwards, M.T. & **Harper, S.R.** (March 2009). *Purposeful dragging: Motivating deeper understanding of functions, domain, and continuity through dynamic geometry*

explorations. Session presented at the International Conference on Technology in Collegiate Mathematics, New Orleans, LA.

Edwards, M.T. & **Harper, S.R.** (March 2009). *First steps in Sketchpad: A versatile software for all classes.* Session presented at the International Conference on Technology in Collegiate Mathematics, New Orleans, LA.

Niess, M., Driskell, S.O., Pugalee, D., Ronau, R., **Harper, S.R.**, Shafer, K., Johnston, C., & Weinhold, M. (January 2009). *Using technology standards for mathematics teachers to design learning environments and experiences for methods courses.* Workshop presented at the annual meeting of the Association of Mathematics Teacher Educators, Orlando, FL.

Harper, S.R. & Driskell, S.O. (October 2008). *Helping middle school students develop spatial visualization skills.* Workshop presented at the regional meeting of the National Council of Teachers of Mathematics, Cleveland, OH.

Harper, S.R., Driskell, S.O., & Nickell, J. (April 2008). *Exploring probabilities by simulating card games using Fathom.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, Salt Lake City, UT.

Nickell, J., **Harper, S.R.**, & Driskell, S.O. (April 2008). *Using technology-based projects to foster geometric thinking in the middle grades.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, Salt Lake City, UT.

Niess, M., **Harper, S.R.**, Browning, C., Ronau, R., Shafer, K., Pugalee, D., & Driskell, S.O. (January 2008). *Preparing teachers with mathematics TPCK (Technological Pedagogical Content Knowledge).* Workshop session presented at the annual meeting of the Association of Mathematics Teacher Educators, Tulsa, OK.

Driskell, S.O., **Harper, S.R.**, & Edwards, M.T. (January 2008). *Using Fathom with prospective teachers.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Tulsa, OK.

Driskell, S.O., **Harper, S.R.**, & Rider, R. (March 2007). *Exploring some "Technology Tips" from The Mathematics Teacher.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, Atlanta, GA.

Harper, S.R. & Driskell, S.O. (October 2006). *Using dynamic geometry software for more than just high school geometry.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Toledo, OH.

Driskell, S.O. & **Harper, S.R.** (October 2006). *Using technology to explore properties of two-dimensional shapes.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Toledo, OH.

Harper, S.R., Driskell, S. O., & Rider, R. (April 2006). *Exploring some "Technology Tips" from The Mathematics Teacher.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, St. Louis, MO.

Keiser-Krumpe, J.M. & **Harper, S.R.** (January 2006). *"I understand it, I just don't know how to say it": Developing students' communication skills in mathematics content courses.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Tampa, FL.

Harper, S.R. & Driskell, S.O. (November 2005). *Developing geometric content knowledge in the middle grades.* Session presented at the Western regional conference of the National Council of Teachers of Mathematics, Denver, CO.

Driskell, S.O. & **Harper, S.R.** (November 2005). *Constructing student's understanding about division with fractions.* Session presented at the Western regional conference of the National Council of Teachers of Mathematics, Denver, CO.

Harper, S.R. & Driskell, S.O. (October 2005). *Illustrating some history of Greek mathematics with dynamic geometry software.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Dayton, OH.

Driskell, S.O. & **Harper, S.R.** (October 2005). *Hands-on learning about division with fractions.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Dayton, OH.

Driskell, S. O. & **Harper, S.R.** (January 2005). *Integrating The Geometer's Sketchpad in secondary preservice teacher content courses.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Dallas, TX.

Harper, S.R. & Driskell, S.O. (April 2004). *Using dynamic geometry software to explore topics in mathematics history.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, Philadelphia, PA.

Harper, S.R. & Driskell, S.O. (March 2004). *Implementing performance-based technology standards in mathematics education courses.* Invited paper presented at the annual international meeting of the Society for Information Technology and Teacher Education, Atlanta, GA. Paper awarded the National Technology Leadership Initiative Fellowship.

Harper, S.R. & Driskell, S.O. (January 2004). *Implementing performance-based technology standards in mathematics education courses.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, San Diego, CA.

Wanko, J.J., **Harper, S.R.**, & Johnson, I. (January 2004). *Designing and assessing mathematical projects: Addressing the NCATE performance standards.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, San Diego, CA.

Harper, S.R. (November 2003). *Learning to teach mathematics with technology.* Session presented at the Southern regional conference of the National Council of Teachers of Mathematics, Charleston, SC.

Harper, S.R. & Driskell, S.O. (October 2003). *Making geometric connections to pre-calculus and calculus topics using The Geometer's Sketchpad.* Session presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Cleveland, OH.

Harper, S.R. (April 2003). *Using technology-based interactive mathematics projects in the K-12 classroom.* Invited talk presented to the Miami University Council of Teachers of Mathematics, Oxford, OH.

Driskell, S.O., **Harper, S.R.**, & Timmerman, M.A. (April 2003). *Uncovering children's misconceptions of shapes using Shape Makers.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, San Antonio, TX.

Harper, S.R. (April 2003). *Using technology to explore iterative processes.* Invited talk presented to the Miami University Chapter of Pi Mu Epsilon, Oxford, OH.

Harper, S.R. (March 2003). *Enhancing elementary pre-service teachers' knowledge of geometric transformations through the use of dynamic geometry computer software.* Paper presented at the annual meeting of the Society for Information Technology and Teacher Education, Albuquerque, NM.

Driskell, S.O., **Harper, S.R.**, & Timmerman, M.A. (January 2003). *Elementary preservice teachers' and students' conceptual understanding of geometric topics.* Session

presented at the annual meeting of the Association of Mathematics Teacher Educators, Atlanta, GA.

Harper, S.R., Stohl, H.S., & Enderson, M. (January 2002). *Prospective teachers' development of mathematical, pedagogical, and technological knowledge.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, San Antonio, TX.

Harper, S.R. (March 2001). *Problem solving and reasoning with The Geometer's Sketchpad.* Session presented at the annual meeting of the Virginia Council of Teachers of Mathematics, Harrisonburg, VA.

Garofalo, J., **Harper, S.R.**, & Drier, H.S. (January 2001). *A beginner's guide to incorporating technology into secondary methods courses.* Invited workshop presented at the annual meeting of the Association of Mathematics Teacher Educators, Costa Mesa, CA.

Harper, S.R., Garofalo, J., & Drier, H.S. (April 2000). *Preparing preservice secondary school teachers to use technology appropriately.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, Chicago, IL.

Harper, S.R. & Schirack, S.O. (March 2000). *Exploring algebra and pre-calculus topics using The Geometer's Sketchpad.* Session presented at the annual meeting of the Virginia Society of Technology in Education, Roanoke, VA.

Garofalo, J., Drier, H., **Harper, S.**, Horton, B., & Pullano, F. (February 2000). *Integrating technology in pre-service secondary methods courses: Evaluation and dissemination of Impact project materials.* Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Charlotte, NC.

Harper, S.R. & Shockey, T.L. (April 1999). *Exploring recursion through various technologies.* Session presented at the annual meeting of the National Council of Teachers of Mathematics, San Francisco, CA.

Harper, S.R., Shockey, T.L., Drier, H.S., & Garofalo, J. (February 1999). *Exploring recursion through various technologies.* Session presented at the Southeast regional conference of the National Council of Teachers of Mathematics, Charlotte, NC.

Drier, H.S. & **Harper, S.R.** (February 1999). *Middle school mathematics for the 21st century.* Workshop presented at the Southeast regional conference of the National Council of Teachers of Mathematics, Charlotte, NC.

Garofalo, J., Drier, H.S., Shockey, T.L., & **Harper, S.R.** (May 1998). *An introduction to graphing calculators.* Workshop at the annual meeting of the Virginia Society of Technology in Education, Roanoke, VA.

Shockey, T.L., **Harper, S.R.**, & Drier, H.S. (May 1998). *Exploring mathematics with technology: Data analysis activities.* Session presented at the annual meeting of the Virginia Society of Technology in Education, Roanoke, VA.

Drier, H.S., **Rushton, S.**, & Shockey, T.L. (April 1998). *Algebra in the middle school? You bet!* Workshop presented at the annual meeting of the National Council of Teachers of Mathematics, Washington, D.C.

Garofalo, J., Shockey, T.L., Drier, H.S., & **Rushton, S.** (March 1998). *Guidelines for incorporating technology into mathematics.* Paper presented at the annual meeting of the Society for Information Technology and Teacher Education, Washington, D.C.

GRANT ACTIVITY

Total External Funding $1,536,316

Miami University Council of Teachers of Mathematics Family Math Night. (February 2019). An Emalou Brumfield Affiliate Grant funded by the Ohio Council of Teachers of Mathematics was written by Lindsey States and Suzanne Harper in collaboration with the MUCTM executive board. The funding will supplement the costs associated with conducting a Family Math Night with parents and students at Kramer Elementary School on March 14, 2019. This conference provides first and third-grade students with the opportunity to engage with mathematics outside of their classroom. PIs: Jenna Odom, Maria Kruger and Suzanne Harper, ($500)

Miami University Council of Teachers of Mathematics Kids Conference. (March 2018). An Emalou Brumfield Affiliate Grant funded by the Ohio Council of Teachers of Mathematics was written by Lindsey States and Suzanne Harper in collaboration with the MUCTM executive board. The funding will supplement the costs associated with conducting a conference with students at E.H. Greene Intermediate School on April 21, 2018. This conference provides fifth and sixth-grade students with the opportunity to engage with mathematics and science outside of their classes. PIs: Lindsey States and Suzanne Harper, ($500)

Miami University Council of Teachers of Mathematics Kids Conference. (March 2017). An Emalou Brumfield Affiliate Grant funded by the Ohio Council of Teachers of Mathematics was written by Allyson Klovekorn and Suzanne Harper in collaboration with the MUCTM executive board. The funding will supplement the costs associated with conducting a conference with students at E.H. Greene Intermediate School on April 22, 2017. This conference provides fifth and sixth-grade students with the opportunity to engage with mathematics and science outside of their classes. PIs: Allyson Klovekorn and Suzanne Harper, ($500)

Project DOVETAIL: Developing Ownership & Vision: Empowering Teachers As Instructional Leaders. (2013-2015). Project DOVETAIL is a two-year professional development project that capitalizes upon the collective efforts of three instructional partners, namely Miami University, Talawanda School District, and the McGuffey Montessori School. The key goals of this project are a) to provide classroom teachers and their students with enhanced content knowledge in the domains of Measurement and Data and b) to provide participants an opportunity to experience and explore connections between academic mathematics and the mathematics of the real world. Co-PI of the grant to the Ohio Mathematics and Science Partnership [Program Solicitation ODE], Submitted August 20, 2013. PI: Dana C. Cox & Nirmala Naresh; Co-PIs: Jane Keiser, Suzanne Harper, Beatriz D'Ambrosio & M. Todd Edwards, Miami University. ($696,568)

Miami University Partnership for Enhancing the Teaching of Mathematics. (2007-2010). A three-year grant funded by the Ohio Department of Education to provide professional development experiences to increase teachers' knowledge of mathematics content found

in the *Ohio Mathematics Academic Content Standards* as measured on pre- and post-tests of mathematical content knowledge; increase teachers' ability to support and develop resources for meeting the needs of all learners, as evidenced by observation of classroom practice, task design, and self-report; and identify the difficulties of their students in learning particular concepts. PIs: Beatriz D'Ambrosio, Michael Todd Edwards, Suzanne Harper, and Iris Deloach Johnson, Miami University. ($717,188)

Hands On Geometry Project. (January 2004). A grant written by Shannon Driskell, Scott Sportsman, and Suzanne Harper in collaboration with Hamilton City Schools and the Ohio Board of Regents was funded to conduct workshops with middle school mathematics teachers between March 2004 and May 2005. A major goal of the grant was centered on increasing the teachers' content knowledge of the Benchmarks for Geometry and Measurement in the Ohio Academic Content Standards. My duties included designing and co-teaching over 40 hours of instruction to fifth- and sixth- grade teachers. PIs: Shannon Driskell, University of Dayton and Scott Sportsman,
College of Mount St. Joseph. ($121,060)

Total Internal Funding $18,128

Using Smartpen Technology to Document, Share, and Analyze Children's Mathematical Reasoning. Grant submitted to the Miami University Student Technology Fee Competitive Proposal Process, Miami University, February 2020. PIs: Suzanne Harper & Dana Cox, Miami University. ($1050)

Elevating the Mathematical Profile of STEM Instruction at Miami University. Grant submitted to the Miami University Student Technology Fee Competitive Proposal Process, Miami University, February 2017. PIs: Dana Cox & Suzanne Harper, Miami University. ($2020)

***Miami University Council of Teachers of Mathematics National Conference Attendance* (February 2011).** The Miami Council of Teachers of Mathematics, an affiliate organization of NCTM, is a student-run organization that is dedicated to the improvement of professional preparation for teachers of school mathematics. We have approximately 60 members, and our attendance at monthly meetings is over 50 students. The goal of our project was to send 8 pre-service mathematics teachers to the national NCTM conference in Indianapolis, Indiana in April 2011. The pre-service teachers who attend the conference will greatly benefit by learning concepts, strategies, and techniques from some of the most knowledgeable people in mathematics education. The presentations – more than 1000 in all – cover all the grade levels and major mathematics content strands as well as research and policy issues and important topics like assessment. Students will meet teacher leaders and other educators to begin building their own professional network and learn about new career, grant and professional development opportunities. PI: Suzanne Harper, Miami University. ($1400)

***Miami University Council of Teachers of Mathematics National Conference Attendance* (February 2008).** A grant funded by the Miami University Parents Council Fund. The goal of the project is to send six pre-service mathematics teachers to the national NCTM conference in Salt Lake City, Utah in April 2008. The pre-service teachers who attend the

conference will greatly benefit by learning concepts, strategies, and techniques from some of the most knowledgeable people in mathematics education. The presentations – more than 1000 in all – cover all the grade levels and major mathematics content strands as well as research and policy issues and important topics like assessment. Students will meet teacher leaders and other educators to begin building their own professional network and learn about new career, grant and professional development opportunities. PI: Suzanne Harper, Miami University. ($750)

***Mathematics and Statistics Interactive Learning Classroom* (July 2008).** A grant funded by the Miami University New Technology Innovation Fund. The Department of Mathematics and Statistics would like to create a classroom equipped with a Smart Board and document camera to be utilized by the students of mathematics, statistics and mathematics education. This classroom will not only allow students to experience mathematics and statistics classes in a more interactive learning environment, but also allow professors to model appropriate pedagogical strategies using technology for those students of mathematics education. PI: Suzanne Harper, Miami University. ($5908)

Facilitating Middle School Mathematics Pre-Service Teachers to Analyze Data and Understand Statistical Inference through the use of Technology. Grant received from the Center for the Enhancement of Learning and Teaching, Miami University, August 2005. PI: Suzanne Harper, Miami University. ($300)

Analyzing Data and Understanding Statistical Inference Through the Use of Technology. Grant received from the College of Arts and Sciences Faculty Development Program, September 2003. PI: Suzanne Harper, Miami University. ($700)

Investigation of Prospective Teachers' Knowledge of Geometric Transformations using Dynamic Geometry Software. Grant received from the College of Arts and Sciences New Tenure-Track Faculty Summer Research Grant Program, October 2003. PI: Suzanne Harper, Miami University. ($6000)

TEACHING, ADVISING & CURRICULUM DEVELOPMENT

Courses Taught

Miami University (2002-present)
Undergraduate
MTH 115: *Mathematics for Elementary School Teachers* I
MTH 116: *Mathematics for Elementary School Teachers* II
MTH 151: *Calculus I*
MTH 218: *Geometry for Middle Childhood Teachers*
MTH 309/330: *Ohio Assessment for Educators Problem Seminar*
MTH 407: *Mathematical Patterns and Structures through Inquiry*
MTH 408: *Mathematical Problem Solving with Technology*
MTH 409: *Secondary Mathematics from an Advanced Perspective*
EDT 465: *Computing Technology Applied to Mathematics*

Masters
MTH 507: *Mathematical Patterns and Structures through Inquiry*
MTH 508: *Mathematical Problem Solving with Technology*
MTH 509: *Secondary Mathematics from an Advanced Perspective*
MTH 604: *Discrete Mathematics for Secondary Teachers*
MTH 605: *Calculus for Secondary Teachers*
MTH 607: Algebra for Secondary Teachers
EDT 565: *Computing Technology Applied to Mathematics*
EDT 566: *Diagnostic, Prescriptive, and General Mathematics*
EDT 660: *Current Issues and Research in Mathematics Education*

University of Virginia (1998-2002)
Masters
EDIS 532: *Teaching Mathematics in the Elementary School*
EDIS 545: *Secondary Mathematics Methods*
EDIS 587: *Mathematics Education Teaching Associateship Seminar*
EDIS 588: *Mathematics Teaching Associateship*
EDIS 788: *Secondary Mathematics Field Project*

Hollins College (1997-1998)
Undergraduate
MATH 110: *Mathematical Ideas*
MATH 140: *Precalculus*

Florida State University (1993-1995)
Undergraduate
MAC 1105: *College Algebra*
MAC 1114: *Analytic Trigonometry*
MAC 1140: *Precalculus Algebra*
MAC 2233: *Calculus for Business*

Graduate Student Research Advising

I have advised 93 graduate students while at Miami University. The following is a list of all of the students by graduation year. I have denoted when I was the chair of the student's masters committee by an asterisk * (24). I have denoted when I served on a student's doctoral committee by double asterisks ** (2).

2024	Jesse Patton*
2023	Hannah Baird, Lisa James**, James Jansen, Maria Kruger*, Dennis Perry, Kaycie Riley, Hannah Van Dyke*, Megan Zahursky
2022	Kate Bradford**, Alex Marling, Lisa James**, Taylor Wood*
2021	Christ Burtis, Kaleigh George, Kristy Jacob*, Lindsey Jakes, Abigail Jerger, Lesley Miller, Leah Simon
2020	Megan Haerr*, Allyson Klovekorn*, Lisa Jacob, Caroline Schulte
2019	Kristyn Walters

2018	Grady Bagwell, Bobby Knurek*, Stacee King Murphy*, Mackenzie Wall
2017	Audrey Altieri*, Stephanie Bradford, Amy Heller*, Courtney Frydryk, Corey Moorefield, Colin Petrello
2016	Ian Callon, Erin Magness, Genna Schwartz*, Amy Young, Tiffany Tsai
2015	Alexis Richter, Karen Noyes, Kendall Stanley*, Kadriye Walsh
2014	Stacey Young*, Ryan McCarthy, Lisa Block, Matt Dollard, Emily Granger, Sonny Phoung
2013	Bayli Palmer, Mark Wyatt, Derek Messenger*
2012	Kevin Unwin, Jake Worley, Kelly Abbas, Brandon Lee, Michelle Engel*, Brad Gaertner*, Tim Pfahler, Linda Fredrick
2011	Lara Doan*, Alex Garvin, Lisa James*, Jack Kaniecki, Jason Roush, Nick Shay*
2010	Christopher Brewer, Dennis Martin
2009	Carrie Ebright, Paula Griffin, Patricia Timko Kinser*, Judy McFarland, Phaedra Seabolt, Jo Steelman
2008	Kathryn Byrkett*, Anne Maranda*, Terri Sage
2007	Jeff Flory, Mike Gutekunst, Melissa Kincaid, Andrew Neyer, Jennifer Nickell*, Cynthia Spires
2006	Matthew Bearse, Amanda Mayer, Scott Nash*
2005	Sandra Johnson, Karen Smith, Heather Whittaker
2004	Greg Faulhaber, Ann Bill Helmers, Amy Poston
2003	Kevin Rodriguez, Carol Snively

Curriculum Development

As part of the mathematics team at the Center for Technology and Teacher Education, we developed materials to help pre-service and in-service teachers effectively integrate technology into the middle and secondary mathematics curriculum. The materials utilize technology tools such as *The Geometer's Sketchpad*, *Microsoft Excel*, *MicroWorlds*, interactive websites, and graphing calculators. Materials have been disseminated for use in mathematics methods courses at other colleges and universities.

While at Miami University, I have solely-designed at least three undergraduate courses, and two graduate courses. I was hired to design and teach MTH 408/508 (formerly EDT 465) *Mathematical Problem Solving with Technology*, to prepare prospective mathematics teachers to learn and effectively teach mathematics with technology. I have also designed two additional courses specific to future high school mathematics teachers, MTH 409/509 *Secondary Mathematics from an Advanced Perspective* and MTH 309 (formerly MTH 330) *Ohio Assessment for Educators Problem Seminar*. I have also designed MTH 604: *Discrete Mathematics for Secondary Teachers* and MTH 605: *Calculus for Secondary Teachers*.

IN-SERVICE WORKSHOPS & PROJECTS

Harper, S. R. (April, 2008). *Introduction to dynamic geometry software: Ohio mathematics program model.* Three-hour workshop for High School Mathematics Teachers at Meadowdale and Thurgood Marshall High Schools, Dayton, OH.

Harper, S. R. & Edwards, M.T. (March, 2008). *Dynamic geometry software not just for geometry*. Two-hour workshop for Talawanda High School Mathematics Teachers, Oxford, OH.

Harper, S. R. & Edwards, M.T. (March, 2008). *Effectively using dynamic geometry software.* Two-hour workshop for Talawanda High School Mathematics Teachers, Oxford, OH.

Reaching Academic Mathematics Proficiency II Workshops. (November 2004). A grant written by Jeffery Wanko in collaboration with Hamilton City Schools and the Discovery Center at Miami University was funded to conduct workshops with middle school mathematics teachers between March 2005 and April 2006. A major goal of the grant was centered on increasing the teachers' content knowledge of the Benchmarks for Geometry and Measurement in the Ohio Academic Content Standards. My duties included designing and co-teaching over 40 hours of instruction to fifth- and sixth- grade teachers. PI: Jeffery Wanko, Miami University. ($168,349)

Encouraging Proficiency in Content: Mathematics for Middle Grade Teachers. (September 2004). A grant written by Iris DeLoach Johnson and Jane Keiser was funded by the Ohio Department of Education to conduct workshops with middle school mathematics teachers between January and December 2005. A major goal of the grant was to provide graduate level credits of mathematics content in alignment with the Ohio Mathematics Academic Content Standards, with an instructional delivery system in close alignment with the Ohio Mathematical Processes Standard, and standards-based pedagogy. My duties included co-teaching over 36 hours of instruction to middle school teachers. PIs: Iris DeLoach Johnson and Jane Keiser, Miami University. ($294,751)

Harper, S.R., Drier, H.S., & Garofalo, J. (1999-2002). *Integrating technology in middle and secondary school mathematics.* A three-year professional development project with teachers as part of the XL Education Initiative, Hamilton, Bermuda.

Harper, S.R. (March 2000). *Teaching multiplication and division of fractions for understanding.* A staff development workshop Charlottesville City middle school teachers, Charlottesville, VA.

Harper, S.R. (January 2000). *Teaching geometry through problem solving activities.* A staff development workshop Charlottesville City middle school teachers, Charlottesville, VA.

Harper, S.R. (October 1999). *Geometry for elementary school teachers.* A staff development workshop Charlottesville City middle school teachers, Charlottesville, VA.

Harper, S.R. (October 1999). *Exploring mathematics with The Geometer's Sketchpad.* A professional development workshop with teachers at Nelson County High School, Lovingston, VA.

Drier, H.S., **Harper, S.R.**, Shockey, T.L., Garofalo, J., & Timmerman, M.A. (1998-99). *Using technology to explore middle and secondary school mathematics.* A three-day in-service project with teachers in Albemarle County Public Schools, Charlottesville, VA.

Harper, S.R., Shockey, T.L., & Drier, H. S. (July 1998). *Integrating the Virginia Technology Standards of Learning into the eighth grade mathematics curriculum.* A four day

in-service project with mathematics and technology teachers in Pittsylvania County Schools, Chatham, VA.

NATIONAL & STATE LEADERSHIP AND SERVICE

Ohio Council of Teachers of Mathematics *2021-2024*
Elected Vice President – College and Executive Board Member
The Ohio Council of Teachers of Mathematics is a group of educators to engage, inspire and support the growth of mathematics teachers in Ohio. Some of the duties of the Vice President-College are to: (1) work with the District Directors and the Affiliate Services Chair to encourage and assist local affiliates and groups of teachers interested in organizing local affiliates; (2) identify and communicate with college and university faculty at institutions with mathematics pre-service teachers in order to promote student affiliates and encourage student memberships in OCTM; and (3) help to plan and promote the OCTM Annual Conference, either as an active conference committee member or in an advisory capacity.

National Council of Teachers of Mathematics *2021-2023*
Co-Editor with Dr. Dana Cox
Modern Math Tasks to Provoke Transformational Thinking is a new NCTM book series focusing on opportunities for students to synthesize ideas from multiple disciplines and reason about mathematics and its relationships to real-world issues. Dr. Cox and I are co-editors for the book focusing on grades 9-12. Each chapter describes high school mathematics activities to develop a focused "literacy" (e.g., media literacy, engineering literacy, political literacy, health literacy, design literacy, and historical literacy).

Ohio Journal of School Mathematics *2012-present*
Manuscript Referee
The *Ohio Journal of School Mathematics* is the journal of the Ohio Council of Teachers of Mathematics. It is intended to be a medium for teachers from elementary to college level to present their ideas and beliefs about the teaching and learning of mathematics.

Midwest Geogebra Journal *2012-present*
Manuscript Referee
Midwest GeoGebra Journal is the official publication of the GeoGebra Institute of Ohio. It publishes articles about the use of GeoGebra Dynamic Mathematics Software in teaching and learning of mathematics at all levels. The journal provides a medium by which a wide range of experiences in mathematics education can be presented, discussed, criticized and best practice assimilated into the new curricula of schools, colleges and universities.

Contemporary Issues in Technology and Teacher Education *2005-present*
Member of the Review Board
An electronic publication of the Society for Information Technology and Teacher Education (SITE), established as a multimedia, interactive counterpart of the *Journal of Technology and Teacher Education*. Funded by the U.S. Department of Education Preparing Tomorrow's Teacher to Use Technology (PT3) catalyst grant, CITE makes possible the

inclusion of sound, animated images, and simulation, as well as allowing for ongoing, immediate dialog about theoretical issues.

Association of Mathematics Teacher Educators *2019-2022*
Member of the AMTE Conferences Committee
This appointment is to provide support to all involved in the planning of the 2020 (Phoenix, AZ), 2021 (virtual), and 2022 (Henderson, NV) AMTE national conferences, with approximately 600-700 participants each.

Southwest Ohio Council of Teacher of Mathematics *2017-2021*
Elected Vice President – Post Secondary
As an elected member of the Executive Board, the Southwest Ohio Council of Teachers of Mathematics is a group of local educators that have an interest in supporting math education in the region. Our goal is to connect educators with people, resources and learning opportunities to stretch their thinking and grow their mathematical instruction.

The Mathematics Teacher *2012-2020*
Manuscript Referee
The *Mathematics Teacher*, an official journal of the National Council of Teachers of Mathematics, is devoted to improving mathematics instruction from grade 8-14 and supporting teacher education programs. It provides a forum for sharing activities and pedagogical strategies, deepening understanding of mathematical ideas, and linking mathematics education research to practice. *Mathematics Teacher* solicits submissions from high school mathematics teachers, university mathematicians, and mathematics educators and strongly encourages manuscripts in which ideas relate to classroom practice.

National Science Foundation *2019*
Member of the Review Panel
I served on the review panel for the Directorate for Education and Human Resources' (EHR) Faculty Early Career Development (CAREER) Program.

Association of Mathematics Teacher Educators *2019*
Member of the AMTE Ad-Hoc Program Committee
This appointment is to provide a report of guidance and recommendations on the conference program strands that reflect the AMTE Standards and the needs of our membership; and evaluate the current proposal evaluation rubric.

Association of Mathematics Teacher Educators *2017-2019*
Vice President for Communications and Outreach
Appointed by the AMTE President, the Vice-President for Communications and Outreach (VP for C & O) facilitates the organization's ability to carry out its programs and activities by organizing and supporting AMTE's efforts to communicate information and resources to its members, sponsors, and donors. The VP for C & O is charged with the coordination of all marketing, media and sponsorship-related activities of the organization, including AMTE's online presence, sponsorship campaigns and opportunities, and marketing the brand of AMTE in the public arena.

Association of Mathematics Teacher Educators *2017-2018*
Member of the AMTE Conference Director Task Force
This appointment is to provide guidance and recommendations to identify a new AMTE Conference Associate Vice President, and reconceptualize the current role.

Association of Mathematics Teacher Educators *2016-2017*
Member of Membership Committee
The Membership Committee is charged to promote the mission and goals of AMTE by reviewing current member benefits and making recommendations to the Board for changes/additions to strengthen services provided to members; seeking information from current members regarding information and services they seek from AMTE; developing and overseeing membership recruitment initiatives, reviewing and recommending revisions to the AMTE membership recruitment materials (print and online).

Association of Mathematics Teacher Educators *2015-2017*
Member of the Celebrations Task Force
This appointment is to provide inspiration, plan and implement celebrations involving the 25th anniversary of AMTE and for the 20th AMTE conference in 2016.

Association of Mathematics Teacher Educators *2013-2016*
Elected Treasurer and Voting Member on the Board of Directors
The treasurer transacts the financial affairs of the Association upon recommendation of the Board of Directors; maintains a current and accurate membership list; maintains the Association's non-profit status; prepares financial reports to the presented at the meetings of the Board of Directors; and prepares an annual report to be presented at AMTE's annual business meeting.

Association of Mathematics Teacher Educators *2011-2014*
Member of the AMTE Conference Leadership Committee
This appointment is to provide support to all involved in the planning of the 2012, 2013, and 2014 AMTE national conferences with approximately 700 participants each.

Association of Mathematics Teacher Educators *2009-2014*
Chair of the 2013 National Conference Program Committee
Assistant Chair of the 2012 National Conference Program Committee
Member of the 2011 National Conference Program Committee
The role of the AMTE Program Committee is to identify potential keynote speakers, review proposals and ensure the success of the national conference. I personally reviewed 64 two-page proposals submitted to the Mathematics Content Knowledge strand for the 2012 conference. I also helped to identify potential keynote speakers, review proposals and ensure the success of the 2011 conference.

Association of Mathematics Teacher Educators *2008-2009*
Member of the Monograph Editorial Panel
Reviewed and solicited submissions for the 2009 AMTE Monograph: *Scholarly Practices and Inquiry in the Preparation of Mathematics Teachers*, Volume 6. Edited by Denise Mewborn and Hollylynne Lee.

National Council of Teachers of Mathematics *2007-2008*
Member for the 2008 Regional Conference Program Committee
I identified and solicited keynote speakers, reviewed proposals and ensured the success of the 2008 regional NCTM conference in Oklahoma City, OK.

Association of Mathematics Teacher Educators *2006-2008*
Member of Technology Committee
The role of the AMTE Technology Committee is to promote the investigation, engagement, and evaluation of uses of technology in mathematics teacher education. The Committee also recommends policy related to the AMTE website, National Technology Leadership Initiative (NTLI), and other technology issues related to enhancing mathematics teacher education. Specifically, I have been in charge of rewriting and implementing the selection process of the NTLI Fellowship Award winner.

Mathematics Teacher *2005-2006*
Co-editor of Technology Tips Department
"Technology Tips" monthly column, *Mathematics Teacher*, National Council of Teachers of Mathematics Publication. Co-editor, with Shannon Driskell, Assistant Professor of Mathematics Education at University of Dayton.

Association of Mathematics Teacher Educators *2005-2006*
Member of the 2006 National Conference Program Committee
I helped to identify potential keynote speakers, review proposals and ensure the success of the 2006 conference in Tampa, FL.

Mathematics Teacher *2004-2005*
Co-editor of Technology Tips Department
"Technology Tips" monthly column, *Mathematics Teacher*, National Council of Teachers of Mathematics Publication. Co-editor, with Hollylynne Stohl, Assistant Professor of Mathematics Education at North Carolina State University.

DEPARTMENTAL, DIVISIONAL & UNIVERSITY SERVICE

Department of Mathematics
Undergraduate Recruiting Committee, 2022 - present
Promotion to Professor Committee, *2014 - present*
Mathematics Education Course Scheduling, *2011 - present*
Academic Advising Committee, *2010 - present*
Promotion & Tenure Committee, *2008 - present*
Miami University Council of Teacher of Mathematics, Faculty Advisor *2005 - present*
Mathematics Education Search Committee, *2005, 2007, 2008, 2016, 2023;* Chair *2008*
Undergraduate Committee, *2012 - 2022*
Top 25 Committee for Calculus Reform, *2008 - 2022*
Mathematics Department Conference, Co-Chair *2009;* Co-Chair *2018*
Program Review Committee, *2015-2016*

Computer & Technology Committee, *2006-2013*
Barney Fellowship Selection Committee, *2012*
Department of Mathematics High School Competition, *2009*
Honors & Awards Committee, *2004-2006*
Faculty Colloquium Committee, *2003-2004*
Governance Committee, *2002-2004*

College of Arts and Science
Advisors Committee, *2012-2013; 2016-2020*
Committee on Committees, *2014-2016; 2018-2020*
Summer Orientation Advisor, *2015, 2018, 2019*
Department of Physics Promotion Committee, *2018*
Curriculum Committee *ex-officio, 2018*

Miami University
Interdivisional Committee of Advisors, *2021-2024*
Mathematics Education Committee, member *2002-present*, Chair *2006-10; 2014-present*
Mathematics Seminar, member 2002-present, Chair *2006-present*
Awards and Recognition Committee, *2018-2021*
Senate Ad-hoc Committee, *2018-2019*
Center for Teaching Excellence Facilitator at New Faculty Orientation, *2015 & 2016*
Department of Teacher Education Search Committee, *2006*

PROFESSIONAL ORGANIZATION MEMBERSHIPS

Association for Mathematics Teacher Educators
National Council of Teachers of Mathematics
Ohio Academy of Science
Ohio Council of Teachers of Mathematics
Ohio Mathematics Education Leadership Council
Phi Beta Kappa, Bronze Member of The Founders Guild
Sigma Xi, The Scientific Research Society
Southwest Ohio Council of Teachers of Mathematics

Last Updated October 2023

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CURRICULUM VITAE

Research Interest

- Set Theory

Education

- Ph.D., University of California, Irvine, USA, June 2003
  Advisor: Matthew Foreman
  Thesis title: *Club Guessing Sequences and Filters*
- Master's degree, Waseda University, Tokyo, Japan, March 1997
- Bachelor's degree, Waseda University, Tokyo, Japan, March 1995

Work Experience

- **Associate Professor** at Miami University, August 2012–present
- **Assistant Professor** at Miami University, August 2006–July 2012
- **Assistant Professor (Non-tenure track)** at the University of Kansas, August 2003–May 2006

External Research Funding

- NSF grant DMS-0700983, 2007-2010, $92,863

Internal Research Funding

- October 2020: Summer Research Appointment, $6,200, funded for Summer 2021.
- October 2010: Summer Research Appointment, $6,200, funded for Summer 2011.
- October 2006: Summer Research Appointment, $6,200, funded for Summer 2007.

Refereed publications

- *The Mardešić conjecture for countably compact spaces*, Topology and Its Applications 335(2023), Paper No. 108596, 19 pp.
- *Archimedean positively ordered semigroups with maximal elements*, Semigroup Forum 105 (2022), no. 1, 244–264
- *Finite products of connected nowhere separable linearly ordered spaces*, Topology and Its Applications, 300 (2021), Paper No. 107763, 21

- *Continuous injections between products of two connected nowhere real linearly ordered spaces*, Topology Proceedings, 50 (2017), 319–333
- *The comparison of various club guessing principles*, Annals of Pure and Applied Logic, 166(2015), no. 5, 583–600.
- *The termination of the higher-dimensional tarai functions* (with M. Kikuchi), Information Processing Letters 115(2015) no. 2, 125-127.
- $\mathbb{P}_{\max}$ *variations for separating club guessing principles* (with P. Larson), Journal of Symbolic Logic 77(2012), no. 2, 532–544
- *Some results about* (+) *proved by iterated forcing* (with P. Larson), Journal of Symbolic Logic 77(2012), no. 2, 515–531.
- *A sequel to "a space topologized by functions from* ω *to* ω*"* (with A. Iwasa), Topology Proceedings, 38(2011), 309–312
- *Club guessing sequences — Natural structures in set theory* —(Japanese), Sugaku 62(2)(2010), 453–478(English translation by myself appeared in Sugaku Exposition 26(2013), no. 1, 73–98).
- *On possible models of CH without locally compact sub-Ostaszewski spaces*, Topology Proceedings, 36(2010), 37–50.
- *Minimality of non* σ*-scattered orders* (with J. Moore), Fundamenta Mathematicae, 205(2009), 29–44.
- *A non-D-space with large extent*, Topology and Its Applications, 155(11)(2008), 1256–1263
- *A fine structure construction of a perfectly normal, non-realcompact space*, Topology Proceedings, 30(2)(2006), 533–545
- *The saturation of club guessing ideals*, Annals of Pure and Applied Logic, 142(1–3)(2006), 398–424.
- *A tail club guessing ideal can be saturated without being a restriction of the non-stationary ideal*, Notre Dame Journal of Formal Logic, 46(3)(2005), 327–333.
- *More on perfectly normal, non-realcompact spaces*, Topology and Its Applications 153(9)(2006), 1476–1499
- α*-properness and Axiom A*, Fundamenta Mathematicae, 186(2005), 25–37.
- *Club guessing sequences and filters*, Journal of Symbolic Logic, 70(4)(2005), 1037–1071.
- *A perfectly normal nonrealcompact space consistent with* $\mathsf{MA}_{\aleph_1}$ (with Fernando Hernández-Hernández), Topology and Its Applications, 143(1–3)(2004), 175–188.
- *Directive trees and games on posets* (with Yasuo Yoshinobu), Proceedings of the American Mathematical Society, 130(2002), 1477–1485.

Non-refereed publications

- *Qualitative differences between the real line and nonseparable linearly ordered topological spaces*, RIMS Kôkyûroku, 2198(2021), 32–40.

Invited Talks at a professional conferences

- Special Session on Set Theory and Its Applications, Canadian Mathematical Society Winter Meeting in Toronto, December 2022.
- Special Session on Set-Theoretic Topology, American Mathematical Society Fall Southeastern Section Meeting, online, November 2021
- Special Session on Set-Theoretic Topology, Spring Topology and Dynamics Conference hosted by Murray State University, online, May 2021
- Special Session on Set Theoretic Topology, American Mathematical Society Fall Southeastern Sectional Meeting, at the University of North Carolina, Greensboro, November 2014
- Spring Topology and Dynamics Conference at the University of Richmond, March 2014
- Workshop on 'Large cardinals and descriptive set theory' at the Erwin Schroedinger Institute in Vienna, June 2009
- Special Session on Set-Theoretic Topology, American Mathematical Society Southeastern Sectional Meeting at the University of Alabama Huntsville. October 2008
- BLAST conference at the University of Denver, August 2008
- Boise Extravaganza in Set Theory (BEST) at Boise State University, March 2008.
- Special Session on Large Cardinals in Set Theory, American Mathematical Society Central Sectional Meeting at Miami University, March 2007.
- Special Session on Topology and Set Theory, Summer Conference on Topology and Its Applications, at Georgia Southern University, July 2006.
- Mid-Atlantic Mathematical Logic Seminar (MAMLS) in honour of Menachem Magidor's sixtieth birthday at the University of California, Irvine, February 2006.
- Special Session in Set Theory, Association for Symbolic Logic Annual Meeting at Carnegie Mellon University, May 2004.
- Workshop 'Singular Cardinal Combinatorics' at Banff, Canada, May 2004.
- AMS-ASL Special Session in Infinite Combinatorics and Inner Model Theory, Joint Mathematics Meeting at Phoenix, January 2004.

Invited talks at seminars

- Colloquium at the University of Dayton, February 2018
- Colloquium at the University of Dayton, March 2009

- Topology Seminar at the University of Pittsburgh, November 2005.
- Mathematical Logic Seminar at Carnegie Mellon University, November 2005.
- Set Theory Seminar at Boise State University, July 2005.
- UCLA Logic Seminar, March 2003.
- Set Theory Seminar at Waseda University, August 2002.
- UCLA Logic Colloquium, April 2002.
- Set Theory Seminar at Waseda University, August 2001.
- Set Theory Seminar at Nagoya University, Fall 1996.
- Symposium on Set Theory and Recursion Theory at Kobe University, December 1996.

Contributed talks at professional conferences

- RIMS Set Theory Workshop, 'Forcing and Cardinal Arithmetic', Hybrid at RIMS, Kyoto University, Japan, and on Zoom, October 2022.
- RIMS Set Theory Workshop 'Set Theory: Reals and Topology', on Zoom, November 2020
- Special Session in Large Cardinals in Set Theory, American Mathematical Society Central Sectional Meeting at Miami University, March 2007.
- Joint Mathematics Meeting at San Antonio, January 2006
- Boise Extravaganza in Set Theory at Boise State University, March 2005
- Association for Symbolic Logic Annual Meeting at the University of Illinois, Chicago, June 2003
- Boise Extravaganza in Set Theory at Boise State University, March 2003
- South Eastern Logic Symposium at the University of Florida, March 2003

Professional activities

- Co-organized (with Paul Larson) the Special Session on Topology and Descriptive Set Theory in American Mathematical Society Fall Central Sectional Meeting in September 2019 at the University of Wisconsin, Michigan.
- Reviewed the following grant proposals.
  - One proposal for National Science Foundation in 2017.
  - Two proposals for Australian Science Fund in 2008 and 2010.
- Refereed 13 articles.
  - One article for Topology Proceedings in 2022.
  - One article for Topology and Its Applications in 2022.
  - One article for Journal of Symbolic Logic in 2017.
  - One article for Mathematical Review Letters in 2016–2017.

  - One article for Proceedings of American Mathematical Society in 2009
  - Two articles for Topology and Its Applications in 2009 and 2010
  - One article for Topology Proceedings in 2008
  - One article for Fundamenta Mathematicae in 2007
  - One article for Notre Dame Journal of Formal Logic in 2006
  - One article for Canadian Mathematical Bulletin in 2006
  - One article for Archive for Mathematical Logic in 2005
  - One article for the Journal of Symbolic Logic in 2005
- 32 published reviews on Mathematical Reviews
- 17 published reviews on zbMath.

Service Experience

- Council on Diversity and Inclusion (CODI), Fall 2020 – Spring 2023
  - CAS Representative, Fall 2020 – Spring 2023
  - 'Across the Divide Subcomittee', Spring 2021 – Spring 2022
  - Bias in Teaching Evaluation Subcommittee, Fall 2022 – Spring 2023
- Math Department DEI Liaison, Fall 2022 – Present
- Chair Search Committee, Spring 2009
- Search Committee, Fall 2014 – Spring 2015
- Internal review of the Department of Physics Program Review, Spring 2015
- Graduate School's Cross-cultural Mentoring Program, Fall 2022 – Present

For more information and preprints, please refer to
`https://ishiut.github.io`.

CURRICULUM VITAE

PERSONAL INFORMATION

Tao Jiang
Department of Mathematics
Miami University
Oxford, OH, USA
E-mail: jiangt@miamioh.edu
Webpage: users.miamioh.edu/jiangt

EDUCATION

1994 – 2000: Ph.D in Mathematics, University of Illinois at Urbana-Champaign
Advisor: Douglas B. West
Dissertation title: *Problems in Structural and Extremal Graph Theory*

RESEARCH INTERESTS

Combinatorics and Graph theory, particularly extremal problems for graphs, hypergraphs, and set systems.

POSITIONS HELD

2010 – present: Professor, Miami University
2006 – 2010: Associate Professor, Miami University
2001 – 2006: Assistant Professor, Miami University
2000 – 2001: Assistant Professor, Michigan Technological University

AWARDS

2007: Distinguished Junior Faculty Scholar Award, Miami University.
2000: Hohn-Nash award for graduate students, University of Illinois.

RESEARCH GRANTS

2019 – 2024: National Science Foundation Grant, DMS-1855542.
2014 – 2018: National Science Foundation Grant, DMS-1400249.
2013 – 2014: Simons Foundation Collaboration Grant 282906.
2007 – 2009: National Security Agency grant H98230-07-1-027.

CONFERENCE GRANTS

2016: National Science Foundation grant for
Extremal Combinatorics at Illinois Meeting III
Co-PIs: Jozsef Balogh, Hermanshu Kaul, Dhruv Mubayi, Douglas West.

2016: National Security Agency grant for
Extremal Combinatorics at Illinois Meeting III
Co-PI: Jozsef Balogh, Hermanshu Kaul, Dhruv Mubayi, Douglas West Gexin Yu.

FUNDED PROGRAM

2016-2018 (one week per year): American Institute of Mathematics,
Structured Quartet Research Ensembles: Turán problems for sparse hypergraphs,
with Z. Füredi, A. Kostochka, D. Mubayi, J. Verstraëte, San Jose, California.

PROFESSIONAL SERVICES

Refereeing around 5-8 papers per year for major journals in combinatorics, and some generalis
journals such as Advances in Mathematics, Proceedings of AMS, Bulletin of London Math. So

Organized two international conferences, one regional conference, four minisymposia
at SIAM meetings on Discrete Math and six special sessions at AMS meetings.

Reviewed proposals for NSF and NSA and served on NSF panels three times.

CONFERENCES ORGANIZED

05/17: TSIMF Workshop on *Recent Advances in Extremal Combinatorics*, with J. Ma, D. Mubayi, Tsinghua-Sanya International Math. Forum, Sanya, Hainan, China.
08/16: *Extremal Combinatorics at Illinois III*, with J. Balogh, H. Kaul, D. Mubayi, D. West, G. Yu, Chicago, Illinois.
04/13: Midwest Graph Theory Meeting, with R. Akhtar, L. DeBiasio, Z. Miller, D. Pritikin, Oxford, Ohio.

SPECIAL SESSIONS ORGANIZED

04/23: AMS sectional meeting, with J. Balogh, Cincinnati, Ohio.
06/18: SIAM meeting on Discrete Math., with L. Yepremyan, Denver, Colorado.
03/18: AMS sectional meeting, with L. DeBiasio, Columbus, Ohio.
06/14: SIAM meeting on Discrete Math., Minneapolis, Minnesota.
10/13: AMS sectional meeting, with J. Balogh, L. DeBiasio, Louisville, Kentucky.
09/11: AMS sectional meeting, with L. Lu, Winston Salem, North Carolina.
04/08: AMS sectional meeting, with J. Balogh, H. Kaul, Bloomington, Indiana.
03/07: AMS sectional meeting, with Z. Miller, D. Pritikin, Oxford, Ohio.
04/03: AMS sectional meeting, with Z. Miller, D. Pritikin, Bloomington, Indiana.
06/02: SIAM meeting on Discrete Math (two minisymposia)., San Diego, California.

COMMITTEES

University: Graduate council
College: Chair review committee, Curriculum committee, graduate scholarship committee.
Department: Search committee, graduate committee, governance committee, advising committee, full professor committee, tenure and promotion committee, Alumni relations committee, Faculty adviser of Pi Mu Epsilon student math organization Ohio Delta chapter.

STUDENTS MENTORED

1. Adam Ghattas, Masters, 2007. Logos Analytics, owner.
2. Bryan Petrak, Masters, 2007, Ph.D Delaware 2012. Systems Engineer, Boeing.
3. Christine Truesdell, Masters, 2008.
4. Michael Salerno, Masters, 2009. Product line director at Cincinnati Insurance. One joint pape
5. Robert Seiver, Masters, 2010. Risk manager for a wealth management firm. Two joint papers.
6. Edward Boehnlein, Masters, 2011. Ph.D. South Carolina, 2016.
Senior analyst at AML RightSource. One joint paper.
7. Axel Brandt, Masters, 2012, Ph.D. U. Colorado Denver, 2016.
Currently Asst. Prof. at Northern Kentucky Univ. One joint paper.
8. Andrew Newman, Masters, 2013, Ph.D. Ohio State 2018. Postdoc TU Berlin.
Currently postdoc at Carnegie-Mellon University. One joint paper.
9. Clayton Collier-Cartaino, Masters 2014. One joint paper.
10. Nathan Graber, Masters, 2014, now Ph.D. student at UC Denver. One joint paper.
11. David Irwin, Masters, 2015. Senior software engineer at Interfolio. One joint paper.
12. Robert Enzmann, Masters, 2017. Senior Data Scientist at Algorex Health.
13. Yu Qiu, co-supervised Ph.D. student from UTSC, 2018-2019. Two joint papers.
14. Sean Longbrake, graduated with BS in math in 2022, three joint papers

PUBLICATIONS

1. Rainbow clique subdivisions and blowups, with S. Letzter, A. Methuku, L. Yepremyan, **Random Structures and Algorithms**, published online in October 2023, printed version to appear.
2. Bipartite-ness under smooth conditions, with S. Longbrake, J. Ma, **Combinatorics, Probability, and Computing 32** (2023), 546-558.
3. Extremal problems for hyoergraph blowups of trees, with Z.Füredi, A. Kostochka, D. Mubayi, J. Verstraëte, **SIAM J. Discrete Math 37** (2023), 2397-2416.
4. Tree-degenerate graphs and nested dependent random choice, with S. Longbrake, **SIAM J. Discrete Math 37** (2023), 1805-1817.
5. Linear cycles of consecutive lengths, with J. Ma, L. Yepremyan, **J. Combinatorial Theory. Ser. B 163** (2023), 1-24.
6. Rainbow Turán number of clique subdivisions, with A. Methuku, L. Yepremyan, **European J. Combinatorics 110** (2023) paper number 103675, 8pp.
7. Many Turán exponents via subdivisions, with S. Longbrake, **Combinatorics, Probability and Computing 32** (2023), 134-150.
8. Negligible obstructions and Turán exponents, with Z. Jiang, J. Ma, **Ann. Applied Math. 38** (2022), 356-384.
9. On Turán exponents of bipartite graphs, with J.Ma, L. Yepremyan, **Combinatorics, Probability, and Computing 31** (2022), 333-344.
10. Extremal problems for convex geometric hypergraphs and ordered hypergraphs, with Z. Füredi, A. Kostochka, D. Mubayi, and J. Verstraëte, **Canadian Journal of Mathematics 73** (2021), 1648-1666.
11. Partitioning ordered hypergraphs, with Z. Füredi, A. Kostochka, D. Mubayi, J. Verstraëte, **J. Combin. Theory Ser. A, 177**, paper No. 105300, 18pp, 2021.
12. Supersaturation of even linear cycles in linear hypergraphs, with L. Yepremyan. **Combinatorics, Probability, and Computing 29**, 698-721, 2020.
13. Turán numbers of bipartite subdivisions, with Y. Qiu, **SIAM J. Discrete Math 34**, 556-570, 2020.
14. New bounds on a hypergraph bipartite Turán problem, with B. Ergemlidze and A. Methuku, **J. Combinatorial Theory Ser. A 176**, paper No. 105299, 18pp, 2020.
15. Tight paths in convex geometric graphs, with Z. Füredi, A. Kostochka, D. Mubayi, J. Verstraëte, **Advances in Combinatorics**, paper No. 1, 14pp, 2020.
16. Hypergraphs not containing a tight tree with a bounded trunk, with Z. Füredi, A. Kostochka, D. Mubayi, J. Verstraëte, **SIAM J. Discrete Math. 33**, 862-873, 2019.
17. Hypergraphs not containing a tight tree with a bounded trunk II, 3-trees with a trunk of size 2, with Z. Füredi, A. Kostochka, D. Mubayi, J. Verstraëte, **Discrete Applied Math.**, accepted.

18. Turán numbers of hyperaph trees, with Z. Füredi,
J. Combinatorial Theory Ser. A. accepted.

19. Cycles of given lengths in hypergraphs, with J. Ma,
J. Combinatorial Theory Ser. B 133, 54-77, 2018.

20. Turán numbers of extensions of some sparse hypergraphs via Lagrangians, with Y. Peng. B. Wu,
European. J. Combinatorics 73, 20-26, 2018.

21. Linear Turán numbers of r-uniform linear cycles and related Ramsey numbers, with C. Collier-Cartaino, N. Graber, **Combinatorics, Probabibility, and Computing. 27**, 358-386. 2018.

22. On the bandwidth of the Kneser graph, with Z. Miller, D. Yager,
Discr. Appl. Math. 127, 84-94. 2017.

23. Stability and Turán numbers of a class of hypergraphs via Lagrangians, with A. Brandt, D. Irwin,
Combinatorics, Probability, and Computing 26. 367-405, 2017.

24. Small dense subgraphs of a graph, with A. Newman.
SIAM J. Discrete Math. 31. 124-142, 2017.

25. Hypergraph Turán numbers of linear cycles, with Z. Füredi,
J. Combinatorial Theory Ser. A 123, 252-270, 2014.

26. Exact solution of the hypergraph Turán problem for k-uniform linear paths, with Z. Füredi, R. Seiver.
Combinatorica 34, 299-322, 2014. **123**, 252-270. 2014.

27. On the co-degree threshold for the Fano plane, with L. DeBiasio,
European J. Combinatorics 36, 151-158, 2014.

28. Degree Ramsey number for cycles and blowups of trees, with K. Milans, D. West,
European J. Combinatorics 34, 414-423, 2013.

29. Turán numbers of subdivided graphs, with R. Seiver,
SIAM J. Discrete math. 26, 1238-1255, 2012.

30. Arrangements of k-sets with intersection constraints, with M. Perkel, D. Pritikin.
European J. Combinatorics 33, 1882-1899, 2012.

31. Set families with a forbidden induced subposet, with E. Boehnlein,
Combinatorics, Probability, and Computing 21. 496-511, 2012.

32. Near optimal bounds for Steiner trees in the hypercube, with Z. Miller, D. Pritikin,
SIAM J. Computing 40, 1340-1360, 2011.

33. Compact topological minors in graphs,
J. Graph Theory 67, 139-152, 2011.

34. Ramsey numbers of some bipartite graphs versus complete graphs, with M. Salerno,
Graphs and Combinatorics 27, 121-128, 2011.

35. Set systems without a strong simplex, with O. Pikhurko, Z. Yilma,
SIAM J. Discrete Math. 24, 1038-1045, 2010.

36. Separation numbers of trees, with Z. Miller, D. Pritikin,
Theor. Comput. Sci. 410, 3769-3781, 2009.

37. Anti-Ramsey numbers of doubly edge-critical graphs, with O. Pikhurko,
J. Graph Theory 61, 210-218, 2009.

38. Canonical Ramsey numbers and properly colored cycles,
Discrete Math. 309, 4247-4252, 2009.

39. Asymptotic determination of edge-bandwidth of multidimensional grids and Hamming graphs, with R. Akhtar, Z. Miller,
SIAM J. Discrete Math. 22, 425-449, 2008.

40. Edge-bandwidth of the triangular grid, with R. Akhtar, D. Pritikin,
Electronic J. Combin. 14, R67, 2007.

41. A lower bound on the order of regular graphs with given girth pair, with C. Balbuena, Y. Lin, X. Marcote, M. Miller,
J. Graph Theory 55, 153-163, 2007.

42. . Disproof of a conjecture about average Steiner distance,
Ars. Combinatoria , 229-234, 2006.

43. On the Steiner, geodetic and hull numbers of graphs, with C. Hernando, M. Mora, I. Pelayo, C. Seara,
Discrete Math. 293, 139-154, 2005.

44. Asymptotic improvement of the Gilbert-Varshamov bound on the size of the binary codes, with A. Vardy,
IEEE. Transactions Information Theory 50, 1655-1664, 2004.

45. Bipartite anti-Ramsey numbers of cycles and path covers in bipartite graphs, with M. Axenovich, A. Kündgen, **J. Graph Theory 47**, 9-28, 2004.

46. A note on a conjecture about cycles with many incident chords,
J. Graph Theory 46., 180-182, 2004.

47. Anti-Ramsey numbers for complete bipartite graphs, with M. Axenovich,
Ars Combinatoria 73, 311-318, 2004.

48. Edge-colorings of complete graphs that avoid polychromatic trees, with D. West,
Discrete Math. 274, 137-145, 2004.

49. On the Erdős-Simonovits-Sós conjecture about the anti-Ramsey number of a cycle, with D. West,
Combinatorics, Probability, and Computing 12. 585-598, 2003.

50. Local anti-Ramsey numbers of graphs, with M. Axenovich, Zs. Tuza,
Combinatorics, Probability, and Computing 12. 495-511, 2003.

51. Properly colored subgraphs and rainbow subgraphs in edge-colorings with local constraints, with N. Alon, Z. Miller, D. Pritikin, **Random Structures and Algorithms 23**, 409-433. 2003.

52. Isometric cycles and bridged graphs, with S. Kim, D. West,
J. Graph Theory 43, 161-170, 2003.

53. Vertex-disjoint cycles containing specified vertices, with Y. Ishigami, **J. Graph Theory 42**, 276-296, 2003.

54. Constrained Ramsey numbers of graphs, with R. Jamison, A. Ling, **J. Graph Theory 42**, 1-16, 2003.

55. Planar Hamiltonian chordal graphs are cycle extendable, **Discrete Math. 257**, 441-444, 2002.

56. Chromatic spectrum of mixed hypergraphs, with D. Mubayi, Zs. Tuza, V. Voloshin, D. West, **Graph. Combin. 18**, 309-318, 2002.

57. Edge-colorings with no large polychromatic stars, **Graph. Combin. 18**, 305-308, 2002.

58. Anti-Ramsey numbers of subdivided graphs, **J. Combinatorial. Theory Ser. B 85**, 361-366, 2002.

59. On a conjecture about trees in graphs with large girth, **J. Combinatorial Theory Ser. B 83**, 221-232, 2001.

60. Short even cycles in cages with odd girth, **Ars Combinatoria 59**, 165-169, 2001.

61. Small odd cycles in 4-chromatic graphs, **J. Graph Theory 37**, 115-117, 2001.

62. Perfection thickness of graphs, with H. Asari, A Kündgen, D. West, **Discrete Math. 215**, 263-264, 2000.

63. New Upper Bounds for a canonical Ramsey graphs, with D. Mubayi, **Combinatorica 20**, 141-146, 2000.

64. Edge-bandwidth of graphs, with D. Mubayi, A. Shastri, D. West, **SIAM J. Discrete Math. 12**, 307-316, 1999.

65. Coloring of trees with minimum sum of colors, with D. West, **J. Graph Theory 32**, 354-358, 1999.

66. Connectivity and separating sets of cages, with D. Mubayi, **J. Graph Theory 29**, 35-44, 1998.

SELECTED TALKS

1. Balanced supersaturation of graphs, **Extremal Combinatorics at Illinois Meeting IV**, Urbana, IL, May 2023.

2. Balanced supersaturation of graphs, **American Mathematics Society Central sectional Meeting**, Cincinnati, OH, April, 2023.

3. Balanced supersaturation of graphs, **Georgia Tech Combinatorics seminar**, Atlanta, GA, April, 2023.

4. Turán problems for bipartite graphs, **Emory University Combinatorics seminar**, Atlanta, GA, Nov, 2022.

5. Degenerate Turán problems for graphs,
University of Illinois Combinatorics Colloquium, Urbana, IL, September 2021.

6. Linear cycles of givens lengths in linear hypergraphs,
SCMS Combinatorics seminar (online), September, 2020.

7. On Turán exponents of graphs,
Extremal and Probabilistic Combinatorics seminar (online), August, 2020.

8. Linear cycles of consecutive lengths in linear hypergraphs,
University of Illinois Combinatorics seminar (online), June, 2020.

9. Many Turán exponents via subdivisions,
AMS sectional meeting, Gainesville, FL, Fall 2019.

10. On a hypergraph Turán problem,
AMS sectional meeting Madison, Wisconsin, September, 2019.

11. On Turán exponents of bipartite graphs,
AMS sectional meeting, Ann Arbor, Michigan, October, 2018.

12. On Turán exponents of bipartite graphs,
SIAM meeting on Discrete Mathematics, Denver, Colorado, June, 2018.

13. Supersaturation of even linear cycles in linear hypergraphs,
AMS sectional meeting, Buffalo, New York, September, 2017.

14. Supersaturation of even linear cycles in linear hypergraphs,
University of Oxford combinatorics seminar, Oxford, UK, May, 2017.

15. Supersaturation of even linear cycles in linear hypergrapgs,
London School of Economics combinatorics seminar, London, UK, May, 2017.

16. Turán numbers of small subdivisions,
SIAM meeting on Discrete Mathematics, Atlanta, Georgia, June, 2016.

17. Turán numbers for sparse hypergraphs.
SIAM meeting on Discrete Mathematics, Atlanata, Georgia, June, 2016.

18. Hypergraph Turán numbers via Lagrangians,
AMS sectional meeting, Salt Lake City, Utah, April, 2016.

19. Hypergraph Turán numbers via Lagrangians,
University of Illinois at Urbana-Champaign combinatorics seminar,
Urbana, Illinois, March 2016.

20. Turán problems for sparse hypergraphs,
Atlanta Lecture Series on Graph theory and Combinatorics, Atlanta, Georgia, Novemeber, 2015.

21. Turán numbers of linear sunflowers,
AMS sectional meeting, Chicago, Illinois, October, 2015.

22. Some Hypergraph Turán results.
AMS sectional meeting, Lansing, Michigan, March 2015.

23. The Turán problem for hypergraph forests,
WestFest, birthday conference for Doug West's 60th birthday,
Minneapolis, Minnesota, June 2014.

24. The Turán problem for hypergraph forests,
SIAM meeting on Discrete Mathematics, Minneapolis. Minnesota, June, 2014.

25. The expansion method in Turán problems.
Mittag-Leffler Institute Special year in graphs, hypergraphs, and computing,
Stockholm, Sweden, March, 2014.

26. Two Turán results on graphs and hypergraphs,
AMS sectional meeting, Louisville, Kentucky, October, 2014.

27. Set systems with a forbidden induced subposet.
Emory University combinatorics seminar, Atlanta, Georgia, November, 2013.

28. Hypergraph Turán and Ramsey results on linear cycles,
Extremal Combinatorics at Illinois II, Urbana, Illinois, March 2013.

29. Hypergraph Turán numbers of linear cycles,
AMS/MAA joint annual meeting, San Diego, California, January, 2013.

30. Hypergraph Turán numbers of linear cycles,
AMS sectional meeting, Akron, Ohio, October, 2012.

31. Turán numbers of expanded hypergraphs,
Oberwolfach workshop on Hypergraph Turán problems. Oberwolfach, Germany, April, 2012.

32. Co-ddegree threshold of the Fano-plane,
Oberwolfach workshop on Hypergraph Turán problems. Oberwolfach, Germany, April, 2012.

33. Set families with a forbidden induced subposet,
AMS sectional meeting, Washington, DC, March, 2012.

34. Turán numbers of expanded hypergraphs,
AMS sectional meeting, Tampa, Florida, March, 2012.

35. Hypergraph Turán numbers of uniform linear paths,
AMS sectional meeting, Winston-Salem, North Carolina, September, 2011.

36. Turán numbers of subdivided graphs,
AMS sectional meeting, Richmond, Virginia, November, 2011.

37. Set systems without a strong simplex,
AMS sectional meeting, St. Paul, Minnesota, April, 2010.

38. Some Turán type results,
SIAM annual meeting. Denver, Colorado, July, 2009.

39. Compact topological cliques in sparse graphs.
Carnegie-Mellon University combinatorics seminar, Pittsburgh, Pennsylvania. April, 2009.

40. Compact topological cliques in sparse graphs,
AMS sectional meeting, Urbana, Illinois, March, 2009.

41. Canonical Ramsey numbers and properly colored cycles,
AMS sectional meeting, Bloomington, Indiana, April, 2008.

42. Properly colored cycles and rainbow cycles in edge-colored graphs,
AMS/MAA annual meeting, San Diego, California, January, 2008.

43. Anti-Ramsey and canonical Ramsey numbers,
Extremal Combinatorics at Illinois conference, Urbana, Illinois, November, 2006.

44. The induced Turán problem.
AMS sectional meeting, Bowling Green, Kentucky, March. 2005.

45. The Steiner problem in the hypercube,
AMS sectional meeting, Evanston, Illinois, October, 2004.

46. The Steiner problem in the hypercube,
First Chinese national meeting on graph theory and combinatorics, Xinjiang, China, August, 2003.

47. The Steiner problem in the hypercube,
Cumberland conference on combinatorics, graph theory and computing, Murfreesboro,Tenneessee, May, 2003.

48. Tree embeddings,
SIAM meeting on Discrete Mathematics, San Diego, California, June, 2002.

49. Constrained Ramsey numbers of graphs,
AMS/MAA joint annual meeting, San Diego, California, January, 2002.

50. Anti-Ramsey numbers of graphs,
Cumberland conference on combinatorics, graph theory and computing, Memphis, Tennessee, May, 2001.

51. Vertex disjoint cycles through specified vertices,
AMS sectional meeting, Las Vegas, Nevada, April, 2001.

52. Colorful subgraphs in edge-colored graphs,
AMS/MAA joint annual meeting, Washington, D.C., January 2001.

CURRICULUM VITAE

DENNIS S. KEELER

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Dept. of Mathematics
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WORK
Miami University – Associate Professor – 2007-present
Miami University – Assistant Professor – 2003-2007
Massachusetts Institute of Technology – Moore Instructor – 2000-2003
NSF Postdoctoral Fellow – 2000-2003

EDUCATION
University of Michigan – PhD in Mathematics – August 2000
Advisor: J.T. Stafford
Miami University – MA in Mathematics – August 1995
Miami University – BS in Math and Physics – Summa Cum Laude – May 1995

AWARDS AND GRANTS
National Security Agency Young Investigator's Grant (2 year) – 2005-06
Dean's Summer Grant – Summer 2004
Rackham Distinguished Dissertation Award – 2000
Sumner Myers Dissertation Prize – 2000
Wirt and Mary Cornwall Prize – 2000
Rackham Predoctoral Fellowship – 1999-2000

CURRICULUM DEVELOPMENT
Helped develop Top 25 Calculus and Online Calculus

PUBLICATIONS
Arithmetically nef line bundles. Michigan Math. J. **69** (2020), no. 3, 545–558. MR 4132603
Erratum to: Fujita's conjecture and Frobenius amplitude. Amer. J. Math. **141** (2019), no. 5, 1477–1478. MR 4011807
Corrigendum to "Ample filters of invertible sheaves" [J. Algebra 259 (1) (2003) 243–283], J. Algebra **507** (2018), 592–598. MR 3807062
with K. Retert, *Noncommutative ampleness from finite endomorphisms*, J. Algebra **429** (2015), 236–252. MR 3320623
Ample filters and Frobenius amplitude, J. Algebra, **323** (2010), no. 10, 3039–3053. MR 2011f:14029
Fujita's Conjecture and Frobenius amplitude, Amer. J. Math., **130** (2008), no. 5, 1327–1336. MR 2009i:14006

with D. Rogalski and J.T. Stafford, *Naïve noncommutative blowing up*, Duke Math J., **126** (2005), no. 3, 491–546. MR 2006g:14005

Appendix for: D. Arapura, *Frobenius amplitude and strong vanishing theorems for vector bundles*, Duke Math. J., **121** (2004), no. 2, 231–267. MR 2005d:14025

Noncommutative ampleness for multiple divisors, J. Algebra **265** (2003), no. 1, 299–311. MR 2004f:16045

The rings of noncommutative projective geometry, Advances in Algebra and Geometry (Hyderabad, 2001), Hindustan Book Agency, 2003, pp. 195–207, `arXiv:math.RA/0205005`, MR 2005a:16040

Ample filters of invertible sheaves, J. Algebra **259** (2003), no. 1, 243–283. MR 2003m:14026

Noncommutative ample divisors, Ph.D. thesis, University of Michigan, 2000.

Criteria for σ-ampleness, J. Amer. Math. Soc. **13** (2000), no. 3, 517–532. MR 2001d:14003

Noncommutative algebraic geometry, Mathematics from a Christian Perspective (Grand Rapids, 1999), pp. 111–114, available on my home page.

with L. Rodman and I. M. Spitkovsky, *The numerical range of* 3×3 *matrices*, Linear Algebra Appl. **252** (1997), 115–139. MR 97k:15062

SELECTED PRESENTATIONS (• = invited)

- "Arithmetically nef line bundles" - AMS Special Session, Cincinnati, Apr. 2023
- "Twisted Cox rings" - AMS Special Session, Columbus, Mar. 2018
- "Noncommutative ampleness from finite endomorphisms" - AMS Special Session, Denver, Oct. 2016

Co-organizer (with Kim Retert) - Special Session on Noncommutative Algebraic Geometry, AMS Sectional Meeting, U of Kentucky, March 2010

- "How your computer does algebra" - Taylor University, Nov. 2008
- "Non-Euclidean Geometry and the Shape of the Universe" - Miami University, Physics Colloquium, Oct. 2008
- "How your computer does algebra" - Manchester College, Nov. 2006
- "Vanishing theorems in noncommutative geometry" - AMS Special Session, Eugene, Nov. 2005
- "Computation in noncommutative algebraic geometry" - AMS Special Session, Santa Barbara, Apr. 2005
- "Noncommutative algebra" – short course, Abdus Salam International Centre for Theoretical Physics, Trieste, Italy – Aug. 2004
- "Naïve noncommutative blowing-up" – AMS Regional Meeting, Athens, OH – Mar. 2004
- "Naïve noncommuative blowing up" – Mittag-Leffler Institute, Sweden – Jan. 2004

"Ample filters and Frobenius amplitude" - Joint Meetings – Jan. 2004

- "Noncommutative projective geometry" – U of Dayton – Nov. 2003
- "Naïve noncommutative blowing up" – Purdue U – Mar. 2003
- "Generalizations of Serre Vanishing" – U of Michigan – Mar. 2003
- "Exotic noncommutative surfaces, II" – "Algebras, Actions, and Algorithms" special session, Joint Meetings – Jan. 2003
- "Exotic noncommutative surfaces" – UW-Milwaukee Colloquium – Dec. 2002

JANE KEISER

Professor of Mathematics Education, Miami University

PROFESSIONAL PREPARATION		Grad. Date
Taylor University, Upland, IN	B.S.: Mathematics/Sec. Ed.	1983
Ball State University, Muncie, IN	M.A.: Mathematics	1988
Indiana University, Bloomington, IN	Ph.D.: Curr. & Instr. (Cognate: Mathematics)	1997

APPOINTMENTS

Professor, Department of Mathematics	
Miami University, Oxford, OH	2016-present
Associate Professor, Department of Mathematics and Statistics	
Miami University, Oxford, OH	2003-2016
Assistant Professor, Department of Mathematics and Statistics	
Miami University, Oxford, OH	1996-2003
Instructor, Depts. of Mathematics and Teacher Education	
Taylor University, Upland, IN	1990-1992
Instructor, Department of Mathematics	
Ball State University, Muncie, IN	1988-1990

PEER-REVIEWED RESEARCH, SCHOLARLY OR CREATIVE ACTIVITIES

Books, Chapters:

Harper, S.R., Cox, D.C., & **Keiser, J.M.** (July, 2020). The impact of defining activity on the beliefs of prospective elementary teachers. Submitted to the Topic Study Group 28: Preservice Mathematical Teacher Education at Primary Level of the the *14th International Congress on Mathematical Education* Conference Proceedings. Shanghai, China.

Keiser, J.M. & Malinosky Coelho da Rosa, F. (2020). The mathematics teacher's training to act in the United States schools, in Marinho, J.R. (Ed.) *Formação de Professores de Matemática.* (Mathematics Pre-service Teachers in several countries) (p. 145-161). Editora Livraria da Fisica.

Keiser, J. M. (2016). Introductory discussions of "What constitutes a proof?" In R. Schwell, A. Steurer & J.F. Vasquez (Eds.), *Beyond lecture: Resources and pedagogical techniques for enhancing the teaching of proof-writing across the curriculum* (pp. 9-17). MAA Press Notes/Volume 85. Washington, DC: Mathematical Association of America.

Wanko, J. J., **Keiser-Krumpe, J.**, Johnson, I. D., & Stonewater, J. K. (2005). The Middle Childhood Mathematics Inquiry Learning Project. In S. Wagner & S. Meiring (Eds.), *The Story of SUSTAIN: Models of Reform in Mathematics and Science Teacher Education* (pp. 69-88). Columbus, OH: Ohio Resource Center for Mathematics, Science, and Reading.

Keiser, J. M. (2002). The role of definition. In A. R. Teppo (Ed.), *Reflecting on NCTM's Principles and Standards in Elementary and Middle School Mathematics: Readings from NCTM's School-Based Journals* (pp. 164-169). Reston, VA: NCTM, Reprint of 2000 MTMS article.

Articles in Refereed Journals:

Cox, D. C., Harper, S. R., & **Keiser, J. M.** (2023). Widening the epistemological window. In T. Lamberg & D. Moss (Eds.) *Proceedings of the forty-fifth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol. 2)* (pp. 267-271). University of Nevada, Reno.

Keiser, J. M., Harper, S. R., & Cox, D. C. (2023). Using number talks to reason about early number concepts in authentic ways. *Proceedings of the forty-fifth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol. 2)* (pp. 841-842). University of Nevada, Reno.

Cox, D.C., Harper, S.R., & **Keiser, J.M.** (2021). Preservice elementary teachers' beliefs about the role of definition in the learning of mathematics. *Journal of Educational Research and Innovation, 9*(1), 1-23 (article 4).

Cox, D., Harper, S.R., & **Keiser, J.M.** (2018). Reflecting on the act of defining. In T.E. Hodges, G. J. Roy, & A. M. Tyminski, (Eds.), *Proceedings of the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 735-738). Greenville, SC: University of South Carolina & Clemson University.

Lopes, C. E., & **Keiser, J.** (2017). The professional journey of Beatriz Silva D'Ambrosio: A mathematics educator. *International Journal for Studies in Mathematical Education, 9*(3), 55–72.

Koyunkaya, M.Y., Kastberg, S., Quinlan, J., Edwards, T., & **Keiser, J. M.** (2015). Dynamic right triangles, *Mathematics Teacher 109*(4), 320.

Naresh, N., Harper, S. R., **Keiser, J. M.**, Krumpe, N. (2014). Probability explorations in a cultural context. *Mathematics Teacher, 108*(3), 184–92.

Cox, D. C., D'Ambrosio, B. S., **Keiser, J. M.**, & Naresh, N. (2014). Repositioning ourselves: Acknowledging contradiction (Um reposicionamento: reconhecendo nossas contradições). *Bolema, 28* (49).

Keiser, J. M. (2012). On my mind: Computational fluency at what price? *Mathematics Teaching in the Middle School, 18*(2), 69-71.

Cox, D. C., Naresh, N., D'Ambrosio, B. S., **Keiser, J.M.** (2012). Honoring teacher's identity: A journey towards non-evaluative listening. In Van Zoest, L. R., Lo, J.J., & Kratky, J. L. (Eds.), *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 417-422). Kalamazoo, MI: Western Michigan University.

Keiser, J. M. (2012). Students' strategies take us off guard. *Mathematics Teaching in the Middle School, 17*(7), 418-425.

Keiser, J. M. (2010). Shifting our computational focus. *Mathematics Teaching in the Middle School, 16*(4), 216-223.

Keiser, J. M. & Gloeckner, D. (2009). A partnership of nurturing pedagogy: The story of MUPET-Math. *Education in a Democracy: A Journal of the NNER, 1*(1), 103-118.

Keiser, J. M. (2007). Features of convincing arguments for middle grades preservice teachers. In Lambert, T., & Wiest, L. R. (Eds.), *Proceedings of the 29th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp.102-104). Stateline (Lake Tahoe), NV: University of Nevada, Reno.

Keiser Krumpe, J. & Krumpe, N. J. (2007). Shading patterns in multiplication tables. *Online Journal of School Math, 5*(1).

Keiser, J. M. (2004). Struggles with developing the concept of angle: Comparing sixth-grade students' discourse to the history of the angle concept. *Mathematical Thinking and Learning 6*(3), 285-306.

Keiser, J. M., Klee, A., & Fitch, K. (2003). An assessment of students' understanding of angle. *Mathematics Teaching in the Middle School, 9*(2), 116-119.

Keiser, J. M. (2003). Variations on a view tube. *Mathematics Teacher 96*(3), 170-176.

Krumpe, N. J. & **Keiser, J. M.** (2003). Getting to know a calculator's numerical limitations. *Mathematics Teacher, 96* (2), 138-140.

Stonewater J. K., Kullman, D. E., & **Keiser, J. M.** (2002). The Miami mathematics by inquiry curriculum project: Design, implementation, and assessment. *Ohio Journal of School Mathematics, 45,* 17-23.

Keiser, J. M. (2001). The benefits of "Show me . . ." in mathematical explorations. *Ohio Journal of School Mathematics, 44,* 17-22.

Keiser, J. M. (2000). The role of definition. *Mathematics Teaching in the Middle School, 5*(8), 506-511. (Focus Issue on Mathematical Communication). .

Keiser, J. M. & Lambdin, D. V. (1996). The clock is ticking: Time constraint issues in mathematics teaching reform. *Journal of Educational Research, 90*(1), 23-31. .

Keiser, J. M. (1989). A history module for the mathematics classroom. *Indiana Mathematics Teacher 4*(1), 18-23.

Commissioned Works:

Keiser, Jane M. (2002). Dimension. In M. Brandenberger (Ed.), Mathematics, Macmillan Science Library, Macmillan Reference USA.

Keiser, J. M. (1997). Analytical Memorandum, A.B. Hart Middle School, Cleveland, Ohio. Site visit report for Jane Butler Kahle's Bridging the Gap Study.

Keiser, J. M. (1997). Impressionistic tale—Gender equity: The other side of the coin. Site visit report for Jane Butler Kahle's Bridging the Gap Study.

Reviews, Abstracts:

Cox, D. C., D'Ambrosio, B., **Keiser, J. M.,** & Naresh, N. (2010). (listed alphabetically) Exploring children's mathematical voices as input for improving the teaching of mathematics. Abstract published in the *Proceedings of the 32nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* (Vol. VI, pp. 1396) Columbus, OH: The Ohio State University. Refereed national conference and proceedings; Equal contributions were made by each author.

Presentations at Professional Conferences:

Cox, D. C., Harper, S. R., & Keiser, J. M. (October 2023). Widening the epistemological window. Session presented at the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Reno, NV.

Keiser, J. M., Harper, S. R., & Cox, D. C. (October 2023). Using number talks to reason about early number conceptsin authentic ways. Poster session presented at the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Reno, NV.

Nirode, Wayne & Keiser, Jane. *Preservice Teachers' Reasoning at the Intersection of Conditional Statements, Converses, and Diagrams*; Association of Mathematics Teacher Educators, Online, February 18, 2021.

Harper, S.R., Cox, D.C., & Keiser, J.M. (accepted for July 2020). The impact of defining activity on the beliefs of prospective elementary teachers. Submitted to the Topic Study Group 28: Preservice Mathematics Teacher Education at Primary Level of the 14th International Congress on Mathematical Education Conference Proceedings. Shanghai, China. [Session canceled]

Harper, S.R., Keiser, J.M., & Cox, D.C. (2019, February). *Incorporating mathematical empathy and fluidity in the teaching of definition.* Session presented at the Association of Mathematics Teacher Educators, Orlando, FL.

Cox, D.C., Harper, S.R., & Keiser, J.M. (2018, November). *Reflecting on the Act of Defining.* 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Greenville, SC.

Keiser, J.M. (2018, September). *Using Visuals in History of Mathematics Courses.* Miami University's Annual Dept. of Mathematics Conference: "Making Mathematics Visible," September 2018.

Keiser, J.M, & Harper, S.R. (2018, February). *Infusing Mathematics with History: A Capstone Course for Prospective Secondary Mathematics Teachers.* Association of Mathematics Teacher Educators Annual Conference. Houston, TX.

Keiser, J. M., & Watt, S. J. (2017, February). *The implementation of a collaborative math tutoring model in a preservice special education program.* Association of Mathematics Teacher Educators Annual Conference. Orlando, FL.

Using Student Interests to Develop Quantitative Reasoning, National Council of Teachers of Mathematics, Boston, MA, April 16, 2015 (with Lynda Wiest).

Straddling two worlds: Co-creating teaching-centered professional development, Association of Mathematics Teacher Educators, Orlando, FL, February 14, 2015 (with Dana Cox, Beatriz D'Ambrosio, Todd Edwards, Suzanne Harper, Nirmala Naresh, & Dianne Suiter).

Developing as a mathematics teacher educator: Living contradictions, Association of Mathematics Teacher Educators, Orlando, FL, January 26, 2013 (with Signe Kastberg, Shelly Harkness, Nirmala Naresh, & Dana Cox).

Honoring teacher's identity: A journey towards non-evaluative listening, 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education , Kalamazoo, MI, 2012 (with Dana Cox, Nirmala Naresh, Beatriz D'Ambrosio)

What do we mean by computational fluency? (Adjusting to students' transitioning computational strategies), Association of Mathematics Teacher Educators, Ft. Worth, TX, February 10, 2012.

High cognitive demand explorations that improve communication skills. Annual Ohio Council of Teachers of Mathematics Conference, Toledo, OH, October 13, 2011.

Learn↔Reflect Reflection Session, (one of two Professional Development Services Committee members who facilitated this session) National Council of Teachers of Mathematics, Indianapolis, IN, April 14, 2011.

Can't do long division? Adjusting to students' transitioning computational strategies, National Council of Teachers of Mathematics, Indianapolis, IN, April 16, 2011.

Listening, reflecting, and planning: The use of student interviews in teachers' professional development, Association of Mathematics Teacher Educators, Irvine, CA, January 28, 2011 (with Jeffrey Wanko and Beatriz D'Ambrosio).

Exploring children's mathematical voices as input for improving the teaching of mathematics, 32nd Annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME~NA), Columbus, OH, October 30, 2010 (Poster Session with Dana Cox, Beatriz D'Ambrosio, and Nirmala Naresh).

Exploring computational fluency in the middle grades, Ohio Council of Teachers of Mathematics, Cincinnati, OH, November 14, 2009 (with Don Gloeckner and Karen Fitch from Talawanda Middle School).

Features of convincing arguments for middle grades preservice teachers, 29th Annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME~NA), Lake Tahoe, NV, October 26, 2007.

"I understand it, I just don't know how to say it": Developing students' communication skills in mathematics content courses, Association of Mathematics Teacher Educators, Tampa, FL, January 27, 2006 (with Suzanne Harper).

Exploring the big ideas of math: An ODE and lesson lab funded PD for Ohio teachers, Ohio Council of Teachers of Mathematics, Toledo, OH, October 12, 2006 (with Barbara Moses from BGSU).

Paper polyhedra: What's the purpose? Ohio Council of Teachers of Mathematics, Toledo, OH; October 13, 2006.

A spyglass adventure: The problem that kept on going and going and going, National Council of Teachers of Mathematics, Philadelphia, PA, April 24, 2004.

Variations on the view tube activity, Ohio Council of Teachers of Mathematics, Akron, OH, October 14, 2004.

Inquiry learning for preservice middle school mathematics teachers, Research Presession of the annual meeting of the National Council of Teachers of Mathematics, San Antonio, TX, April, 2003 (with Wanko, J., Johnson, I. D. & Stonewater, J.).

How preservice teachers view proof, National Council of Teachers of Mathematics, Regional in Columbus, OH, September 20, 2001.

Moving beyond Flatland: Three-dimensional activities with and without a computer, National Council of Teachers of Mathematics, Chicago, IL, April 13, 2000.

Improving students' spatial sense, Ohio Council of Teachers of Mathematics, Akron, OH, October 23, 1998.

Sharp turns ahead! Learning from students' struggles with the concept of angle, National Council of Teachers of Mathematics, Minneapolis, MN, April 16-20, 1997.

The role of definition in the mathematics classroom, American Educational Research Association, Chicago, IL, March 28, 1997.

Other Presentations:

Barney Teaching Fellowship Colloquium, April 19, 2006.

Miami University middle childhood mathematics content courses, for participants of "Preparing Mathematicians to Educate Teachers" (PMET) weeklong workshop in Bowling Green, Ohio, June 25, 2004.

Conducting effective observations of classroom teachers, for administrators and principals of "Planting Seeds, Cultivating Clusters: Strengthening Middle Grade Mathematics and Science" grant in Northern Kentucky, June 12, 2003.

Presentation about the Connected Mathematics Project for the Standard-based Curriculum Showcase, sponsored by the SW Ohio Regional Professional Development Centers and Hamilton County ESC, Springdale, OH, May 16, 2002.

Two presentations for Institute for Educational Renewal's "Seeing is Believing" Workshop, Fairfield, OH, Sept. 27, 1997.

Mathematicians and sixth grade students' understandings of angle, for the annual Taylor University's Mathematics Banquet, May 6, 1997.

TEACHING AND INSTRUCTIONAL ACTIVITIES (Fall 2007 through Spring 2020)

Instructional Courses Taught:

- Mathematics for Teachers of Grades P-6 (MTH 115, 4 credit course, 17 sections)
- Mathematics for Elementary Teachers (MTH 116, 4 credit course, 9 sections)
- Calculus I (MTH 151, 5 credit course, 1 section)
- Mathematics for Middle Childhood Teachers: Structure of Arithmetic and Algebra (MTH 217, 3-4 credit course, 10 sections)
- Geometry for Middle Childhood Teachers (MTH 218, 4 credit course, 1 section)
- Patterns & Structures (MTH 407, 3 credit course, 1 section)
- Foundations of Geometry (MTH 411, 3 credit course, 2 sections)
- Great Theorems of Mathematics (MTH 482, 3 credit course, 8 sections)
- Geometry for Secondary School Teachers (MTH 606, 3 credit course, 2 sections)
- Calculus for Secondary School Teachers (MTH 605, 3 credit course, 1 section)
- Middle Childhood Mathematics (EDT 429M, 3 credit course, 1 section)

Curriculum Committees:

MTH 217 (now 4 credit hours) – *Mathematics for Middle School Teachers* – Fall 2014.
MTH 331 (3 credit hours) – *Proof: Introduction to higher mathematics* – Fall 2013.
MTH 409 (3 credit hours) – *Secondary Mathematics from an Advanced Perspective* – Fall 2008.

Personal Professional Development:

Summer 2020: 2 classes taken on online instruction and one seminar on the use of TopHat to teach Great Theorems of Mathematics

Since the last program review I have had one summative peer review and one Small Group Instructional Diagnosis (SGID), both in Spring 2015.

EXTERNALLY FUNDED ACTIVITIES

Co-Principal Investigator for a grant from Ohio Department of Education, "*Developing Ownership and Vision: Empowering Teachers as Instructional Leaders*"-*Project Dovetail* ($741,710), September 2013- August 2015.

Instructor for the U.S. Department of Education funded *Miami University Partnership for Enhancing Teaching in Math* (MUPET) grant ($717,188), Spring 2007 – Spring 2010.

University Coordinator and Instructor of Record for the over 56 online classes taught Spring/Summer/Fall 2006, Spring/Summer/Fall 2007, and Spring 2008 for *Breakthrough Mathematics (LessonLab)*($225,000).

Co-Principal Investigator for a project EPIC grant from Ohio Department of Education, "Encouraging Proficiency in Content." ($200,000) Spring 2005-Fall 2005.

Co-Principal Investigator for an OBR project SUSTAIN grant, "Middle Childhood Mathematics Inquiry Learning Project." ($108,000) Fall 2001 to Spring 2003.

External evaluator for 5 grants, the most recent being "Planting Seeds, Cultivating Clusters: Strengthening Middle Grade Mathematics and Science in Northern Kentucky," Project Director: Linda Sheffield, funded by IEQ, 2003 – 2004.

Unfunded:

Early and Focused Field Experience for Candidate Teachers (Project EFFECT), $435,288. National Science Foundation—Discovery Research K-12 (DR K-12) [Program Solicitation NSF 10-610]; PI: Jane Keiser, co-PI's: Dana Cox, Beatriz D'Ambrosio, Suzanne Harper, Nirmala Naresh, (Department of Mathematics, Miami University), Jeffrey Wanko and Todd Edwards (Department of Teacher Education, Miami University). Written during the Fall Semester 2010; Submitted January 5, 2011. Notification, June 2011. (NSF accepted 10% of the 510 submitted grant proposals.)

Early and Focused Field Experience for Candidate Teachers (Project EFFECT), $199,919. National Science Foundation—Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES) [Program Solicitation NSF 10-544]; PI: Jane Keiser, co-PI's: Dana Cox, Beatriz D'Ambrosio, Suzanne Harper, Nirmala Naresh, (Department of Mathematics, Miami University), Jeffrey Wanko and Todd Edwards (Department of Teacher Education, Miami University). Submitted May 27, 2010. Notification, October 18, 2010 (NSF accepted 11% of the 1160 submitted grant proposals).

NSF Travel Grant—submitted to National Science Foundation (NSF), it would have allowed me to participate in the Eleventh International Congress on Mathematical Education in Monterrey, Mexico from July 6-13, 2008.

RECENT SERVICE TO DEPARTMENT AND UNIVERSITY AND PROFESSION

Profession:

Program Reviewer, Taylor University Department of Mathematics, March 9-10, 2020.

Purdue University: Doctoral Committee Member: Hanan Alyami, Fall 2019 – present.

Purdue University: Doctoral Committee Member: Cetin Bilir, Fall 2015 – Summer 2017.

Proposal Reviewer for AMTE's national conferences (8 of the last 10 conferences)

Membership Committee for *Association of Mathematics Teacher Educators*: February 2013 – February 2016.

Professional Development Services Committee (PDSC) for the *National Council for Teachers of Mathematics:* April 2010-April 2013.

Manuscript Reviewer for *Mathematical Thinking and Learning, Mathematics Teaching in the Middle School, Ohio Journal of School Mathematics, Contemporary Issues in Technology and Teacher Education* journal.

University:

College of Arts & Science Curriculum Committee – meets bi-weekly Fall 2022-present.

Higher Learning Commission Assessment Plan and Reports (College of Arts & Sciences); Fall 2018-Present.

Campus Planning Committee (University); Fall 2016-Fall 2019.

University Studies Advisor/Freshman Orientation (College of Arts & Sciences); Spring 2013-2023.

Search Committee for Chair of Department of Teacher Education: 2012-13 & 2013-14.

Department:

Search Committee for Chair of Mathematics; Fall 2021-22

Program Coordinator for Department of Mathematics' Master of Arts in Teaching Degree; Fall 2003-Present.

Tenure Committee; Fall 2003-Present.

Ombudsperson for Department; Fall 2011-Present.

Search Committees for Mathematics Educators: 1999-00, 2001-02, 2002-03, 2004-05, 2006-07, 2016-17

Regional Search Committee for Mathematician/Mathematics Educator: 2015-16

EDITORSHIP OF JOURNALS OR OTHER LEARNED PUBLICATIONS

Department Editor – Take Time for Action in *Mathematics Teaching in the Middle School* (Dec. 2002 – Dec. 2005)

Editorial Panel Member – Mathematics Teaching: Putting Research into Practice at All Levels, 7th AMTE Monograph (2010).

Paul B. Larson

Curriculum Vitae

Department of Mathematics
Miami University, Oxford, OH 45056 USA
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Education

1998	University of California, Berkeley	Ph.D.	Mathematics
1992	Dartmouth College	A.B.	Mathematics

Employment

2011-	Professor, Miami University, Oxford, Ohio
2008-2011	Associate Professor, Miami University
2003-2008	Assistant Professor, Miami University
1993-1997	Graduate Student Instructor, Departments of Mathematics and Interdepartmental Studies, U.C. Berkeley
1992	Teaching Assistant in Mathematics, Dartmouth College

Fellowships and Visiting Positions

Fall 2021	Visiting Scholar, Harvard University
Summer 2019	Visiting Professor, Osaka Prefecture University
Fall 2012	Visitor, Fields Institute, Toronto
Fall 2009	JSPS Visiting Professor, Kobe University
Fall 2009	Visitor, Mittag-Leffler Institute, Djürsholm, Sweden
Summer 2006	Visiting Professor, University of São Paulo
2003-2004	Postdoctoral Fellow, Centre de Recerca Matematica, Bellaterra, Spain
Spring 2003	Visiting Professor, University of São Paulo
Fall 2002	Postdoctoral Fellow, Fields Institute, Toronto
2001-2002	Postdoctoral Instructor, University of Toronto, Mississauga, Ontario
Fall 2000	Postdoctoral Fellow, Mittag-Leffler Institute
1999-2000	JSPS Postdoctoral Fellow, Kobe University
1998-1999	NSF-NATO Postdoctoral Fellow, Université Paris VII
1997-1998	Graduate Student Researcher, U.C. Berkeley

Courses Taught

Miami University

Abstract Algebra, Spring 2009, Fall 2010, Fall 2015
Analysis, Fall 2014, Spring 2018
Graduate Analysis (641), Spring 2023
Calculus I (151), Fall 2004, Spring 2011, Fall 2013
Calculus I (153), Fall 2006, Fall 2007
Calculus II, Spring 2005, Spring 2013, Spring 2014, Fall 2015, Fall 2016, Spring 2021
Calculus III (Multivariable), Fall 2005, Fall 2006, Fall 2007, Spring 2009, Spring 2010, Fall 2014, Spring 2015, Fall 2022
Calculus on Manifolds (440), Spring 2015
Complex Analysis, Fall 2019
Differential Equations (347), Spring 2017, Spring 2023
Differential Equations and Linear Algebra, Spring 2022
Discrete Mathematics (231), Fall 2004, Spring 2007, Fall 2008, Fall 2010
Discrete Mathematics / Proof (331), Spring 2006, Spring 2008, Spring 2011, Spring 2014, Spring 2020, Fall 2020
Linear Algebra, Fall 2011, Spring 2012, Spring 2016, Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, Fall 2022
Mathematical Logic, Spring 2005, Spring 2007, Spring 2022
Number Theory, Fall 2005
Problem Solving, Spring 2007, Fall 2014
Set Theory, Spring 2008, Spring 2010, Spring 2013, Fall 2016, Spring 2021
Topology, Fall 2008, Fall 2011, Fall 2013, Fall 2018
Graduate Topology (691), Spring 2012, Spring 2019

University of Toronto, Mississauga

Combinatorics, Spring 2001, Spring 2002
Foundations of Analysis, Fall 2001
Linear Algebra, Spring 2002

Fields Institute, Toronto

Large Cardinals, Fall 2012

University Service (All at Miami University)

Mathematics Department Graduate Director, Fall 2016-Summer 2021
Mathematics Department Annual Conference Organizer, 2007, 2008, 2011
Mathematics Department Awards Committee, Spring 2010-Spring 2011
Mathematics Department Colloquium Committee, Fall 2006-Spring 2011
Mathematics Department Facilities Design Committee, Fall 2006-Spring 2009

Mathematics Department Governance Committee, Fall 2010-Spring 2011, Fall 2014-Fall 2016
Mathematics Department Search Committee, 2005-2006, 2011-2012 (chair), 2013-2014, 2014-2015 (chair)
Mathematics Department Tenure Committee (chair), Spring 2010-Spring 2014
Mathematics Department Undergraduate Committee, Fall 2004-Spring 2006, Fall 2013-Spring 2014
Mathematics Department Workload Norms Committee, Fall 2008-Spring 2009

Graduate Council Graduate Achievement Fund subcommittee, Fall 2010-Spring 2013
Faculty Assembly Steering Committee, Fall 2011-Spring 2014
Film Studies Committee, 2005-2012
East Asian Studies Committee, Fall 2005-Spring 2011
Faculty Research Committee, Fall 2007-Spring 2010

Grants and Awards

National Science Foundation research grant DMS-1764320, 2018-2021
National Science Foundation research grant DMS-1201494, 2012-2018
National Science Foundation research grant DMS-0081009, 2008-2011
National Science Foundation research grant DMS-0401603, 2004-2007
Miami University Sigma Xi Researcher of the Year, 2014
Miami University Distinguished Scholar Award, 2008
Miami University College of Arts and Sciences Summer Research Grant, 2004

Professional Service

Editorial work

Editor for the Association for Symbolic Logic's Lecture Notes in Logic book series, 2016-, Managing Editor, 2020-

Editor for the Notre Dame Journal of Formal Logic, 2011-

Co-editor of *Foundations of Mathematics*, with Andrés Caicedo, James Cummings and Peter Koellner, Contemporary Mathematics volume 690, American Mathematical Society, 2017

Reviewing and Refereeing

Reviewer for the American Mathematical Society, 2008-2009, 2020-

Referee for the Bulletin of Symbolic Logic, Journal of Symbolic Logic, Journal of Mathematical Logic, Journal of the Institute of Mathematics of Jussieu, Annals of Pure and Applied Logic, Mathematical Research Letters, Fundamenta Mathematicae, Israel Journal of Mathematics, Mathematical Logic Quarterly, Memoirs of the American Mathematical Society, Notre Dame Journal of Formal Logic, Handbook of Set Theory, CRM Set Theory 2003-2004, Annals of the Japan Association for Philosophy of Science, Transactions of the American Mathematical Society, European Journal of Mathematics

Review of *The axiom of determinacy, forcing axioms and the nonstationary ideal*, by W. Hugh Woodin, in the Bulletin of Symbolic Logic 8 (2002), 91-93

Review of *Proper forcings and absoluteness in* $L(\mathbb{R})$ and *Proper forcing and* $L(\mathbb{R})$, by I. Neeman and J. Zapletal, in the Bulletin of Symbolic Logic 8 (2002), 548-550

Review of *Games of countable length*, *Unraveling* Π^1_1 *sets* and *Unraveling* Π^1_1 *sets, revisited*, by I. Neeman, in the Bulletin of Symbolic Logic 11 (2005), 542-544

Conference Organization

Co-organizer for a Special Session in Large Cardinals in Set Theory for the American Mathematical Society Spring Central Sectional Meeting in Oxford, Ohio, March 2007

Co-organizer for an Appalachian Set Theory meeting in Oxford, Ohio, January 2010

Co-organizer for a Special Session in Set Theory for the American Mathematical Society Fall Eastern Sectional Meeting in Ithaca, New York, Fall 2010

Co-organizer of the Workshop on Iterated Forcing and Large Cardinals, Fields Institute, November 2012

Co-organizer for a Special Session in Set Theory and Its Applications for the American Mathematical Society Fall Southeastern Sectional Meeting in Louisville, Kentucky, Fall 2013

Co-organizer of a Mid-Atlantic Mathematical Logic Seminar, Miami University, April 2014

Co-organizer for a meeting in honor of W. Hugh Woodin held at Harvard University in April 2015

Co-organizer for a Special Session in Large Cardinals and Combinatorial Set Theory for the American Mathematical Society Fall Central Sectional Meeting in Ann Arbor, Michigan, October 2018

Co-organizer for a Special Session in Topology and Descriptive Set Theory for the American Mathematical Society Fall Central Sectional Meeting in Madison, Wisconsin, September 2019

Books and monographs

Variations of $\mathbb{P}_{max}$ Forcing, Ph.D. Thesis, U.C. Berkeley, 1998

The Stationary Tower. Notes on a course by W. Hugh Woodin, American Mathematical Society University Lecture Series volume 32, 2004

Geometric Set Theory, American Mathematical Society Surveys and Monographs Series volume 248, 2020

Extensions of the Axiom of Determinacy, American Mathematical Society University Lecture Series, to appear

Published and Accepted Articles

An $\mathbb{S}_{max}$ variation for one Souslin tree, Journal of Symbolic Logic 64 (1999) 1, 81–98

Separating Stationary Reflection Principles, Journal of Symbolic Logic 65 (2000) 1, 247–258

The size of $\tilde{T}$, Archive for Mathematical Logic 39 (2000) 7, 541–568

Martin's Maximum and the $\mathbb{P}_{max}$ axiom $(*)$, Annals of Pure and Applied Logic 106 (2000) 1-3, 135–149

Chain conditions in maximal models, with Stevo Todorcevic, Fundamenta Mathematicae 168 (2001) 1, 77–104

Showing OCA in $\mathbb{P}_{max}$-style extensions, Kobe Journal of Mathematics 18 (2001), 115–126

Katetov's Problem, with Stevo Todorcevic, Transactions of the American Mathematical Society 354 (2002), 1783–1791

A uniqueness theorem for iterations, Journal of Symbolic Logic 67 (2002) 4, 1344–1350

Bounding by canonical functions, with CH, with Saharon Shelah, Journal of Mathematical Logic 3 (2003) 2, 193-215

Almost-disjoint coding and strongly saturated ideals, Proceedings of the American Mathematical Society 133 (2005) 9, 2737–2739

Saturation, Suslin trees and meager sets, Archive for Mathematical Logic 44 (2005) 5, 581–595

The canonical function game, Archive for Mathematical Logic 44 (2005) 7, 817–827

An Ω-logic primer, with Joan Bagaria and Neus Castells, in: Set Theory, CRM 2003-2004, Birkhauser, 2006, 1–28

Compact spaces, elementary submodels and the countable chain condition, with Lucia Junqueira and Franklin D. Tall, Annals of Pure and Applied Logic 144 (2006) 1-3, 107-116

Irreducibility of products with finitely many points removed, Topology Proceedings 30 (2006) 1, 327-333

Absoluteness for universally Baire sets and the uncountable I, with Ilijas Farah, Quaderni di Matematica 17, 2006

The nonstationary ideal in the $\mathbb{P}_{max}$ extension, Journal of Symbolic Logic 72 (2007) 1, 138-158

Guessing clubs in the generalized club-filter, with Bernhard König and Yasuo Yoshinobu, Fundamenta Mathematicae, 195 (2007) 2, 177–191

Increasing δ^1_2 and Namba-style forcing, with Richard Ketchersid and Jindrich Zapletal, Journal of Symbolic Logic 72 (2007) 4, 1372-1378

On extensions of elementary submodels by forcing, with Lucia Junqueira and Marcelo Passos, Logic Journal of the IGPL 15 (2007) 5-6, 637-651

Bounding the consistency strength of a five element linear basis, with Bernhard König, Justin Moore and Boban Veličković, Israel Journal of Mathematics 164 (2008) 1, 1-18

The stationary set splitting game, with Saharon Shelah, Mathematical Logic Quarterly 54 (2008) 2, 187-193

Absoluteness for universally Baire sets and the uncountable II, with Ilijas Farah, Richard Ketchersid and Menachem Magidor, in : Computational Prospects of Infinity, Part II, Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore - Vol. 15 (2008), 163–191

Rectangular axioms, perfect set properties and decomposition, with Jörg Brendle and Stevo Todorcevic, Bulletin de l'Académie Serbe des Sciences et des Arts, Classe des Sciences Mathématiques et Naturelles, Sciences mathématiques 33 (2008), 91–130

Martin's Maximum and definability in $H(\aleph_2)$, Annals of Pure and Applied Logic 156 (2008) 1, 110-122

Splitting stationary sets from weak forms of Choice, with Saharon Shelah, Mathematical Logic Quarterly 55 (2009) 3, 299-306

The Filter Dichotomy and medial limits, Journal of Mathematical Logic 9 (2009) 2, 159-165

Forcing over models of determinacy, in: The Handbook of Set Theory, Foreman, Kanamori, eds., Springer, 2010, 2121-2177

Introduction to Zermelo's Chess Papers, in: The Collected Works of Ernst Zermelo, Ebbinghaus, Fraser, Kanamori, eds, Springer 2010

D-spaces, irreducibility and trees, with Leandro F. Aurichi and Lúcia R. Junqueira, Topology Proceedings 35 (2010), 73–82

Regular embeddings of the stationary tower and Woodin's Σ^2_2 maximality theorem, with Richard Ketchersid and Jindrich Zapletal, Journal of Symbolic Logic 75 (2010) 2, 711-727

Universally measurable sets in generic extensions, with Itay Neeman and Saharon Shelah, Fundamenta Mathematicae 208 (2010) 2, 173-192

Locally compact perfectly normal spaces may all be paracompact, with Franklin D. Tall. Fundamenta Mathematicae 210 (2010) 3, 285-300

Ultrafilter limits of asymptotic density are not universally measurable, with Jörg Brendle, RIMS Kokyuroku 1686, April, 2010, 16-18

Another c.c.c. forcing that destroys presaturation, with Teruyuki Yorioka, RIMS Kokyuroku 1686, April, 2010, 73-74

Three days of Ω-logic, Annals of the Japan Association for Philosophy of Science 19 (May 2011), 57-86

Small-sum pairs in abelian groups, with Reza Akhtar, Journal de Théorie des Nombres de Bordeaux 22 (2010), 525-535

An introduction to $\mathbb{P}_{max}$ forcing, in: Appalachian Set Theory, Cummings, Schimmerling, eds., Cambridge, 2012

A brief history of determinacy, in: The Handbook of the History of Logic, Kanamori, Gabbay, Woods, eds., Elsevier, 2012

What majority decisions are possible with possible abstaining, with Nick Matteo and Saharon Shelah, Discrete Mathematics 312 (7) 2012, 1309–1392

Some results about (+) proved by iterated forcing, with Tetsuya Ishiu, Journal of Symbolic Logic 77 (2) 2012, 515–531

$\mathbb{P}_{max}$ variations for separating club guessing principles, with Tetsuya Ishiu, Journal of Symbolic Logic 77 (2) 2012, 532–544

Forcing axioms and the Continuum Hypothesis, with David Asperó and Justin Moore, Acta Mathematica 210 (2013) 1, 1-29

On the hereditary paracompactness of locally compact, hereditarily normal spaces, with Franklin D. Tall, Canadian Mathematics Bulletin 57 (2014) 3, 579-584

Universal functions, with Arnold Miller, Juris Steprāns and William Weiss, Fundamenta Mathematicae 227 (2014), 197–245

A Choice function on countable sets, from determinacy, Proceedings of the American Mathematical Society 143 (2015) 4, 1763–1770

Almost Galois ω-stable classes, with John Baldwin and Saharon Shelah, Journal of Symbolic Logic 80 (2015) 3, 763-784

Iterated elementary embeddings and the model theory of infinitary logic, with John Baldwin, Annals of Pure and Applied Logic 167 (2016) 3, 309-334

Automorphisms of $\mathcal{P}(\lambda)/I_\kappa$, with Paul McKenney, Fundamenta Mathematicae 233 (2016) 3, 271-291

Ramsey ultrafilters and countable-to-one uniformization, with Richard Ketchersid and Jindrich Zapletal, Topology and its Applications 213 (2016), 190-198

Consistency of a strong uniformization principle, with Saharon Shelah, Colloquium Mathematicum 146 (2017) 1, 1-13

Closed sets which consistently have few translates covering the line, with Tomek Bartoszynski and Saharon Shelah, Fundamenta Mathematicae 237 (2017) 2, 101-125

Square principles in $\mathbb{P}_{\max}$ extensions, with Andres Caicedo, Grigor Sargsyan, Ralf Schindler, John Steel and Martin Zeman, Israel Journal of Mathematics 217 (2017) 1, 231-261

Real games and strategically selective coideals, with Dilip Raghavan, in Sets and Computations, Lecture Notes Series Vol. 33, Institute for Mathematical Sciences, National University of Singapore, 2017

Scott Processes, in Beyond First Order Model Theory, J. Iovino, ed., CRC press, 2017

Canonical models for fragments of the Axiom of Choice, with Jindrich Zapletal, Journal of Symbolic Logic 82 (2017) 2, 489–509

Coding with canonical functions, with Saharon Shelah, Mathematical Logic Quarterly 63 (2017) 5, 334-341

A model of ZFA with no outer model of ZFAC with the same pure part, with Saharon Shelah, Archive for Mathematical Logic 57 (2018) 7, 853-859

Discontinuous homomorphisms, selectors, and automorphisms of the complex plane, with Jindich Zapletal, Proceedings of the American Mathematical Society 147 (2019) 4, 1733-1737

The rearrangement number, with Andreas Blass, Jörg Brendle, Will Brian, Joel D. Hamkins and Michael Hardy, Transactions of the American Mathematical Society 373 (2020) 1, 41-69

Prediction of chlorine and fluorine crystal structures at high pressure using symmetry driven structure search with geometric constraints, with Mark Olsen, Shefali Bhatia and Burkhard Militzer, J. Chem. Phys. 153, 094111 (2020)

A brief history of determinacy, in: Large Cardinals, Determinacy and Other Topics: The Cabal Seminar, Volume IV, Kechris, Löwe, Steel, eds., Cambridge University Press, 2020

Choosing between incompatible ideals, with Will Brian, European J. Combin. 96 (2021), Paper No. 103349

Unilateral weighted shifts on ℓ_2, with Konstantinos A. Beros, Journal of Operator Theory 87 (2022) 1, 113-136

Polar forcings and measured extensions, with Jindrich Zapletal. Topology and Its Applications 323, January 2023, article 108290

Forcing axioms and the definability of the nonstationary ideal on the first uncountable cardinal, with Stefan Hoffelner, Liuzhen Wu and Ralf Schindler, Journal of Symbolic Logic, to appear

Invited One-Hour Conference Presentations

Set theory and large cardinals, Gathering of Young Logicians in Japan, Tsukuba, November 21, 1999

Maximal Models, Annual Meeting of the Mathematical Society of Japan, Tokyo, March 29, 2000

Souslin trees and the nonstationary ideal, 4th Japan Informal Gathering, Kobe, June 11, 2000

Canonical theories for the first two uncountable cardinals, Association for Symbolic Logic Winter Meeting with the American Mathematical Society, New Orleans, January 12, 2001

Souslin's Axiom and metrizability, Eighth Southeastern Logic Symposium, Gainesville, Florida, April 28, 2001

$\mathbb{P}_{\max}$ *and the nonstationary ideal*, Greater Boston Logic Conference, Cambridge, Massachusetts, May 12, 2001

Revisiting Gödel's argument for the true power of the continuum, MSRI Workshop on the Continuum Hypothesis. Berkeley, May 29, 2001

Forcing axioms and coherent Suslin trees, Spring Topology and Dynamics Conference, Austin, Texas, March 23, 2002

Forcing axioms and the nonstationary ideal, Workshop on the Foundations of Set Theory, Barcelona June 9, 2004

$\mathbb{P}_{\max}$ *and the nonstationary ideal*, Boise Extravaganza in Set Theory 14, March 25, 2005

Generalizations of Σ^2_1 *absoluteness*, Workshop on Computational Prospects of Infinity, Institute for Mathematical Sciences, National University of Singapore, July 5 and July 7, 2005

Regular embeddings of the stationary tower, Singular Cardinal Combinatorics and Inner Model Theory Meeting, Gainesville, Florida March 8, 2007

Large cardinals and forcing-absoluteness, ASL Logic Colloquium, Wrocław, Poland, July 15, 2007

There may be just continuum many universally measurable sets, Mid-Atlantic Mathematical Logic Seminar, Pittsburgh, March 22, 2009

Universally measurable sets in generic extensions, Erwin Schrödinger Institute Workshop on Large Cardinals and Descriptive Set Theory, Vienna, June 15, 2009

Weak diamond and uniformization, Mini-conference on Abstract Elementary Classes and Set Theory, Chicago, July 13, 2009

Universally measurable sets in generic extensions, RIMS Set Theory Workshop, Kyoto, November 19, 2009

The $\mathcal{P}(\omega)/\mathrm{Fin}$ *extension of* $L(\mathbb{R})$, Mid-Atlantic Mathematical Logic Seminar, Rutgers University, October 16, 2010

Models of size $\aleph_1$ *in Abstract Elementary Classes*, Workshop on Forcing Axioms and their Applications, Toronto, October 23, 2012

A Choice function on countable sets, from determinacy, American Mathematical Society Spring Southeastern Sectional Meeting, Oxford, Mississippi, March 1, 2013

Scott processes, American Mathematical Society Spring Western Sectional Meeting, Boulder, Colorado, April 13, 2013

A proof of a theorem of Harrington on counterexamples to Vaught's conjecture, Mid-Atlantic Mathematical Logic Seminar, Rutgers University, October 19, 2013

Iterated ultrapowers, absoluteness and Galois types, Beyond First Order Model Theory Miniconference, San Antonio, January 9, 2015

Scott processes, Workshop on Vaught's Conjecture, Berkeley, California, June 4, 2015

Automorphisms of $\mathcal{P}(\lambda)/I_\kappa$, Perspectives on Infinity Workshop, Torino, September 26, 2015

On the absoluteness of ω*-orbital stability*, Workshop on Set-theoretical aspects of the model theory of strong logics, Centre de Recerca Matemàtica, Bellaterra, September 26, 2016

Real games and the Hausdorff extension, American Mathematical Society Fall Western Sectional Meeting, Denver, October 9, 2016

Geometric forcing II, Set Theory Today, Vienna, September 14, 2018

Balanced forcing extensions, Reflections on Set Theoretic Reflection, Montseny, Catalonia, November 18, 2018

Balanced forcing extensions, 50 Years of Set Theory in Toronto, Fields Institute, May 13, 2019

Scott Processes Revisited, Kobe Set Theory Workshop, March 10, 2021

An introduction to AD^+, Chicago Spring Logic Conference, April 14, 2022

Invited Half-Hour Conference Presentations

The tilde function and $\mathbb{P}_{\max}$, Fifth Luminy Workshop on Set Theory, CIRM, Marseille, September 25, 1998

Chain conditions in maximal models, Set Theory Meeting, Mathematisches Forschungsinstitut, Oberwolfach, Germany, December 16, 1999

Bounding by canonical functions, with CH, Sixth Luminy Workshop on Set Theory, CIRM, Marseille, September 20, 2000

Bounding by canonical functions, with CH, Association for Symbolic Logic Annual Meeting, Philadelphia, March 11, 2001

A solution to Katětov's problem, 964th Meeting of the American Mathematical Society, Lawrence, Kansas, March 31, 2001

Katětov's problem, Summer Conference Series in Topology and Applications, New York City, July 20, 2001

Bounding by canonical functions, with CH, 108th Annual Meeting of the American Mathematical Society, San Diego, January 6, 2002

Iterations of countable models, Association for Symbolic Logic Annual Meeting, Las Vegas, June 2, 2002

Iterations of countable models, Association for Symbolic Logic European Summer Meeting, Münster, Germany, August 4, 2002

Absoluteness and the Chang model, Seventh Luminy Workshop on Set Theory, CIRM, Marseille, September 20, 2002

Q-sets and strongly saturated ideals, 2003 Summer Conference on Topology and its Applications, Washington, D.C., July 10, 2003

The canonical function game, 110th Annual Meeting of the American Mathematical Society, Phoenix, January 7, 2004

The nonstationary ideal, Eighth Luminy Workshop on Set Theory, CIRM, Marseille, September 13, 2004

$\mathbb{P}_{\max}$ *and the nonstationary ideal*, North Texas Logic Conference, Denton, October 10, 2004

Absoluteness for universally Baire sets and the uncountable, Set Theory Meeting, Mathematisches Forschungsinstitut, Oberwolfach, Germany, December 6, 2005

Irreducibility of product spaces with finitely many points removed, Spring Topology and Dynamical Systems Conference. Greensboro, North Carolina, March 25, 2006

Martin's Maximum and definability in $H(\aleph_2)$, Logic Colloquium, Nijmegen, The Netherlands, July 27, 2006

The stationary set splitting game, American Mathematical Society Fall Eastern Sectional Meeting, Rutgers University, October 6, 2007

Martin's Maximum and definability in $H(\aleph_2)$, Set Theory Meeting, Mathematisches Forschungsinstitut, Oberwolfach, Germany, January 16, 2008

There may be just continuum many universally measurable sets, Spring Topology and Dynamical Systems Conference, Gainesville, Florida, March 9, 2009

There may be just continuum many universally measurable sets, Association for Symbolic Logic North American Annual Meeting, South Bend, Indiana, May 21, 2009

Fragments of Martin's Maximum in the $\mathbb{P}_{\max}$ *extension*, American Mathematical Society Fall Western Sectional Meeting, Los Angeles, October 10, 2010

Separating club guessing principles, Association for Symbolic Logic North American Annual Meeting, Berkeley, March 25, 2011

Automorphisms of $\mathcal{P}(\lambda)/I_\kappa$, for λ uncountable, 60 Years of Dow, Cornell University, December 6, 2014

Scott Processes, 121st Annual Meeting of the American Mathematical Society, San Antonio, January 11, 2015

Automorphisms of $\mathcal{P}(\lambda)/I_\kappa$, for λ uncountable, Southeastern Logic Symposium, University of Florida, Gainesville, February 28, 2015

Canonical models for fragments of the Axiom of Choice, Southeastern Logic Symposium, University of Florida, Gainesville, February 27, 2016

Generic instances of the Axiom of Choice, 15th Asian Logic Conference, Daejeon, South Korea, July 13, 2017

Canonical models for fragments of the Axiom of Choice, 124th Annual Meeting of the American Mathematical Society, San Diego, January 11, 2018

Cardinal characteristics related to permutations of conditionally convergent series, 124th Annual Meeting of the American Mathematical Society, San Diego, January 13, 2018

All sufficiently regular sets of reals may be projective, 52nd Spring Topology and Dynamics Conference, Auburn, Alabama, March 15, 2018

Common hypercyclic vectors for backward weighted shifts, American Mathematical Society Fall Southeastern Sectional Meeting, Gainesville, Florida, November 3, 2019

Lecture series

An introduction to $\mathbb{P}_{\max}$ *forcing*, Nagoya University, March 2000 (fourteen hours)

An introduction to $\mathbb{P}_{\max}$ *forcing*, Kitami Institute of Technology, March 2000 (six hours)

An introduction to $\mathbb{P}_{\max}$ *forcing*, Ben Gurion University, Be'er Sheva, October 2000 (six hours)

An introduction to $\mathbb{P}_{\max}$ *forcing*, First Appalachian Set Theory Meeting, Pittsburgh, September 9, 2006 (six hours)

An introduction to Ω*-logic*, Nagoya University, November 2009 (twelve hours)

Tutorial on AD^+, Institute for Mathematical Sciences, National University of Singapore, July 2019 (six hours)

Geometric Set Theory, Young Set Theory Workshop, Novi Sad, Serbia, August 2022 (four hours)

A $\mathbb{P}_{\max}$ *tutorial*, Vienna University of Technology, January 2023 (twenty-two hours)

An introduction to AD^+, Baltic Set Theory Seminar (online), March-May 2023 (twelve hours)

Contributed Conference Lectures

A maximal model for $H(\omega_2)$, Joint Conference of the 5th Barcelona Logic Meeting and the 6th Kurt Gödel Colloquium, Barcelona, June 19, 1999

Chain conditions in maximal models, RIMS Symposium on Set Theory of the Reals, Kyoto, November 18, 1999

On Gödel's argument for $\mathfrak{c} = \omega_2$, Association for Symbolic Logic European Summer Meeting, Paris, July 30, 2000

The canonical function game, 13th Brazilian Logic Meeting, Campinas, May 28, 2003

A minimal model with a nonprincipal ultrafilter on the integers, Conference on Ramsey Theory and Topological Algebra in honor of Neil Hindman, Oxford, Ohio, July 27, 2008

MM$(\mathfrak{c})$ *in a model of* $AD_{\mathbb{R}} + \Theta$ *regular*, Conference on the core model induction and hod mice, Institut for Mathematical Logic, Münster, Germany, July 26, 2010

The Tree Production Lemma and suitably wellfounded limits, Conference on the core model induction and hod mice, Institut for Mathematical Logic, Münster, Germany, July 28, 2010

Fixing the theory of the universally Baire sets, Conference on the core model induction and hod mice, Institut for Mathematical Logic, Münster, Germany, August 5, 2010

Majority decisions when abstention is possible, American Mathematical Society Fall Central Sectional Meeting, Ann Arbor, Michigan, October 20, 2018

Colloquium and Seminar Lectures

Set Theory Seminar, University of California, Berkeley, 1996-1998, January 2003
Logic Seminar, Humboldt University, Berlin, November 1998
Set Theory Seminar, University of Paris VII, 1998-1999, June 2000
Logic/Set Theory Seminar, Kobe University, June 1998, Spring 2000, August 2001, July 2003, July 2004, March 2006, Fall 2009, June 2012, June 2013, July 2014, January 2016, June 2018, June 2022, June 2023
Logic Seminar, Institute of Mathematics, Chinese Academy of Sciences, June 1998
Mathematical Logic Seminar, Carnegie Mellon, September 1999, September 2004
Logic Workshop, City University of New York Graduate Center, September 1999, October 2013, March 2019
Logic Seminar, Mittag-Leffler Institute, Fall 2000, September 2009
Set Theory Seminar, University of Toronto, 2001-2002, March 2003, March 2005, April 2007, June 2009, August 2010, June 2011
Set Theory Seminar, University of Florida, Gainesville, April 2001, March 2005, January 2019
Set Theory Seminar, University of California, Irvine, February 2003, October 2014
Logic Colloquium, University of California, Los Angeles, February 2003, May 2009
Topology Seminar, Howard University, Washington, D.C., March 2003
Set Theory and Topology Seminar, University of São Paulo, Spring 2003, June 2006
Set Theory Seminar, Centre de Recerca Matemática, Bellaterra, 2003-2004
Topology Seminar, Miami University, 2004-2006
Set Theory Seminar, Miami University, 2005-2007
Set Theory Seminar, Boise State University, October 2005
Logic Seminar, Ohio State University, November 2006, November 2010
Model Theory and Descriptive Set Theory Seminar, University of Illinois, Urbana, November 2006
Logic Seminar, Cornell University, October 2007, March 2020
Logic Seminar, University of Illinois at Chicago, September 2008, April 2011, November 2017, February 2019
Set Theory Seminar, University of California, Los Angeles, May 2009

Topology Seminar, Shizuoka University, November 2009
Logic Seminar, Notre Dame University, August 2012
Logic Seminar, Harvard University, March 2014, Fall 2021
Logic Seminar, Rutgers University, April 2014
Departmental Colloquium, University of North Texas, April 2015
Kansai Set Theory Seminar, July 2019
Osaka Prefecture University Departmental Colloquium, July 2019
Muenster Set Theory Seminar, December 2020
Brandeis-Harvard-MIT-Northeastern Joint Mathematics Colloquium, Harvard University, September 2021

Vahagn Manukian

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EDUCATION

June 2005	Ph.D. degree in Mathematics Department of Mathematics, Ohio State University Adviser: Bjorn Sandstede
Thesis	EXISTENCE AND STABILITY OF MULTI-PULSES WITH APPLICATIONS TO NONLINEAR OPTICS
July 1998 - May 2005	Ph.D. Program in Mathematics, The Ohio State University Columbus, Ohio
June 1998	M.A. Degree in Mathematics, State University of New York at Buffalo, Buffalo, New York
Jan. 1997- July 1998	Graduate Program in Mathematics State University of New York at Buffalo, Buffalo, New York
1995-1996	Slovak Language Institute Comenius University, Bratislava, Slovakia
1993-1995	Graduate Program in Mathematics Yerevan State University, Yerevan, Armenia
June 1993	Honors Diploma (Undergraduate Degree) Yerevan State University, Yerevan, Armenia
1988-1993	Undergraduate program in Mathematics Yerevan State University, Yerevan, Armenia

EMPLOYMENT

Aug 2018-Present	Chair Department of Mathematical and Physical Sciences, Miami University
Aug 2017-Present	Associate Professor Department of Mathematical and Physical Science, Miami University Department of Mathematics, Miami University
Aug. 2010 – Aug 2017	Assistant Professor Department of Mathematics, Miami University
Aug. 2008 - May 2010	Lecturer Department of Mathematics, University of Kansas
June 2005 - Aug. 2008	Postdoctoral Research Associate, Department of Mathematics, University of North Carolina at Chapel Hill
June 2005 - May 2008	Postdoctoral Fellow

	Department of Mathematics, North Carolina State University
Sept. 1998-June 2005	Teaching Associate
	Department of Mathematics, The Ohio State University
1996-1998	Teaching Assistant
	Department of Mathematics, State University of New York at Buffalo

PROFESSIONAL AFFILIATIONS

- Adjunct Professor of Mathematics, Associate Member in Graduate Faculty, Department of Mathematics, North Carolina State University; November 2013-2018.
- Long Term Visitor at Institute of Mathematics and its Applications (IMA); June 01, 2013-June 20, 2013.

AWARDS

- NSF DMS award 1919555 " Fall 2023 Mathematics Conference: Differential Equations and Dynamical Systems and Applications" $14,880. Co-PI with A. Ghazaryan, Alin Pogan and Alim Sukhtayev. Oxford, Ohio.
- NSF DMS award 1919555 " Fall 2019 Mathematics Conference: Differential Equations and Dynamical Systems and Applications" $11,552. Co-PI with A. Ghazaryan, Alin Pogan and Alim Sukhtayev. Oxford, Ohio.
- Collaboration Grant for Mathematicians from Simons Foundation $35,000. Duration 09/1/2012 -08/31/2018. Project title: Existence and stability of traveling waves.
- NSF DMS award 1630812 "Fall 2016 Mathematics Conference: Differential Equations and Dynamical Systems" $10,000. Co-PI with A. Ghazaryan and Alin Pogan. Oxford, Ohio
- $2700 award from Institute for Mathematics and its Applications (IMA) to visit the IMA from June 01, 2013-June 31, 2013
- Faculty Research Grant, Miami University, to support research in Summer 2011.
- NSF Travel award to participate at the 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Dresden, Germany, May
- NSF Travel award to attend the First PRIMA Congress in Sydney, Australia July 6-10, 2009
- Scholarship of Government of Slovakia
- Honor Diploma After Graduation
    - Department of Mathematics, Yerevan State University

PUBLICATIONS AND PREPRINTS

- V. Manukian, S. Schecter, More traveling waves in the Holling-Tanner model with weak diffusion. Discrete Contin. Dyn. Syst. Ser. B 27 (2022), no. 9,

- M. Bakhshi, A. Ghazaryan, V. Manukian, N. Rodriguez, Traveling wave solutions in a model for social outbursts in a tension-inhibitive regime. Stud. Appl. Math. 147 (2021), no. 2, 650–674.
- Ghazaryan, S. Lafortune, V. Manukian, Spectral analysis of fronts in a Marangoni-driven thin liquid film flow down a slope. SIAM J. Appl. Math, Vol. 80, No. 1 (2020) 95-118.
- H. Cai, A. Ghazaryan, V. Manukian, Fisher-KPP dynamics in diffusive Rosenzweig-MacArthur and Holling-Tanner models. Math. Model. Nat. Phenom. 14 (2019) 404
- A. Ghazaryan, S. Lafortune, V. Manukian, Stability of nonlinear waves and patterns and related topics. Phil. Trans. R. Soc. A 376: 2018 0001
- A. Ghazaryan, S. Lafortune, V. Manukian, Stability of front solutions in a model for a surfactant driven flow on an inclined plane. Physica D. Nonlinear Phenomena 307 (2015) 1-13.
- A. Ghazaryan, V. Manukian, S. Schecter, Traveling waves in the Holling-Tanner model with weak diffusion. Proceedings of the Royal Society of London A: Mathematical, Physical and Engineering Sciences 471 (2015) 16pp.
- V. Manukian, On traveling waves of Gray-Scott model. Dynamical Systems: An International Journal 30 no 3 (2015) 270-296.
- A. Ghazaryan, V. Manukian, Coherent structures in a population model for mussel-algae interaction. SIAM Journal on Dynamical Systems 14, no. 2 (2015) 893-913.
- N. Costanzino, V. Manukian, C.K.R.T Jones, Solitary waves of the regularized short pulse and Ostrovsky equations. SIAM J. Math. Anal. 41 (2009) 2088-2106.
- V. Manukian, N. Costanzino, C.K.R.T Jones, B. Sandstede, Existence of multi-pulses of the regularized short-pulse and Ostrovsky equations. Journal of Dynamics and Differential Equations 21 (2009) 607-622.
- V. Manukian, B. Sandstede. Multi-hump pulses in systems with reflection and phase invariance. Journal of Differential Equations 247 (2009) 1886-1898.
- V. Manukian, S. Schecter. Traveling waves for a thin liquid film with surfactant on an inclined plane. Nonlinearity 22 (2009) 85-122.

Book

- Ghazaryan, S. Lafortune, V. Manukian. Introduction to Traveling Waves, Chapman and Hall/CRC; 1st edition (November 14, 2022).

EDITORIAL WORK

Co-editor for a thematic issue "Stability of nonlinear waves and patterns and related topics" for *Philosophical Transactions of the Royal Society A: Mathematical, Physical, and Engineering Sciences*, published in March 2018

PROFESSIONAL ACTIVITIES

EDITOR OF EDITORIAL BOARD

Theme issue 'Stability of nonlinear waves and patterns and related topics' organized and edited by Anna R. Ghazaryan, Stéphane Lafortune and Vahagn Manukian. Philosophical Transactions of the Royal Society A, ISSN 1364-503X, Volume 376, Issue 2017, 13 April 2018.

PRESENTATIONS

- *Multi-scale reduction of modified Holling-Tanner model with an Allee effect.* Mathematics Days in Sofia 2023, July 10-July 14, 2023 in Sofia, Bulgaria. (invited presentation).
- *Multi-scale reduction of modified Holling-Tanner model with an Allee effect.* The 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications May 31 - June 4, 2023, Wilmington, NC USA. (invited presentation).
- *Front Solutions of Modified Rosenzweig-MacArthur Model.* AMS Spring Central Sectional Meeting, Ohio State University, Columbus, OH, March 16-18, 2019.
- *The Gray-Scott Model: Bistable Regime*, SIAM Conference on Analysis of Partial Differential Equations, Baltimore, Maryland, December 9-12, 2017.
- *The Gray-Scott Model: Bistable Regime*, SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, Pennsylvania, Aug. 8-11, 2016.
- *Stability of front solutions for a surfactant driven flow on an inclined plane*, AMS Section Meeting, New Brunswick, NJ, November 14-15, 2015.
- *Stability of front solutions for a surfactant driven flow on an inclined plane*, SIAM Conference on Analysis of Partial Differential Equations, Paradise Valley Scottsdale, Arizona, November 7-10, 2015.
- *Existence and Stability of Traveling Waves in Gray-Scott Model*, KUMU (Universities of Kansas and Missouri) Conference in PDE, Dynamical Systems and Applications, University of Kansas, Lawrence Kansas, April 18-19, 2015.
- *Traveling Waves in Holling-Tanner Model with Diffusion*. The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, July 7 - 11, 2014.
- *Traveling Waves in Holling-Tanner Model with Diffusion*. SIAM Conference on Nonlinear Waves and Coherent Structures, Cambridge, UK, Aug. 11-14, 2014.
- *Coherent structures in a model for mussel-algae interaction.* SIAM Conference on Analysis of Partial Differential Equations, December 7-10, 2013, Lake Buena Vista, Florida, (invited speaker).
- *Coherent structures in a model for mussel-algae interaction*. College of Charleston, Department of mathematics, Colloquium, November 14, 2013.
- *Introduction to traveling waves (target audience was graduate students)*. North Carolina State University, Department of mathematics, Applied Math Club, August 28, 2013.

- *Traveling wave in the Gray-Scott model.* North Carolina State University, Department of mathematics, Differential Equations Seminar, August 28, 2013
- Poster presentation at the conference "*Geometric Methods for Infinite-Dimensional Dynamical Systems*", November 4-6, 2011, Brown University, Providence, RI, USA.
- *On the Traveling Waves of Gray-Scott Model.* SIAM Conference on Applications of Dynamical Systems, May 22-26, 2011, Snowbird, Utah.
- *On the Traveling Waves of Gray-Scott Model.* The Seventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, The University of Georgia, Athens, GA, April 04-07, 2011,(invited speaker).
- *On the traveling waves of the Gray-Scott model.* SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, Pennsylvania, August 16-19, 2010.
- *Multi-hump pulses in systems with reflection and phase invariance.* The 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications , Dresden University of Technology Dresden , Germany, May 25 - 28, 2010 (invited speaker).
- *Traveling waves for a thin liquid film with surfactant on an inclined plane.* 1st PRIMA Congress, The University of New South Wales Sydney, NSW, Australia, July 6-10, 2009 (contributed talk).
- *Existence and stability of multi-pulses with applications to nonlinear optics.* The Sixth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, The University of Georgia, Athens, GA, March 23-26, 2009, (invited speaker).
- *Traveling waves for a thin liquid film with surfactant on an inclined plane.* Universita di Roma La Sapienza Rome, Italy July 21-24, 2008. (invited speaker).
- *Multi-pulses in PDEs with Reflection and Phase Invariance*. The Fifth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 16-19, 2007 (invited speaker).
- *Traveling wave solutions of a surfactant equation*. North Carolina State University, Department of mathematics, Differential Equations Seminar, April 11, 2007.
- *Traveling wave solutions of a surfactant equation*. MSRI, short presentation, January 27, 2007 (invited speaker).
- *Existence of Multi-Pulse Solutions of the Regularized Short Pulse and Ostrovsky Equations*. SIAM Conference on Nonlinear Waves and Coherent Structures, Seattle, Washington, September 9-12, 2006 .
- *Multi-pulses in PDEs with Reflection and Phase Invariance.* SIAM Conference on Analysis of Partial Differential Equations, 2006, Boston, Massachusetts, July 10-12,
- *Existence and stability of multi-pulses with applications to nonlinear optics.* Southeastern Atlantic Mathematical Sciences Workshop, University of North Carolina at Chapel Hill, September 23-25, 2005 (invited speaker).

- *Existence and stability of multi-pulses in optical fibers.* US-Japan workshop on Dynamics and Computations, Shonan International Center, Shonan, Kanagawa, Japan. March 7-12, 2004 (poster presentation).

SUMMER SCHOOLS AND WORKSHOPS

- IMA Special Workshop: Joint US-Japan Workshop for Young Researchers on Interactions among Localized Patterns in Dissipative Systems, June 3-7, 2013.
- Introductory Workshop on Dynamical Systems with Emphasis on Extended Systems. MSRI, January 22- January 26, 2007.
- Stability Criteria for Multi-Dimensional Waves and Patterns. American Institute of Mathematics, Palo Alto, California, May 16 to May 20, 2005.
- US-Japan workshop on Dynamics and Computations. Shonan International Center, Shonan, Kanagawa, Japan, March 7-12, 2004

PROFESSIONAL SERVICE

- Co-organizer of the minisymposium "Nonlinear Patterns and Waves", Part I-II (8 speakers) at SIAM Conference on Dynamical Systems, Snowbird UT, May 19-23, 2019.
- Co-organizer of the minisymposium Existence and stability of traveling waves. Part I -III, 12 speakers, SIAM Conference on Nonlinear Waves and Coherent Structures, Anaheim, Orange, California, June. 11-14, 2018
- Co-organizer of the minisymposium Nonlinear Waves and Patterns, Parts I - II, AMS Section Meeting, Columbus, OH, March 16-18, 2018.
- Co-organizer of the minisymposium Recent results on traveling waves in systems of PDEs, 8 speakers, SIAM conference on Dynamical Systems, Snowbird, Utah, May 2017.
- Co-organizer of the minisymposium Waves and Patterns. Part I - II, 8 speakers, SIAM Conference on Analysis of Partial Differential Equations, Baltimore, Maryland, December 9-12, 2017.
- Co-organizer of the minisymposium Existence and stability of nonlinear waves and patterns. Part I -IV, 14 speakers, SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, Pennsylvania, Aug. 16-19, 2016
- Co-organizer of the minisymposium Pattern Formation in Nonlinear Systems- Part I - II, 9 speakers, SIAM Conference on Analysis of Partial Differential Equations, Paradise Valley Scottsdale Scottsdale, Arizona, November 7-10, 2015.
- Co-organizer of the minisymposium on Spectral and Geometric Methods in Stability of Waves and Patterns: Parts I-V, 20 speakers, SIAM Conference on Nonlinear Waves and Coherent Structures, Cambridge, UK, Aug. 11-14, 2014.
- Co-organizer of the minisymposium on Traveling Waves and Patterns: Parts I-IV, 16 speakers, the 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, July 7 - 11, 2014.

- Co-director of a Study Abroad Program. I helped to organize and presented at informational meetings, worked on the proposal, worked on the creation of the program and details of the budget. I participated in organizing and scheduling the cultural activities for students and provided support to the students throughout the program.
- Co-organizer of the minisymposium Existence and Stability of Traveling Wave Solutions, 8 speakers, SIAM conference on Dynamical Systems, Snowbird, Utah, May 2013.
- Co-organizer of a special session with 19 participants on Nonlinear Waves and Patterns at AMS Central Fall Section Meeting, University of Akron, Akron, OH, October 20-21, 2012. As organizers we made sure that female mathematicians are among participants.
- Co-organizer of a three-session mini-symposium "Existence and stability of nonlinear waves in coupled systems". SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 22-26, 2011.
- Co-organizer of the minisymposium (two sessions) Recent Developments in Analysis of Traveling Waves: Theory and Applications. SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, Pennsylvania, August 16-19, 2010.
- Co-organizer of the minisymposium (two sessions) Singularly Perturbed Systems and Applications. SIAM Conference on Application of Dynamical Systems, Snowbird, Utah. May 17-21, 2009.
- Co-organizer of the minisymposium (three sessions) Stability of Traveling Waves: Spectral, Linear, and Nonlinear Stability. SIAM Conference on Application of Dynamical Systems, Snowbird, Utah. May 17-21, 2009.
- Co-organizer of the minisymposium Geometry in Analysis of Traveling Waves. SIAM Conference on Nonlinear Waves and Coherent Structures, Seattle, Washington. September 9-12, 2006.
- Co-organizer of the minisymposium Existence and Stability of Traveling Waves. SIAM Conference on Analysis of Partial Differential Equations, Boston, Massachusetts, July 10-12, 2006.

MEMBERSHIP

Member of the Society of Industrial and Applied Mathematics
Member of American Mathematical Society, 2017-2019
Member of the Association for Women in Mathematics (AWM), 2016-2017

I. Education, Employment

A. Education

a) B.S. Honors Mathematics, University of Michigan (1972).

b) Ph.D. Mathematics, University of Michigan (1979), Thesis title: "Minimum Simplicial Complexes with Given Abelian Automorphism Group".

B. Positions held

a) University of Michigan, Teaching Fellow, 1972-1978.

b) Miami University, Assistant Professor, 1978-1982.

c) Miami University, Associate Professor, 1982-1988.

d) Miami University, Professor, 1988-present.

e) University of Texas, Program in Computer Science, Visiting Professor (on sabbatical), Fall 1985.

f) University of California Berkeley, Dept. of EECS, Visiting Scholar, participant at MSRI year on complexity, Spring 1986.

II. Selected Teaching and Service Activities

A. Teaching/curriculum design

a) Courses taught: I have taught a large variety of courses at both the undergraduate and graduate level in the Mathematics Department at Miami.

b) Curriculum design:

b1) I designed MTH 438/538, our introductory course in graph theory in 1981. Later I co-designed the courses MTH 439/539 (Combinatorial mathematics), MTH 436/536 (Theory of Codes and designs), and MTH 638 (Advanced graph theory). These courses together constitute the combinatorial mathematics curriculum in the Mathematics Department at Miami. Apart from its importance as an area in Mathematics itself, this curriculum especially benefits students studying any subject in which networks and related topics in operations research play a significant role, for example students in computer science, and engineering.

b2) I also designed MTH 447/547 in 2002, our senior level course in Mathematical Finance. This course has been valuable for Finance and Economics students at both the undergraduate and graduate level. It has also drawn the interest of students in actuarial science, and of mainline Mathematics majors who wish to learn about this relatively new area of applied mathematics.

b3) During 2022-23, and 23-24 I have been on the Applied Mathematics Committee. This committee designed the proposal for the B.S. degree in Applied Mathematics.

c) Supervision of Master's theses over the past 15 years: Since 2008 I have been the Master's project supervisor for seven M.S. students in Mathematics. I had hourly meetings with each student twice a week, reading research papers on our topic, and eventually starting some independent research with them. I list their names, the topic of their studies with me, and the year when they completed their Master's project.

1. Brian Hanson (2008) - Achromatic and edge achromatic number. Brian completed his Ph.D. at North Carolina State in Operations Research.

2. Derek Yager (2012) - Bandwidth of the Kneser graph. This work was eventually expanded and developed into a research paper, jointly with Tao Jiang, which was recently (2017) published. Derrek completed his Ph.D. in Mathematics (specializing in graph theory) at University of Illinois - Urbana.

3. Michael Williams (2013) - Total bandwidth and edge bandwidth of the hypercube. Michael went on to the Ph.D. program in Mathematics at University of Kansas.

4. Henry Liu (2015) - Graph and hypergraph saturation. Henry completed his Ph.D. in Mathematics (specializing in graph theory) at University of Illinois - Urbana.

5. Walker Yane (2017) - Saturation in Graphs. Walker is now a high school Mathematics teacher in the St. Louis public schools.

6. Kristen Melton (2019) - Saturation in Graphs. Kristen went on to become an instructor in the Mathematics Department at Winthrop University,

7. Alex Cordero (2021) - Permutation Arrays. Alex went on to teach high school mathematics in the Seattle area.

B. Selected Service Activities

a) Department Service: I have served on a variety of committees within the Mathematics Department; including the Graduate Committee, Governance Committee, Undergraduate Committee, Colloquium Committee (as chair), as well several ad-hoc committees (including hiring committees). As chair of the Governance Committee, I compiled in 2009 the first governance document of the new Mathematics Department (after the split of Statistics and Mathematics in 2009).

b) Graduate Program Director: I was Graduate Program Director in the (then) Mathematics and Statistics Department in the years 2002-2008. As my final project in this position, I wrote the document profiling the Department's graduate program for the review of graduate programs that took place at Miami in 2008.

c) University Service: At the university level, I have served on Graduate Council, and in the Advisory Committee on Promotion and Tenure in the College of Arts and Science. I have served on the Rights and Responsibilities Committee, through University wide elections, since Fall 2011, and have been chair of this committee since Fall 2017.

d) Service to Profession: In the profession, over the past 10 years I have been the referee for 8 journal papers, and 2 grant proposals in Mathematics to the National science Foundation. During this period I have also been a coorganizer of a graph theory conference at Miami (the MIGHTY conference), a coorganizer of the Department's fall conference in Mathematical Finance, and assisted in a recent Fall conference in discrete mathematics. Going further back in time, I have served as an outside evaluator for 2 tenure cases in Mathematics and 2 tenure cases in Computer Science departments.

III. Publications, Research Presentations, Awards

A. Selected Research Presentations

a) Recent Contributed Talks at Research Conferences

1. "New Lower Bounds for Permutation Arrays", October 2019, MIGHTY conference, Ohio State University - Marion Campus.

2. "On the bandwidth of the Kneser graph", College of Charleston, Oct. 2015, MCCC Conference.

3. "On the bandwidth of the Kneser graph", University of Detroit Mercy, May 2014, MIGHTY Conference.

4. "Embedding multidimensional grids into hypercubes with low dilation", Eastern Tennessee University, May 2012, Cumberland Conference.

5. "The Steiner problem in the hypercube", University of Detroit Mercy, May 2010, MIGHTY Conference.

b) Selected Invited Talks at Research Conferences and Colloquia

1. Western Michigan University, October 2009, "Separation in trees", Special session in graph theory, Regional Conference of the AMS.

2. "Sequential sums and the on-line steiner problem", Workshop on Networks , Fordham University, New York, N.Y., April 2001.

3. "Edge bandwidth in graphs", Workshop in honor of Frank Harary, IIT, Chicago, Ill., Fall 2001.

4. "Area efficient embeddings of topological complete binary trees in the integer lattice", Workshop on Networks, Fordham University, New York, N.Y., March 2000.

5. "Low dilation embeddings of grids into hypercubes", AMS meeting special session on graph theory, Urbana, Ill., March 1999.

6. "Phylogeny and the steiner problem in the hypercube", Clemson Conference in discrete mathematics, Clemson University, Clemson, SC, Oct. 1996.

7. "The steiner problem and applications", Mathematics and C.S. department colloquium, Central State University, Wilberforce, Ohio, March 1995.

8. "Phylogeny and the steiner problem", Workshop on computational biology, Discrete Mathematics Center, Rutgers University, Oct. 1994.

9. "The probabilistic method in combinatorics", Mathematics and Statistics department colloquium, Oakland University, Rochester, Michigan, November 1992.

10. "Graph theory and VLSI design for circuits on chips", colloquium, REU program, University of Dayton, Dayton, Ohio, July 1992.

B. Research Award

I received a research grant from Office of Naval Research providing summer salary support for summers of 1985 and 1986 for research in graph embeddings and the bandwidth problem for graphs.

C. Research Publications in Peer Reviewed Journals and Conference Proceedings

(See next page)

Publications of Zevi Miller

1. S. Bereg, Z. Miller, L. Mojica, L. Morales, I.H. Sudborough, *New Lower Bounds for Permutation Arrays Using Contraction,* Designs, Codes and Cryptography **87** (2019)2105-2128.
2. T. Jiang, Z. Miller, and D. Yager, *On the Bandwidth of the Kneser graph*, Discrete Applied Mathematics, **227** (2017) 84-94.
3. Z. Miller, D. Pritikin, and I.H. Sudborough, *Embedding multidimensional grids into optimal hypercubes* , Theoretical Computer Science **552** (2014) 52-82.
4. T. Jiang, Z. Miller, and D.Pritikin, *Near optimal bounds for Steiner trees in the hypercube*, SIAM Journal on Computing **40** (2011), no. 5, 1340-1360.
5. T. Jiang, Z. Miller, and D. Pritikin, *Separation numbers of trees*, Theoretical Computer Science **410** (2009), 3769-3781.
6. D.Craft, Z. Miller, and D. Pritikin, *A Solitaire Game Played on 2-Colored Graphs*, Figure Discrete Math. **309** (2009), no. 1, 188-201.
7. R. Akhtar, T. Jiang, and Z. Miller, *Asymptotic determination of edge-bandwidth of multidimensional grids and Hamming graphs*, SIAM J. Discrete Math. **22** (2008), no. 2, 425-449.
8. Z. Miller, D.Pritikin, M. Perkel, and I. H. Sudborough, *The Sequential sum problem and performance bounds on the greedy algorithm for the on-line Steiner Problem,* Networks **45** (2005), no. 3, 143-164.
9. N. Alon, T. Jiang, Z. Miller, and D. Pritikin, *Properly colored subgraphs and rainbow subgraphs in edge-colorings with local constraints*, Random Structures Algorithms **23** (2003), no. 4, 409-433.
10. Y.-B. Lin, Z. Miller, M. Perkel, D. Pritikin, and I. H. Sudborough, *Expansion of layouts of complete binary trees into grids*, Discrete Appl. Math. **131** (2003), no. 3, 611-642.
11. L. Gardner, Z. Miller, D. Pritikin, and I. H. Sudborough, *One-to-many embeddings of hypercubes into Cayley graphs generated by reversals*, Theory Comput. Syst. **34** (2001), no. 5, 399-431.
12. Z. Miller and D. Pritikin, *On randomized greedy matchings*, Random Structures Algorithms **10** (1997), no. 3, 353-383.
13. Z. Miller, D. Pritikin, and I. H. Sudborough, *Bounded dilation maps of hypercubes into Cayley graphs on the symmetric group*, Math. Systems Theory **29** (1996), no. 6, 551-572.
14. Z. Miller and D.Pritikin, *Separation in graphs: a survey and some new results*, Graph theory, combinatorics, and algorithms, Vol. 1, 2 (Kalamazoo, MI, 1992), Wiley-Intersci. Publ., Wiley, New York, 1995, pp. 801-817.
15. Arthur M. Hobbs and Z. Miller, *Total closure in outerplanar graphs*, Graph theory, combinatorics, and

algorithms, Vol. 1, 2 (Kalamazoo, MI, 1992), Wiley-Intersci. Publ., Wiley, New York, 1995, pp. 557-577.

16. Z. Miller and M. Perkel, *A stability theorem for the automorphism groups of powers of the n-cube*, Australas. J. Combin. **10** (1994), 17-28.
17. Z. Miller and I. H. Sudborough, *Compressing grids into small hypercubes*, Networks **24** (1994), no. 6, 327-357.

    Note: Figures 4, 7, and 9 are missing from this online version.
18. Z. Miller and D.Pritikin, *Applying a result of Frankl and Rödl to the construction of Steiner trees in the hypercube*, Discrete Math. **131** (1994), no. 1-3, 183-194.
19. Z. Miller, D. Pritikin, and I. Hal Sudborough, *Near embeddings of hypercubes into Cayley graphs on the symmetric group*, IEEE Trans. Comput. **43** (1994), no. 1, 13-22.
20. Z. Miller and D. Pritikin, *Eigenvalues and separation in graphs*, Linear Algebra Appl. **181** (1993), 187-219.
21. S. Bettayeb, Z. Miller, and I. H. Sudborough, *Embedding grids into hypercubes*, J. Comput. System Sci. **45** (1992), no. 3, 340-366.
22. Z. Miller and M. Perkel, *The Steiner problem in the hypercube*, Networks **22** (1992), no. 1, 1-19.
23. Z. Miller, *Graph layouts*, (book chapter) Applications of discrete mathematics, McGraw-Hill, New York, 1991, pp. 365-393.
24. Z. Miller, *Multidimensional bandwidth in random graphs*, Graph theory, combinatorics, and applications. Vol. 2 (Kalamazoo, MI, 1988), Wiley-Intersci. Publ., Wiley, New York, 1991, pp. 861-870.
25. Z. Miller and D. Pritikin, *The harmonious coloring number of a graph*, Discrete Math. **93** (1991), no. 2-3, 211-228.
26. C. McDiarmid and Z. Miller, *Lattice bandwidth of random graphs*, Discrete Appl. Math. **30** (1991), no. 2-3, 221-227, ARIDAM III (New Brunswick, NJ, 1988).
27. Z. Miller and I. H. Sudborough, *A polynomial algorithm for recognizing bounded cutwidth in hypergraphs*, Math. Systems Theory **24** (1991), no. 1, 11-40.
28. B. Cong, Z. Miller, and I. H. Sudborough, *Optimum simulation of meshes by small hypercubes*, Aspects and prospects of theoretical computer science (Smolenice, 1990), Lecture Notes in Comput. Sci., vol. 464, Springer, Berlin, 1990, pp. 30-46.
29. C. Gowri Sankaran, Z. Miller, and J. Opatrný, *A new bandwidth reduction algorithm for trees*, Proceedings of the Twentieth Southeastern Conference on Combinatorics, Graph Theory, and Computing (Boca Raton, FL, 1989), vol. 72, 1990, pp. 33-50.
30. Z. Miller, *Bandwidth in multigrids for random graphs*, Combinatorics, computing and complexity (Tianjing and Beijing, 1988), Math. Appl. (Chinese Ser.), vol. 1, Kluwer Acad. Publ., Dordrecht, 1989, pp. 161-172.
31. Z. Miller and D. Pritikin, *On the separation number of a graph*, Networks **19** (1989), no. 6, 651-666.
32. S. Bettayeb, Z. Miller, and I. Hal Sudborough, *Embedding grids into hypercubes*, VLSI algorithms and architectures (Corfu, 1988), Lecture Notes in Comput. Sci., vol. 319, Springer, New York, 1988, pp. 201-211.
33. Z. Miller and D. Pritikin, *The harmonious coloring number of a graph*, Congr. Numer. **63** (1988), 213-228,

250th Anniversary Conference on Graph Theory (Fort Wayne, IN, 1986).
34. D. Z. Du and Z. Miller, *Matroids and subset interconnection design*, SIAM J. Discrete Math. **1** (1988), no. 4, 416-424.
35. Z. Miller, *A linear algorithm for topological bandwidth in degree-three trees*, SIAM Journal on Computing **17** (1988), no. 5, 1018-1035.
36. M. Goldberg and Z. Miller, *A parallel algorithm for bisection width in trees*, Comput. Math. Appl. **15** (1988), no. 4, 259-266.
37. Z. Miller and I. H. Sudborough, *A polynomial algorithm for recognizing small cutwidth in hypergraphs*, VLSI algorithms and architectures (Loutraki, 1986), Lecture Notes in Comput. Sci., vol. 227, Springer, Berlin, 1986, pp. 252-260.
38. Z. Miller, *A linear algorithm for topological bandwidth in degree three trees*, Graph theory with applications to algorithms and computer science (Kalamazoo, Mich., 1984), Wiley-Intersci. Publ., Wiley, New York, 1985, pp. 561-582.
39. Z. Miller and J. B. Orlin, *NP-completeness for minimizing maximum edge length in grid embeddings*, J. Algorithms **6** (1985), no. 1, 10-16.
40. F. Harary and Z. Miller, *Generalized Ramsey theory. VIII. The size Ramsey number of small graphs*, Studies in pure mathematics, Birkhäuser, Basel, 1983, pp. 271-283.
41. Z. Miller, *Medians and distance sequences in graphs*, Ars Combin. **15** (1983), 169-177.
42. Z. Miller, *Minimum simplicial complexes with given abelian automorphism group*, Trans. Amer. Math. Soc. **271** (1982), no. 2, 689-718.
43. Z. Miller, *Extremal regular graphs for the achromatic number*, Discrete Math. **40** (1982), no. 2-3, 235-253.
44. Z. Miller, *The bandwidth of caterpillar graphs*, Proceedings of the Twelfth Southeastern Conference on Combinatorics, Graph Theory and Computing, Vol. II (Baton Rouge, La., 1981), vol. 33, 1981, pp. 235-252.
45. Z. Miller and H. Miller, Chromatic Numbers of Hypergraphs and Coverings of Graphs, J. Graph Theory **5** (1981), no. 3, 299-305.
46. F. Buckley, Z. Miller, and P.J. Slater, *On graphs containing a given graph as center*, J. Graph Theory **5** (1981), no. 4, 427-434.
47. A. Blass, F. Harary, and Z. Miller, *Which trees are link graphs?*, J. Combin. Theory Ser. B **29** (1980), no. 3, 277-292.
48. R.A. Brualdi, F. Harary, and Z.Miller, *Bigraphs versus digraphs via matrices*, J. Graph Theory **4** (1980), no. 1, 51-73.
49. Z. Miller, *Contractions of graphs: a theorem of Ore and an extremal problem*, Discrete Math. **21** (1978), no. 3, 261-272.
50. F. Harary, D. Hsu, and Z. Miller, *The bichromaticity of a tree,* Theory and applications of graphs(Proc. Internat. Conf., Western Mich. Univ., Kalamazoo, Mich., 1976), Lecture Notes in Math., vol. 642, Springer, Berlin, 1978, pp. 236-246.
51. F. Harary and Z. Miller, *On point-symmetric and arc-symmetric digraphs*, Nanta Math. **10** (1977), no. 1,

50-52.

52. F. Harary, D. Hsu, and Z. Miller, *The bichromaticity of a lattice-graph*, J. Austral. Math. Soc. Ser. A **23** (1977), no. 3, 354-359.
53. F. Harary, D. Hsu, and Z. Miller, *The biparticity of a graph*, J. Graph Theory **1** (1977), no. 2, 131-133.

Back to home page.

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CURRICULUM VITAE

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Professor of Mathematics
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EDUCATION

- Licence de Mathématiques, Université d'Antananarivo, Madagascar, 1985.
- Maîtrise de Mathématiques, Université d'Antananarivo, Madagascar, 1986.
- D.E.A. de Mathématiques pures, Université d'Antananarivo, Madagascar, 1988.
- Ph.D. in Mathematics, University of Missouri-Columbia, 1993

ACADEMIC CAREER

- 2005 - Present, Professor of Mathematics, Miami University, Oxford, Ohio.
- 2000 - 2005, Associate Professor, Miami University, Oxford, Ohio (on leave, Spring 2003).
- Spring 2003, Visiting Professor, Université de Franche-Comté, Besançon, France.
- 1996 - 2000, Assistant Professor, Miami University, Oxford, Ohio.
- 1994 - 1996, Post-doctoral Lecturer, University of Texas, Austin, Texas (on leave, Spring 1996).
- Spring 1996, Post-doctoral Fellow, Mathematical Sciences Research Institute (MSRI), Berkeley, California.
- 1993 - 1994, Visiting position, Bowling Green State University, Bowling Green, Ohio.

PROFESSIONAL SOCIETY

American Mathematical Society

Research

RESEARCH INTERESTS

Noncommutative analysis; Banach space theory; Operator spaces; Noncommutative probability; Noncommutative martingales.

RESEARCH GRANTS/AWARDS

- NSF-DMS "Great Plains Operator Theory Symposium 2018": Co-principal investigator; May 2018-July 2018.
- NSF DMS-0552245 "Conference on Banach spaces and their applications in analysis": Co-principal investigator; May 2006-April 2007.
- NSF DMS-0456781 "Banach space structures of non-commutative L^p-spaces and non-commutative martingale inequalities": principal investigator; July 2005-June 2008.
- Miami University Distinguished Junior Scholar Award 2001.
- NSF DMS-0096696 "Banach space structures of non-commutative L^p-spaces and non-commutative Hardy spaces": principal investigator; July 2001-June 2005.
- Miami University Summer Research Appointment (Summer of 2001).
- NSF DMS-9703789 "Structures of vector-valued function spaces and non-commutative function spaces": principal investigator; July 1997–June 2000.
- Miami University Summer Research Appointment (Summer of 1997).
- NSF Young Investigator, University of Texas at Austin, (Summer of 1996).

PUBLICATIONS

1. (with E. Saab) The complete continuity property in Bochner spaces, **Proceedings of the American Mathematical Society**, **117** (1993) 1109–1113.
2. (with E. Saab) Weak compactness in the space of vector valued measures, **Rocky Mountain Journal of Mathematics**, **24** (1994) 681–688.
3. (with E. Saab) Stabilité de quelques proprietés d'espaces de Banach, **Compte Rendus de l'Académie des Sciences, Paris**, **319** Série I, (1994), 959–962.
4. (with E. Saab) Stability of some types of Radon-Nikodym properties, **Illinois Journal of Mathematics**, **39** (1995) 416–430.
5. Pełczyński's property (V) on spaces of vector-valued function spaces, **Colloquium Mathematicum**, **71** (1996) 63–78.
6. Complemented copies of ℓ^1 and Pełczyński's property (V^*) in Bochner spaces, **Canadian Journal of Mathematics**, **48** (1996) 625–640.
7. Radon-Nikodym properties for spaces of compact operators, **Revue Roumaine de Mathématiques Pures et Appliquées**, **41** (1996) 119–131.

8. Some remarks on the Dunford-Pettis property, **Rocky Mountain Journal of Mathematics**, **27** (1997) 1199–1213.
9. Pełczyński's property (V^*) for symmetric operator spaces, **Proceedings of the American Mathematical Society**, **125** (1997) 801–806.
10. Hilbert Transform associated with finite maximal subdiagonal algebras, **Journal of the Australian Mathematical Society** (series A), **65** (1998) 388–404.
11. (with E. Saab) The near Radon-Nikodym property in Lebesgue Bochner spaces, **Illinois Journal of Mathematics 42** (1998) 40–57.
12. Factorization of operators on C^*-algebras, **Studia Mathematica**, **128** (1998) 273–285.
13. (with P. Dowling and B. Turett) Remarks on James's Distortion Theorems, **Bulletin of the Australian Mathematical Society**, **57** (1998) 49–54.
14. Absolutely summing operators on non commutative C^*-algebras and applications, **Houston Journal of Mathematics**, **25** (1999) 745–756.
15. Complemented copies of ℓ_1 in spaces of vector-valued measure and applications, **Mathematische Nachrichten**, **202** (1999) 109–123.
16. (with P. Dowling and B. Turett) Remarks on James's distorsion theorems II, **Bulletin of the Australian Mathematical Society**, **59** (1999) 515–522.
17. (with P. Dowling) Space of compact operators on a Hilbert space with the fixed point property, **Journal of Functional Analysis**, **168** (1999) 111–120.
18. (with P. Dowling) Asymptotically isometric copies of ℓ^∞ in Banach spaces and a theorem of Bessaga and Pełczyński, **Proceedings of the American Mathematical Society**, **128** (2000) 3391–3397.
19. Compact range property and operators on C^*-algebras, **Proceedings of the American Mathematical Society**, **129** (2001) 865–871.
20. (with P. Dowling) Asymptotically isometric copies of c_0 and ℓ^1 in Bochner-spaces, **Journal of Mathematical Analysis and Applications**, **262** (2001) 419–434.
21. Kadec-Pełczynski decomposition for Haagerup L^p-spaces, **Mathematical Proceedings of the Cambridge Philosophical Society**, **132** (2002) 137–154.
22. Spectral subspaces and non-commutative Hilbert transforms, **Colloquium Mathematicum**, **91** (2002) 9–27.
23. Banach spaces with complete continuity properties, **Quaestiones Mathematicae**, **25** (2002) 29–36.
24. Non-commutative martingale transforms, **Journal of Functional Analysis**, **194** (2002) 181–212.

25. Sequences in non-commutative L^p-spaces, **Journal of Operator Theory**, **48** (2002) 255–272.
26. Embeddings of ℓ_p into non-commutative spaces, **Journal of the Australian Mathematical Society**, **74** (2003) 331–350.
27. (with P. Dowling) Riemann-Lebesgue properties of Banach spaces associated with subsets of countable discrete abelian groups, **Glasgow Mathematical Journal**, **45** (2003) 159–166.
28. Non-commutative subsequence principles, **Mathematische Zeitchrift**, **245** (2003) 625-644.
29. Square function inequalities for non-commutative martingales, **Israel Journal of Mathematics**, **140** (2004) 333–365.
30. C^*-algebras and factorization through diagonal operators, **Canadian Mathematical Bulletin**, **47** (2004) 615–623.
31. Weak-type inequalities of non-commutative martingales, **Proceedings of the London Mathematical Society**, **91** (2005) 509–544.
32. (with J. Parcet) Gundy's decomposition for non-commutative martingales, **Proceedings of the London Mathematical Society**, **93** (2006) 227–252.
33. Conditioned square functions for non-commutative martingales, **Annals of Probability**, **35** (2007) 1039–1070.
34. (with W. B. Johnson) On complemented versions of James's distortion theorems, **Proceedings of the American Mathematical Society**, **135** (2007) 2751–2757.
35. Embeddings of non-commutative L^p-spaces into preduals of finite von Neumann algebras, **Israel Journal of Mathematics**, **163** (2008) 1–27.
36. Non-commutative martingale VMO-spaces, **Studia Mathematica**, **191** (2009) 39–55.
37. Fixed point properties of semigroups of nonexpanssive mappings, **Journal of Functional Analysis**, **258** (2010) 3801–3817.
38. Fixed point properties in Hardy spaces, **Journal of Mathematical Analysis and Applications**, **371**(2010) 16–24.
39. Grothendieck's Theorem and operator integral mappings, **Journal of the London Mathematical Society**, **87** (2013) 530–544.
40. A remark on maximal functions for non-commutative martingales, **Archiv der Mathematik (Basel)**, **101** (2013) 541–548.

41. (with M. A. Japón and C. Lennard) Second dual projections characterizations of three classes of L^0-closed, convex, bounded sets in L^1: non-commutative generalizations, **Journal of Mathematical Analysis and Applications**, **409** (2014) 13–27.
42. (with L. Wu) Noncommutative fractional integrals, **Studia Mathematica**, **229** (2015) 113–139.
43. (with L. Wu) Martingale inequalities in noncommutative symmetric spaces, **Journal of Functional Analysis**, **269** (2015) 2222–2253.
44. (with L. Wu) Noncommutative Burkholder/Rosenthal inequalities associated with convex functions, **Annales de l'Institut Henri Poincaré, Probabilités et Statistiques**, **53** (2017) 1575–1605.
45. (with L. Wu and Q. Xu) Noncommutative Davis type decompositions and applications, **Journal of the London Mathematical Society**, **99** (2019) 97–126.
46. (with Y. Jiao, L. Wu, and D. Zhou) Square functions for noncommutative differentially subordinate martingales, **Communications in Mathematical Physics**, **374** (2020) 975–1019.
47. (with L. Wu and D. Zhou) Atomic decompositions and asymmetric Doob inequalities in noncommutative symmetric spaces, **Journal of Functional Analysis**, **280** (2021) 64pp.
48. Interpolation between noncommutative martingale Hardy and BMO spaces: the case $0 < p < 1$, **Canadian Journal of Mathematics**, **74 (6)** (2022) 1700–1744.
49. P. Jones' interpolation theorem for noncommutative martingale Hardy spaces. **Transactions of the American Mathematical Society**, **376** (2023) 2089–2124.
50. (with Z. Chen and Q. Xu) Atomic decompositions for noncommutative martingales. **Journal of Functional Analysis**, **284** (2023) 47pp.
51. Operators taking values in Köthe-Bochner spaces. **Proceedings of the American Mathematical Society** (to appear).
52. Triple operator version of the Golden-Thompson inequality for traces on von Neumann algebras. **Annales de l'Institut Fourier (Grenoble)** (to appear).

Book edited: Banach spaces and their applications in analysis. Proceedings of the International Conference in honor of Nigel Kalton's 60th birthday held at Miami University, Oxford, OH, May 22–27, 2006. Edited by Beata Randrianantoanina and Narcisse Randrianantoanina. Walter de Gruyter GmbH and Co. KG, Berlin, 2007. x+453 pp. ISBN: 978-3-11-019449-4 46-06.

PRESENTATIONS AT MEETINGS/CONFERENCES

1. Joint Annual Meeting of the American Mathematical Society and the Mathematical Association of America, contributed talk, January 1993, San Antonio, Texas.
2. Conference on Algebras in Analysis, contributed talk, September 1993, Kent State University, Kent, Ohio.
3. American Mathematical Society Sectional Meeting, Special Session on Banach Space Theory, invited talk, October 1993, Texas A&M University, College Station, Texas.
4. The Summer Informal Regional Functional Analysis Seminar (SUMIRFAS), invited talk, August 1994, Texas A&M University, College Station, Texas.
5. American Mathematical Society Sectional Meeting, Special Session on Geometry of Banach Spaces, invited talk, November 1995, Kent State University, Kent, Ohio.
6. Mathematical Sciences Research Institute (MSRI), Concentration in Infinite Dimensional Convex Geometry, invited talk, February 1996, Berkeley, California.
7. The Informal Regional Functional Analysis Seminar (IRFAS), invited talk, August 1996, Texas A&M University, College Station, Texas.
8. American Mathematical Society Sectional Meeting, Special Session on Geometric Functional Analysis, invited talk, October 1996, Rider University, Lawrenceville, New Jersey.
9. American Mathematical Society Sectional Meeting, Special Session on Banach Spaces and Related Topics, invited talk, November 1996, University of Missouri, Columbia, Missouri.
10. Conference on Modern Banach Space Theory, invited talk, Kent State University, December 1996, Kent, Ohio.
11. Workshop on Operator Spaces, invited talk, August 1997, Texas A&M University, College Station, Texas.
12. Third Conference on Function Spaces, contributed talk, May 1998, Southern Illinois University, Edwardsville, Illinois.
13. The Summer Informal Regional Functional Analysis Seminar (SUMIRFAS), invited talk, August 1998, Texas A&M University, College Station, Texas.
14. Spring School on Banach Space Theory, contributed talk, April 1999, Charles University of Prague (held at Paseky), CZECH REPUBLIC.
15. American Mathematical Society Sectional Meeting, Special Session on Operator and Banach Space structures, invited talk, October 1999, University of Texas, Austin, Texas.

16. International Conference on Mathematical Analysis and its Applications (ICMAA2000), contributed talk, January 2000, National Sun Yat-Sen University, Kaohsiung, TAIWAN, REPUBLIC OF CHINA.
17. Summer School on Functional Analysis, contributed talk, June 2000, Université de Franche-Comté, Besançon, FRANCE.
18. International Functional Analysis Meeting, contributed talk, July 2000, Universidad Politécnica de Valencia, Valencia, SPAIN.
19. Workshop on free probability and non-commutative Banach spaces, invited talk, January 2001, Mathematical Sciences Research Institute (MSRI), Berkeley, California.
20. American Mathematical Society Sectional Meeting, Special Session on Banach Spaces, Invited talk, March 2001, University of South Carolina, Columbia, South Carolina.
21. Trends in Banach spaces and operator theory, contributed talk, October 2001, University of Memphis, Memphis, Tennessee.
22. American Mathematical Society Sectional Meeting, Special Session on Banach Spaces and their applications, invited talk, March 2002, Georgia Institute of Technology, Atlanta, Georgia.
23. Conference on Non-commutative Phenomena and Random Matrices, contributed talk, August 2002, Pacific Institute for the Mathematical Sciences at the University of British Columbia, Vancouver, CANADA.
24. Workshop on Free Probability Theory and Non-commutative Martingales, contributed talk, June 2003, Greifswald, GERMANY.
25. Espaces d'Opérateurs et Applications, Invited talk, June 2003, Centre International de Rencontres Mathématiques (CIRM), Luminy-Marseille, FRANCE.
26. Workshop on Free Probability Theory and Non-commutative L_p-spaces, Invited talk, June 2004, Texas A&M University, College Station, Texas.
27. Wabash Modern Analysis conference, contributed talk, September 2004, UIPUI, Indianapolis, Indiana.
28. The Summer Informal Regional Functional Analysis Seminar (SUMIRFAS), invited talk, August 2005, Texas A&M University, College Station, Texas.
29. Seminar on Analysis (a conference on the occasion of Elias Saab's 60th birthday), invited talk, December 2005, University of Missouri, Columbia, Missouri.
30. American Mathematical Society Sectional Meeting, Special Session on Banach Spaces and their applications, invited talk, April 2006, Florida International University, Miami, Florida.

31. Operator spaces, non-commutative L_p-spaces and applications, Invited talk, June 2007, Centre International de Rencontres Mathématiques (CIRM), Luminy-Marseille, FRANCE.
32. The international conference on Banach spaces and operator spaces, Invited talk, July 2007, Chern Institute of Mathematics, Nankai University, Tianjin, PEOPLE'S REPUBLIC OF CHINA.
33. International Conference on Interdisciplinary Mathematical and Statistical Techniques (IMST 2008/ FIM XVI), Invited talk, May 2008, The University of Memphis, Memphis, Tennessee.
34. American Mathematical Society Sectional Meeting, Special Session on Geometry of Banach Spaces and connections with other areas, invited talk, November 2010, University of Richmond, Richmond, Virginia.
35. Joint Congress of the South African Mathematical Society and American Mathematical Society, invited talk, November 2011, Nelson Mandela Metropolitan University, Port Elizabeth, SOUTH AFRICA.
36. American Mathematical Society and South African Mathematical Society Satellite Conference on Abstract Analysis, invited talk, December 2011, University of Pretoria, Hatfield, SOUTH AFRICA.
37. Operator Spaces, Quantum Probability and Applications, invited talk, June 2012, Wuhan University, Wuhan, PEOPLE'S REPUBLIC OF CHINA.
38. International Conference on Operator Algebras and Applications, invited talk, June 2013, Nanjing University of Science and Technology, Nanjing, PEOPLE'S REPUBLIC OF CHINA.
39. Operator Spaces and Quantum Probability, invited talk, December 2014, Université de Franche-Comté, Besançon, FRANCE.
40. Mathematical Symposium on Modern Analysis and Applications, invited talk, July 2016, Institute of Advanced Study in Mathematics, Harbin Institute of Technology, Harbin, PEOPLE'S REPUBLIC OF CHINA.
41. Special week on noncommutative analysis, invited talk, August 2017, Institute of Advanced Study in Mathematics, Harbin Institute of Technology, Harbin, PEOPLE'S REPUBLIC OF CHINA.
42. Mini Workshop on Noncommutative Analysis, invited talk, July 2018, School of Mathematics and Statistics, Central South University, Changsha, PEOPLE'S REPUBLIC OF CHINA.

43. International Workshop on Operator Theory and its Applications (IWOTA); Special session on Operator Spaces and Harmonic Analysis, Invited talk, July 2018, Research Center for Operator Algebras of East China Normal University, Shanghai, PEOPLE'S REPUBLIC OF CHINA.
44. Conference on Noncommutative Analysis and Quantum Information Theory, invited talk, May 2019, Institute of Advanced Study in Mathematics, Harbin Institute of Technology, Harbin, PEOPLE'S REPUBLIC OF CHINA.

SEMINARS/COLLOQUIA

1. Colloquium, Bowling Green State University, February 1994, Bowling Green, Ohio.
2. Seminar at the NSF Workshop on Linear Analysis and Probability, August 1995, Texas A&M University, College Station, Texas.
3. Invited Analysis seminar, University of Missouri-Columbia, April 1996, Columbia, Missouri.
4. Invited Analysis Seminar, Institute of Mathematics (Polish Academy of Sciences), January 1997, Warsaw, POLAND.
5. Colloquium, Miami University, October 1998, Oxford, Ohio.
6. Colloquium, Cape Town University, June 1999, Cape Town, SOUTH AFRICA.
7. Seminar at the NSF Workshop on Linear Analysis and Probability, August 2000, Texas A&M University, College Station, Texas.
8. Invited Analysis Seminar, University of Illinois, April 2001, Urbana-Champaign, Illinois.
9. Seminar at the NSF Workshop on Linear Analysis and Probability, July 2001, Texas A&M University, College Station, Texas.
10. Invited Analysis Seminar, University of Illinois, November 2001, Urbana-Champaign, Illinois.
11. Invited Functional Analysis Seminar, Université de Franche-Comté, January 2003, Besançon, FRANCE.
12. Invited Analysis Seminar, Université Pierre et Marie Curie (Paris 6), May 2003, Paris, FRANCE.
13. Seminar at the NSF Workshop on Linear Analysis and Probability, July 2004, Texas A&M University, College Station, Texas.
14. Colloquium, University of Cincinnati, March 2005, Cincinnati, Ohio.
15. Invited Analysis Seminar, Texas A&M University, October 2005, College Station, Texas.

16. Seminar at the NSF Workshop on Analysis and Probability, July 2006, Texas A&M University, College Station, Texas.
17. Invited Analysis Seminar, Tianjin University of Technology, July 2007, Tianjin, People's Republic of China.
18. Seminar at the NSF Workshop on Analysis and Probability, July 2008, Texas A&M University, College Station, Texas.
19. Series of Lectures on fixed point property, June 2013, Wuhan University, Wuhan, People's Republic of China.
20. Colloquium, Central South University, June 2013, Changsha, People's Republic of China.
21. Invited Analysis Seminar, July 2019, School of Mathematics and Statistics, Central South University, Changsha, People's Republic of China.
22. Colloquium, Central South University, October 2019, Changsha, People's Republic of China.
23. Invited Analysis Seminar, June 2020, Institute of Mathematics, Polish Academy of Sciences, Virtual.

TEACHING

- Taught the following classes:

MTH 121 Finite Mathematics
MTH 151/153 Calculus I
MTH 251 Calculus II
MTH 252 Calculus III
MTH 222 Introduction to Linear Algebra
MTH 245 Differential Equations for Engineers
MTH 246 Linear Algebra and Differential Equations for Engineers
MTH 331 Proof: Introduction to Higher Mathematics
MTH 347 Differential Equations
MTH 441/541 Real Analysis
MTH 442/542 Real Analysis II
MTH 451/551 Introduction to Complex Variables
MTH 641 Functions of a Real Variable
MTH 651 Functions of a Complex Variable
MTH 700 Research for Master's thesis

• Regularly involved in master's comprehensive written examinations (analysis and complex analysis).

SERVICE

INTERNAL SERVICE

• Served in the following departmental/university committees:

Undergraduate committee
Graduate committee
Colloquium committee
Award committee
Advising committee
Governance committee
Search committee
Tenure committee
Graduate council

• Served as advisor for undergraduate students.

SERVICE TO THE PROFESSION

• Conference organization

1. (with B. Randrianantoanina) Special Session on "Recent Trends in infinite dimensional Banach space Theory", American Mathematical Society Sectional Meeting, Ohio University, Athens, Ohio, March 2004.
2. (with B. Randrianantoanina) Conference on "Banach spaces and their applications in analysis" (a conference on the occasion of Nigel Kalton's 60th birthday), Miami University, Oxford, Ohio, May 2006.
3. (with W. Bryc) Special Session on "Random matrices and non-commutative probability", American Mathematical Society Sectional Meeting, Miami University, Oxford, Ohio, March 2007.
4. (with C. Eckhart) Great Plains Operator Theory Symposium 2018, Miami University, Oxford, Ohio, June 2018.

• Mathematical Reviews: Reviewer for the Mathematical Reviews of the American Mathematical Society.

- Service to other Institutions:
  1. Outside jury/examiner for one Mathematics Ph.D thesis from École Doctoral Louis Pasteur (Université de Franche-Comté), Besançon, France.
  2. Outside jury/examiner for one Mathematics Ph.D thesis from Wuhan University, China.
  3. Co-Advisor for one Mathematics Ph.D student from Central South University, China.
  4. Outside jury/examiner for one Mathematics Ph.D thesis from Cape Town University, South Africa.
  5. Member of the reviewer panel for outside review of the School of Mathematics. Central South University, China.
  6. Outside jury/examiner for one Mathematics Ph.D thesis from University of New South Wales (Sydney), Australia.

WAYNE NIRODE

CURRICULUM VITAE

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Department of Mathematics
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EDUCATION WITH DEGREES CONFERRED

December 2012	**OHIO UNIVERSITY**** *PhD Curriculum and Instruction: Mathematics Education* Dissertation: *An Analysis of How and Why High School Geometry Teachers Implement Dynamic Geometry Software Tasks for Student Engagement* (https://etd.ohiolink.edu/) **One of five universities partnering in the NSF-funded Center for Learning and Teaching (CLT) Doctoral Program: *Appalachian Collaborative Center for Learning, Assessment, and Instruction in Mathematics* (*ACCLAIM*) along with University of Kentucky, University of Louisville, University of Tennessee, and West Virginia University	Athens, OH
July 2016	**SHAWNEE STATE UNIVERSITY** *MS Mathematics: Mathematical Sciences* Thesis: *The Effects of Proof Format on Student Achievement in High School Geometry*	Portsmouth, OH
August 1999	**UNIVERSITY OF DAYTON** *MS Education: Technology in Education* Thesis: *The Effects of Graphing Calculators on Student Achievement on Proportions and Linear Equations in First Year Algebra*	Dayton, OH
May 1997	**UNIVERSITY OF DAYTON** *BS Education: Secondary Education: Mathematics and Economics*	Dayton, OH

ACADEMIC APPOINTMENTS

2023–Present	**MIAMI UNIVERSITY – DEPARTMENT OF MATHEMATICS** *Associate Professor*	Oxford, OH
2017–2023	**MIAMI UNIVERSITY – DEPARTMENT OF MATHEMATICS** *Assistant Professor*	Oxford, OH
2013–2014	**WRIGHT STATE UNIVERSITY – DEPARTMENT OF TEACHER EDUCATION** *Adjunct Instructor*	Dayton, OH

PROFESSIONAL EXPERIENCE

2002–2017	**TROY CITY SCHOOLS** *High School Mathematics Department Chair (10 member dept.)*	Troy, OH
1997–2017	**TROY CITY SCHOOLS** *High School Mathematics, Statistics, and Economics Teacher*	Troy, OH

PROFESSIONAL LICENSE

2019–2024	**5-YEAR PROFESSIONAL LICENSE: OH1197098** *7–12 Mathematics and Economics*	Ohio
2014–2019	**5-YEAR LEAD PROFESSIONAL LICENSE** *7–12 Mathematics and Economics*	Ohio
2009–2014	**5-YEAR PROFESSIONAL LICENSE** *7–12 Mathematics and Economics*	Ohio
2001–2009	**8-YEAR PROFESSIONAL CERTIFICATE** *7–12 Mathematics and Economics*	Ohio
1997–2001	**4-YEAR PROVISIONAL CERTIFICATE** *7–12 Mathematics and Economics*	Ohio

PROFESSIONAL CERTIFICATE

2007–2017	**NATIONAL BOARD FOR PROFESSIONAL TEACHING STANDARDS CERTIFICATE: 01152981** *Adolescent and Young Adult Mathematics*	NBPTS

PUBLICATIONS AND CREATIVE WORKS

JOURNAL ARTICLES AND REFEREED CONFERENCE PROCEEDINGS (*N* = 19)

Nirode, W., & Krumpe, N. (2023). The search for perfect donuts. *Mathematics Teacher: Learning and Teaching PK–12*, *116*(6), 448–453. https://doi.org/10.5951/MTLT.2022.0266

Nirode, W. (2023). Point-line ellipses and hyperbolas. *Mathematics Teacher: Learning and Teaching PK–12*, *116*(3), 206–210. https://doi.org/10.5951/MTLT.2022.0229

Tenure

Nirode, W., & Boyd, B. (2023). The prevalence of teacher tracking in high school mathematics departments. *Journal for Research in Mathematics Education*, *54*(1), 7–23. https://doi.org/10.5951/jresematheduc-2020-0296

Nirode, W., & Krumpe, N. (2022). Donuts with Pythagoras. *The College Mathematics Journal*, *53*(4), 306–311. http://doi.org/10.1080/07468342.2022.2099705

Boyd, B., & Nirode, W. (2021). Investigation opportunities of Common Core theorems prior to proof in high school geometry textbooks. In D. Olanoff, K. Johnson, & S. Spitzer (Eds.), *Proceedings of the 43rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 78–82). http://www.pmena.org/proceedings/

Nirode, W., & Boyd, B. (2021). High school geometry textbooks' proving opportunities of Common Core theorems. *School Science and Mathematics*, *121*(6), 345–356. https://doi.org/10.1111/ssm.12487

Nirode, W. (2020). The first days of geometry. *Mathematics Teacher: Learning and Teaching PK–12*, *113*(8), 663–669. https://doi.org/10.5951/MTLT.2019.0068

Nirode, W. (2019). Ferris wheel graphs. *Mathematics Teacher*, *112*(7), 560. https://doi.org/10.5951/mathteacher.112.7.0560 (Ferris wheel animations available at https://nirodew.github.io/ferris/)

Nirode, W. (2019). Going over the test. *Mathematics Teacher*, *112*(6), 422–425. https://doi.org/10.5951/mathteacher.112.6.0422

Nirode, W. (2019). Lines as "foci" for conic sections. *Mathematics Teacher*, *112*(4), 312–316. https://doi.org/10.5951/mathteacher.112.4.0312

Nirode, W. (2018). Doing geometry with dynamic geometry software. *Mathematics Teacher*, *112*(3), 199–205. https://doi.org/10.5951/mathteacher.112.3.0179

Nirode, W. (2018). Collecting simulation data with Google Forms. *Mathematics Teacher*, *112*(1), 67–70. https://doi.org/10.5951/mathteacher.112.1.0067

Nirode, W. (2018). A proof progression for geometry. *Mathematics Teacher*, *111*(7), 512–519. https://doi.org/10.5951/mathteacher.111.7.0512

Nirode, W. (2017). Proofs without words in geometry. *Mathematics Teacher, 110*(8), 580–586. https://doi.org/10.5951/mathteacher.110.8.0580

Nirode, W. (2016). Creating quadrilaterals from quadrilaterals. *Mathematics Teacher, 109*(8), 592–599. https://doi.org/10.5951/mathteacher.109.8.0592

Nirode, W. (2015). Exploring new geometric worlds. *Mathematics Teacher, 109*(2), 112–119. https://doi.org/10.5951/mathteacher.109.2.0112

Nirode, W. (2014). Triangles from three points. *Mathematics Teacher*, *108*(1), 32–38. https://doi.org/10.5951/mathteacher.108.1.0032

Nirode, W. (2013). Don't sacrifice geometry on the Common Core altar. *Mathematics Teacher*, *107*(3), 168–170. https://doi.org/10.5951/mathteacher.107.3.0168

Nirode, W. (2011). Thinking deeply about area and perimeter. *Mathematics Teacher*, *105*(4), 304–310. https://doi.org/10.5951/mathteacher.105.4.0304

BOOKS

Ruland, P. & Nirode, W. (2001). *Active Investigations with The Geometer's Sketchpad*. Meridian Creative Group.

ANCILLARIES

Nirode, W. (contributing author) (2007). *Technology Demonstrations* for *Discovering Algebra* (2nd ed.). Emeryville, CA: Key Curriculum

Nirode, W. (contributing author) (2002). *Assessment Resources A* and *Assessment Resources B* for *Discovering Algebra*. Emeryville, CA: Key Curriculum.

Nirode, W. (contributing author) (2001). *Resource Book* (one for each of the 12 chapters) for *Geometry: Applying, Reasoning, Measuring*. Evanston, IL: McDougal Littell.

PRESENTATIONS (N = 36)

Nirode, W. (2024, February). *Preservice elementary teachers' geometric reasoning with static and dynamic diagrams*. Talk to be presented at the annual meeting of the Association of Mathematics Teacher Educators, Orlando, FL.

Nirode, W. (2023, October). *Structural barriers to equity in high school mathematics: The case of teacher tracking*. Talk presented at the annual meeting of the National Council of Teachers of Mathematics, Washington, DC.

Boyd, B., & Nirode, W. (2023, February). *Using Desmos polygraphs to elicit student thinking to facilitate the act of defining*. Talk presented at the annual meeting of the Association of Mathematics Teacher Educators, New Orleans, LA.

Nirode, W., & Boyd, B. (2023, February). *How teachers choose among four versions of the DGS parallelogram task*. Talk presented at the annual meeting of the Association of Mathematics Teacher Educators, New Orleans, LA.

Boyd, B., & Nirode, W. (2022, October). *Mathematics teacher tracking and what it means for equity*. Talk presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Cincinnati, OH.

Boyd, B., & Nirode, W. (2021, October). *Investigation opportunities of Common Core theorems prior to proof in high school geometry textbooks*. Talk presented at the annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Philadelphia, PA.

Boyd, B., & Nirode, W. (2021, February). *The prevalence of teacher tracking in high school mathematics departments*. Talk presented at the annual meeting of the Association of Mathematics Teacher Educators, Virtual.

Nirode, W., & Keiser, J. (2021, February). *Preservice teachers' reasoning at the intersection of conditional statements, converses, and diagrams*. Talk presented at the annual meeting of the Association of Mathematics Teacher Educators, Virtual

Boyd, B., & Nirode, W. (2020, February). *Leveraging dynamic geometry software to promote authentic mathematics*. Talk presented at the annual meeting of the Association of Mathematics Teacher Educators, Phoenix, AZ.

Nirode, W., & Boyd, B. (2020, February). *Developing preservice and inservice teachers' ability to teach proof in high school*. Talk presented at the annual meeting of the Association of Mathematics Teacher Educators, Phoenix, AZ.

Nirode, W. (2019, October). *Geometry proof cards*. Talk presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Sandusky, OH.

Nirode, W. (2019, April). *Proofs without words in high school geometry*. Talk presented at the annual meeting of the National Council of Teachers of Mathematics, San Diego, CA.

Nirode, W. (2019, February). *Leveraging dynamic geometry software for high school geometry: Implications for mathematics teacher educators*. Talk presented at the annual meeting of the Association of Mathematics Teacher Educators, Orlando, FL.

Boyd, B., & Nirode, W. (2019, February). *High school geometry textbooks, the Common Core, and proof: Implications for secondary methods courses*. Talk presented at the annual meeting of the Association of Mathematics Teacher Educators, Orlando, FL.

Watt, S., Cox, D., & Nirode W. (2019, January). *Towards equity in mathematics: Understanding the collaborative partnerships between special and general math teachers*. Talk presented at the Council for Exceptional Children Convention and Expo, Indianapolis, IN.

Nirode, W. (2018, November). *The efficacy of an alternative high school geometry curriculum on student achievement with proofs*. Poster presented at the annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Greenville, SC.

Nirode, W. (2018, April). *Proofs without words in high school geometry*. Talk presented at the annual meeting of the National Council of Teachers of Mathematics, Washington, DC.

Steketee, S., Nirode, W., & Hayes, D. (2018, April). *Congruence, similarity, and proof: Experience a hands-on transformation approach using Web Sketchpad*. Talk presented at the annual meeting of the National Council of Teachers of Mathematics, Washington, DC.

Nirode, W. (2017, April). *Classroom-tested activities that promote reasoning, sense making, and proof in high school geometry*. Talk presented at the annual meeting of the National Council of Teachers of Mathematics, San Antonio, TX.

Nirode, W. (2016, November). *Scaffolding a progression for proof in high school geometry*. Talk presented at the National Council of Teachers of Mathematics Innov8 Conference, St. Louis, MO.

Nirode, W. (2016, October). *Think deeply of simple things*. Invited talk presented at the monthly meeting of the Miami University Council of Teachers of Mathematics, Oxford, OH.

Nirode, W. (2015, October). *Proof and reasoning in geometry: The Common Core and beyond*. Talk presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Cincinnati, OH.

Nirode, W. (2013, October). *Ideas for the teaching and learning of high school geometry*. Talk presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Dayton, OH.

Nirode, W. (2013, April). *Models of teaching and instruction for fostering students' higher level thinking skills*. Talk presented at the Wright State University Network for Education Renewal Conference, Dayton, OH.

Nirode, W. (2012, October). *Ideas for the teaching and learning of high school geometry*. Talk presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Columbus, OH.

Nirode, W. (2011, April). *Thinking deeply about two elementary math concepts: Area and perimeter*. Talk presented at the annual meeting of the National Council of Teachers of Mathematics, Indianapolis, IN.

Nirode, W. (2011, March). *Using The Geometer's Sketchpad throughout the mathematics curriculum*. Invited talk presented at the monthly meeting of the Wright State University Area Council of Teachers of Mathematics, Dayton, OH.

Nirode, W. (2007, March). *Building trigonometric connections through activities and explorations*. Talk presented at the annual meeting of the National Council of Teachers of Mathematics, Atlanta, GA.

Nirode, W. (2006, October). *Using The Geometer's Sketchpad throughout the mathematics curriculum*. Invited talk presented at the annual meeting of the Ohio Council of Teachers of Mathematics, Toledo, OH.

Nirode, W. (2005, April). *Active geometry: Hands-on projects and extended assignments*. Talk presented at the annual meeting of the National Council of Teachers of Mathematics, Anaheim, CA.

Nirode, W. (2005, March). *Developing a conceptual understanding of linear equations in beginning algebra*. Talk presented at the International Teachers Teaching with Technology Conference, Washington DC.

Ruland, P., & Nirode, W. (2001, March). *Calculator projects, programs, and extended assignments*. Talk presented at the International Teachers Teaching with Technology Conference, Columbus, OH.

Ruland, P., & Nirode, W. (2000, March). *Calculator projects, programs, and extended assignments*. Talk presented at the International Teachers Teaching with Technology Conference, Dallas, TX.

Nirode, W., & Ruland, P. (2000, March). *Dynamic discovery with Cabri*. Talk presented at the International Teachers Teaching with Technology Conference, Dallas, TX.

Ruland, P., & Nirode, W. (1999, April). *Calculator projects, programs, and extended assignments*. Talk presented at the Regional Teachers Teaching with Technology Conference, Columbus, OH.

Ruland, P., & Nirode, W. (1999, March). *Calculator projects, programs, and extended assignments*. Talk presented at the International Teachers Teaching with Technology Conference, Chicago, IL.

COURSES TAUGHT

MIAMI UNIVERSITY (*N* = 29)

Undergraduate:

Early Childhood (EC):

MTH 115: Mathematics for Elementary Teachers I (×7)
MTH 116: Mathematics for Elementary Teachers II (×4)

Middle Childhood (MC):

MTH 217: Mathematics for Middle School Teachers: Arithmetic and Algebra (×2)
MTH 407: Mathematical Structures through Inquiry (×2)

Adolescent to Young Adult (AYA):

MTH 408: Mathematical Problem Solving with Technology (×6)
MTH 411: Foundations of Geometry (×2)

Graduate:

Summer MAT Program for Inservice AYA Teachers:

MTH 508: Mathematical Problem Solving with Technology (×2)
MTH 605: Calculus for Secondary School Teachers (×2)
MTH 609: Data Analysis and Inference for Secondary School Teachers (×2)

WRIGHT STATE UNIVERSITY

Undergraduate:

ED 2700: Educational Psychology

Graduate:

EDS 6120: Mathematical Content Standards for Intervention Specialists

TROY HIGH SCHOOL (*N* = 120)

Mathematics:

Informal Algebra 1 (×15), Algebra 1 (×12)
Informal Geometry (×4), Geometry (×10), Honors Geometry (×10)
Algebra 2 (×2), Honors Algebra 2 (×3)
Functions, Statistics, & Trigonometry (×17), Pre-Calculus (×3)
AP Calculus AB (×5), AP Calculus BC (×5)

Statistics:

AP Statistics (×14)

Economics:

AP Macroeconomics (×10), AP Microeconomics (×10)

PROFESSIONAL SERVICE

REVIEWER OF MANUSCRIPTS FOR THE FOLLOWING JOURNALS:

Mathematics Teacher: Learning and Teaching PK–12

Ohio Journal of School Mathematics

Mathematics Teacher Educator

Journal of Mathematical Behavior

Contemporary Issues in Technology and Teacher Education

The Journal of Educational Research

Mathematics Teaching in the Middle School (2014–2018)

Mathematics Teacher (2010–2018)

REVIEWER OF PROPOSALS/PAPERS FOR THE FOLLOWING CONFERENCES:

Association of Mathematics Teacher Educators (AMTE) Annual Meeting

Psychology of Mathematics Education North American (PMENA) Chapter Annual Meeting

COEDITOR FOR ASKED & ANSWERED DEPARTMENT

Mathematics Teacher: Learning and Teaching PK–12 (May 2019–September 2020)

PROFESSIONAL DEVELOPMENT WORKSHOPS (N = 42)

Nirode, W, (2020, February). *Thinking deeply about simple things*. Half-day workshop for Miamisburg High School, Miamisburg, OH.

Nirode, W. (2015, June). *Reasoning, sense making, and proof in high school geometry*. Four-day workshop open to Dayton-area teachers, Troy, OH.

Nirode, W. (2011, August). *Using The Geometer's Sketchpad throughout the secondary mathematics curriculum*. One-day workshop for Marshall High School, Marshall, TX.

Nirode, W. (2009, October). *Using the Smartboard to teach with instructional efficiency*. One-day workshop for Marshall High School, Marshall, TX.

Nirode, W. (2008, August). *Using The Geometer's Sketchpad throughout the secondary mathematics curriculum*. One-day workshop for the Fayette County Public Schools, Lexington, KY.

Nirode, W. (2007, March). *Using The Geometer's Sketchpad throughout the secondary mathematics curriculum*. Three-day workshop for the New York City Department of Education, New York, NY.

Nirode, W. (2006, October). *Integrating technology throughout the secondary mathematics curriculum*. One-day workshop for West Liberty-Salem High School, Salem, OH.

Nirode, W. (2006, August). *Discovering Algebra with technology implementation*. One-day workshop for Trotwood-Madison High School, Trotwood, OH.

Nirode, W. (2005, September). *Discovering Algebra with technology implementation*. One-day workshop for Chicago Public Schools, Chicago, IL.

Nirode, W. (2005, August). *Discovering Algebra with technology implementation*. Two-day workshop for Belleville High School, Belleville, MI.

Nirode, W. (2005, July). *Discovering Algebra with technology implementation*. Three-day workshop for Roseville Area High, Roseville, MN.

Nirode, W. (2005, June). *Discovering Algebra and Discovering Geometry implementation*. Four-day workshop for Hopkins High School, Minnetonka, MN.

Nirode, W. (2004, August). *Discovering Algebra with technology implementation*. One-day workshop for Stebbins High School, Riverside, OH.

Nirode, W. (2004, August). *Discovering Algebra with technology*. Three-day workshop for Liberty High School, Clarksburg, WV.

Nirode, W. (2004, July). *Discovering Algebra with technology*. Three-day workshop, Champaign, IL.

Nirode, W. (2004, July). *Using Fathom throughout the secondary mathematics curriculum*. Three-day workshop, Champaign, IL.

Nirode, W. (2004, June). *Discovering Algebra and Discovering Geometry implementation*. Two-day workshop for Madison Metropolitan School District, Madison, WI.

Nirode, W. (2004, June). *Using The Geometer's Sketchpad throughout the secondary mathematics curriculum*. Half-day workshop for the Cleveland Municipal School District, Cleveland, OH.

Nirode, W. (2004, June). *Using The Geometer's Sketchpad throughout the middle school mathematics curriculum*. One-day workshop for Auburn Elementary School, Auburn, KY.

Nirode, W. (2004, February). *Using The Geometer's Sketchpad throughout the secondary mathematics curriculum*. One-day workshop for the Adams County/Ohio Valley School District, West Union, OH.

Nirode, W. (2003, August). *Discovering Algebra with technology implementation*. One-day workshop for Curlew High School, Curlew, WA.

Nirode, W. (2003, August), *Discovering Geometry and The Geometer's Sketchpad*. Five-day workshop for the San Diego Unified School District, San Diego, CA.

Nirode, W. (2003, August). *Discovering Algebra with technology implementation*. Two-day workshop for Portland Public Schools, Portland, OR.

Nirode, W. (2003, July). *Using The Geometer's Sketchpad throughout the secondary mathematics curriculum*. One-day workshop for Hicksville High School, Hicksville, OH.

Nirode, W. (2003, July). *Discovering Algebra with technology*. Three-day workshop, Houston, TX.

Nirode, W. (2003, July). *Discovering Algebra with technology*. Three-day workshop, Trenton, OH.

Nirode, W. (2003, June). *Discovering Algebra and Discovering Geometry implementation*. Three-day workshop for Lower Moreland High School, Huntingdon, PA.

Nirode, W. (2002, June). *Discovering Algebra with technology implementation*. One-day workshop for New Canaan High School, New Canaan, CT.

Nirode, W. (2002, June). *Discovering Algebra with technology*. Two-day workshop for Spaulding High School, Barre, VT.

Nirode, W. (2001, August). *Discovering Algebra with technology implementation*. One-day workshop for Morgan High School, McConnelsville, OH.

Nirode, W. (2001, August). *Discovering Algebra with technology implementation*. One-day workshop for Middletown High School, Middletown, OH.

Nirode, W. (2001, August). *Discovering Algebra with technology implementation*. One-day workshop for Dalton High School, Dalton, GA.

Nirode, W. (2001, August). *Discovering Algebra with technology*. Three-day workshop, Providence, RI.

Nirode, W. (2001, August). *Discovering Algebra with technology implementation*. One-day workshop for Naperville Community Unit School District, Naperville, IL.

Nirode, W. (2001, August). *Discovering Algebra with technology*. Three-day workshop, Las Vegas, NV.

Nirode, W. (2001, June). *Discovering Algebra with technology implementation*. Two-day workshop for Blue Valley High School, Stilwell, KS.

Nirode, W. (2001, February). *Discovering Algebra with technology*. One-day workshop, Kansas City, KS.

Nirode, W. (2000, August). *Discovering Algebra with technology implementation*. One-day workshop for Covington High School, Covington, VA.

Nirode, W. (2000, July). *Discovering Algebra with technology*. Three-day workshop, Louisville, KY.

Nirode, W. (2000, May). *Discovering Algebra with technology*. One-day workshop, Cleveland, OH.

Nirode, W. (2000, February). *Discovering Algebra with technology*. One-day workshop, Columbus, OH.

Nirode, W. (2000, January). *Discovering Algebra with technology*. One-day workshop, Lansing, MI.

TEXTBOOKS REVIEWED AND FIELD-TESTED

REVIEWED TWO CHAPTERS, 2007

Yates, D. S., Moore, D. S., & Starnes, D. S. (2008). *The Practice of Statistics* (3rd ed.). W. H. Freeman.

REVIEWED, 2000

Forester, P. (2003). *Precalculus with Applications*. Emeryville, CA: Key Curriculum.

FIELD-TESTED, 1998–1999

Murdock, J., Kamischke, E., & Kamischke, E. (2002). *Discovering Algebra: An Investigative Approach*. Key Curriculum.

AWARDS (National)

2003 **MILKEN NATIONAL EDUCATOR AWARD**
Awarded to early-to-mid career education professionals for their current achievements and for the promise of what they will accomplish in the future
Included an unrestricted $25,000 award
Award money funded scholarships for Troy High School graduates from 2005–2018

AWARDS (Local)

2020	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** Valedictorian and Salutatorian from each high school in the county select their most influential educator in their K–12 career *Selected by Jackson Goodall, Troy High School Valedictorian*
2016	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** *Selected by Jared Sherrick, Troy High School Valedictorian*
2015	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** *Selected by Annie Zhang, Troy High School Salutatorian*
2014	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** *Selected by Noelle Culp, Troy High School Valedictorian*
2013	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** *Selected by Angela Dennison, Troy High School Salutatorian*
2012	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** *Selected by Cody Fox, Troy High School Salutatorian*
2011	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** *Selected by Rajan Gupta, Troy High School Salutatorian*
2006	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** *Selected by Robert Kappers, Troy High School Valedictorian*
2003	**MIAMI COUNTY EXCELLENCE IN EDUCATION AWARD** *Selected by Andy Kappers, Troy High School Valedictorian*

ADDITIONAL GRADUATE COURSEWORK

Spring 2015 Fall 2014	**WRIGHT STATE UNIVERSITY** *6 semester hours of graduate mathematics*	Dayton, OH
Summer 2004	**PORTLAND STATE UNIVERSITY** *3.33 semester hours of graduate mathematics education*	Portland, OR
Summer 2004 Fall 2002	**SOUTH CAROLINA STATE UNIVERSITY** *9 semester hours of graduate mathematics*	Orangeburg, SC
Summer 2003 Summer 2000	**UNIVERSITY OF CALIFORNIA BERKELEY EXTENSION** *6 semester hours of graduate mathematics education*	Berkeley, CA
Winter 2003 Winter 2002 Summer 2000 Fall 1999	**UNIVERSITY OF DAYTON** *12.67 semester hours of graduate counseling, education, and educational technology*	Dayton, OH

CONFERENCE, INSTITUTE, AND WORKSHOP PARTICIPATION

2018	**ASSOCIATION OF MATHEMATICS TEACHER EDUCATORS CONFERENCE**	Houston, TX
2013	**STATISTICS: AN OVERVIEW WORKSHOP BY WRIGHT STATE UNIVERSITY STATISTICAL CONSULTING CENTER**	Dayton, OH

2009	**Ohio Council of Teachers of Mathematics Conference**	Cincinnati, OH
2009	**Association of Mathematics Teacher Educators Conference**	Orlando, FL
2008	**Regional National Council of Teachers of Mathematics Conference**	Cleveland, OH
2007	**AP Economics Workshop**	Cincinnati, OH
2006	**AP Statistics Workshop**	Westerville, OH
2006	**Anja S. Greer Conference on Secondary School Mathematics, Science, and Technology**	Exeter, NH
2005	**Ohio Council of Teachers of Mathematics Conference**	Dayton, OH
2005	**AP Statistics in Action Institute**	Oakland, CA
2005	**AP Calculus Workshop**	Columbus, OH
2003	**Calculus with The Geometer's Sketchpad Institute**	Oakland, CA
2003	**Precalculus with Applications Institute**	Oakland, CA
2003	**Regional National Council of Teachers of Mathematics Conference**	Indianapolis, IN
2000	**Fathom Institute**	Berkeley, CA
1998	**Discovering Algebra with Technology Institute**	Berkeley, CA
1998	**International Teachers Teaching with Technology Conference**	Nashville, TN
1997	**Regional National Council of Teachers of Mathematics Conference**	Cleveland, OH

MENTORING

2015–2017	**Troy High School** Mentor for Resident Educator Samantha Potocek
2015–2017	**Troy High School** Mentor for Resident Educator Tyler Wright
2013–2014	**Troy High School** Mentor for Resident Educator Kristen Schumann
2007–2008	**Troy High School** Mentor for Entry Year Educator Jessica (Marvin) Westfall
2003–2004	**Troy High School** Mentor for Entry Year Educator Brian Huelskamp
2002–2003	**Troy High School** Mentor for Entry Year Educator Sarah Weide

MEMBERSHIPS

2013–Present	**ASSOCIATION OF MATHEMATICS TEACHER EDUCATORS (AMTE)**
1999–Present	**OHIO COUNCIL OF TEACHERS OF MATHEMATICS (OCTM)**
1996–Present	**NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS (NCTM)**

Ivonne J. Ortiz Parsons

Department of Mathematics
Miami University
Oxford, OH 45056
April 26, 2023

Education

- Ph.D. Mathematics, SUNY Binghamton, May 2003.
  Advisor: Thomas Farrell, dissertation
- M.S. Mathematics, SUNY Binghamton, May 1998.
- Diploma in Mathematics, Universidad de Antioquia, Colombia, May 1996.
  Advisor: Debora Tejada
  Undergraduate Thesis: *Branched Coverings of S^2 onto S^2.*

Areas of Specialization

- Algebraic/Geometric Topology and K-theory.

Grants and Awards

- NSF Research Grant DMS-1207712 (PI) 2012-2016.
- NSF Research Grant DMS-1441592 (SP) May 1, 20014 - April 30, 2015.
- NSF Research Grant DMS-0805605 (PI) 2008-2011. No-cost extension 2011-2012.
- CFR Summer Grant (PI), Miami University, Summer 2008.
- College of Arts and Sciences Summer Research Grant (PI), Miami University, Summer 2004.
- Research Assistantship, SUNY Binghamton, Summer 2002, and Summer 2001.
- Research Assistantship, Universidad Nacional de Colombia, Medellin, 1995 and 1996.

Academic Positions

- Professor, Miami University, Fall 2015 - present.
- Associate Professor, Miami University, Fall 2009 - spring 2015
- Assistant Professor, Miami University, Fall 2003 - Spring 2009.
- Teaching Assistant, SUNY Binghamton, Fall 1996 - Spring 2003.

Dissertation

- *The lower algebraic K-theory of Γ_3*, May 2003. Advisor F. T. Farrell.

Papers

- D. Farley, I. J. Ortiz, *Algebraic K-theory of crystallographic groups - the three-dimensional slitting case.* Lecture Notes in Mathematics, **Book 2113,** Springer, 2014 Edition.
- J-F Lafont, I. J Ortiz, R. Sánchez-García, *Rational equivariant K-homology of low dimensional groups,* Clay Math. Proceedings **16** (2012), pgs. 131-164. The volume is entitled *Topics in Non-commutative Geometry*, Proceedings of the 3rd Winter School at the Luis Santaló-CIMPA Research School, Buenos Aires, 2010.
- B. Magurn, J.-F. Lafont, I. J. Ortiz, *Lower Algebraic K-theory of hyperbolic reflection groups.* Math. Proc. Cambridge Philos. Soc. 148 (2010), pgs. 193-226.
- J.-F. Lafont, I. J. Ortiz, *Algebraic K-theory of hyperbolic 3-simplex reflection groups*, Comment. Math. Helv. 84 (2009), pgs. 297-337.
- J.-F. Lafont, I. J. Ortiz, *Splitting formulas for certain Waldhausen Nil-groups.* J. London Math. Soc. 79 (2009), pgs. 309-322.
- J.-F. Lafont, and I. J. Ortiz, *Relating the Farrell Nil-groups to the Waldhausen Nil-groups*, Forum Math **20** (2008), no. 3, 445–455.
- J.-F. Lafont, and I. J. Ortiz, *Relative hyperbolicity, classifying spaces, and lower algebraic K-theory*, Topology **46** (2007), pgs 527–553.
- I. J. Ortiz, *Erratum to the lower algebraic K-theory of Γ_3*, K-theory **38** (2007), pgs 85–86.
- I. J. Ortiz, *The lower algebraic K-theory of Γ_3*, K-theory **32**(4) (2004), pgs 331–355.

Papers in preparation

- I. J. Ortiz *The lower algebraic K-theory of Γ_4.* First draft of 22 pages completed.
- J.-F. Lafont, and I. J. Ortiz, *Isomorphism conjectures for Kleinian groups.* First draft of 28 pages completed.
- D. Farley, and I. J. Ortiz, *The lower algebraic K-theory of hyperbolic 4-simplex reflections groups.* First draft of 23 pages completed.

Invited Talks

- *Geometry and Topology session* at the First Mathematical Congress of the Americas, Guanajuato, Mexico, August 5-9, 2013.
- *Workshop on High-dimensional Topology in honor of Frank Connolly.* University of Notre Dame, December 8-9, 2012.

- Topology Seminar, SUNY Binghamton, November 29, 2012.
- Lecture on *Algebraic K-theory of infinite groups with torsion* at the Department of Mathematics, Universidad the Antioquia. July 2012.
- Geometry and Topology in Samos, Greece, June 11-16, 2012.
- Topology Seminar. The Ohio State University, April 26, 2012.
- *Geometry and Topology*, *Splitting formulas for certain Waldhausen Nil-groups*, Oaxaca, Mexico, April 6–10, 2009.
- *Topology Seminar, University of Chicago*, *Lower Algebraic K-Theory of Hyperbolic Reflections Groups*, April 23, 2009.
- Topology Seminar at the University of Aegen in Samos, Greece, *On the lower algebraic K-theory of Γ_4*, June 26, 2008.
- *Splitting formulas for certain Waldhausen Nil-groups. Conference on Algebraic and Geometric Topology*, in Gdańsk, Poland, June 9–13, 2008.
- *Splitting formulas for certain Waldhausen Nil-groups.* AMS special session *Algebraic K-theory and Nil-groups in algebra and topology* at the AMS sectional meeting in Indiana University, Bloomington IN, April 4–6, 2008.
- *On the Farrell and Jones Isomorphism Conjecture and its applications*, G^3, *Geometric Groups on the Gulf coast* in Pensacola Beach FL, March 20–23, 2008.
- Topology Seminar, The Ohio State University, *On the lower algebraic K-theory of Γ_4*, February 24, 2008.
- *Lower algebraic K-theory of lattices in hyperbolic space, II*, Vanderbilt University, April 14–15, 2007.
- *On the lower algebraic K-theory of 3-dimensional crystallographic groups.* Spring Topology and Dynamics Conference, University of Missouri-Rolla, March 29–31, 2007.
- *The Farrell - Jones Isomorphism Conjecture as a tool for computations in K-theory*, Geometry, Topology, and their Interactions. An international conference in honor of Farrell-Jones, Morelia Mexico, January 8–13, 2007.
- Topology Seminar at SUNY Binghamton, *The lower algebraic K-theory of hyperbolic 3 simplex reflection groups.* May 10, 2006.
- Topology Seminar at Ohio State University, *Classifying spaces for relative hyperbolic groups.* February 28, 2006.
- *The lower algebraic K-theory of Γ_3*, JAMEX III (3rd Japan-Mexico Joint Meeting on Topology and its Applications), Oaxaca, Mexico, December 9, 2004; ALTENCOA Conference, Antioquia University, Medellin Colombia, July 2004;

- *The Isomorphism Conjecture in algebraic K-theory* (two hour short course), ALTENCOA Conference, Antioquia University, Medellin Colombia, July 2004.
- *The algebraic K-theory of Fuchsian groups*, Zassenhaus Group Theory Conference, Sarasota, FL, 2001.

Contributed Talks

- *The controlled algebraic K-theory of Γ_3*, Joint Mathematics Meeting AMS-MAA, Baltimore, 2003 and San Diego 2002, I also delivered this talk at the Topology Seminar in SUNY Binghamton on May 2002.

Conferences Attended

- Geometry and Topology session at the First Mathematical Congress of the Americas 2013, August 5-9, 2012, Guanajuato, Mexico.
- Workshop on High-dimensional Topology in honor of Frank Connolly. University of Notre Dame, December 8-9, 2012.
- The Summer School and Conference Topology and Groups - Berlin, June 18-29, 2012.
- Geometry and Topology in Samos, Greece, June 11-16, 2012.
- Geometry, Topology, Dynamics in Negative Curvature at Raman Research Institute, Bangalore India. August 2-7, 2010.
- Unni Namboodiri Lectures in Geometry and Topology at the University of Chicago, Chicago, IL., May 3-6, 2010
- Examples of Groups, Ohio State University, Columbus, OH, May 10-15, 2009.
- Geometry and Topology, Oaxaca, Mexico, April 6-10, 2009.
- Geometric Topology conference in honor of Steve Ferry at the University of Chicago, Chicago, IL, March 22-24, 2009.
- Andrew Ranicki's 60th Birthday Conference: Surgery and Manifold Theory, Münster, Germany, June 18-21, 2008.
- Conference on Algebraic and Geometric Topology, in Gdańsk, Poland, June 9-13, 2008.
- Summer School: *Cohomology of Groups and Algebraic K-theory*, CMS – Zhejiang University, Hangzhou China. July 1-13, 2007.
- Workshop on Nil Phenomena in Topology, Vanderbilt University, April 14th -15th, 2007.
- Spring Topology and Dynamics Conference, University of Missouri-Rolla, March 29th-31th, 2007.

- Geometry, Topology, and their Interactions. An international conference in honor of Farrell-Jones, Morelia (Mexico), January 8th-13th, 2007.
- Frank Quinn's 60th Birthday Conference, Binghamton, 5-7 November, 2006.
- Surgery Theory Past, Present and Future, A celebration of the 70th birthday of C.T.C. Wall ICMS, Edinburgh, 3-5 July, 2006.
- Prospects in Topology, Workshop in Münster, Germany, June 28 -29, 2006.
- Algebraic K-and L-Theory of Infinite Groups, ICMS, Edinburgh, United Kingdom, June 27 to July 1, 2005.
- Workshop in Geometric Topology, Colorado College at Colorado Springs, June 9 to 11, 2005.
- JAMEX III (3rd Japan-Mexico Joint Meeting on Topology and its Applications), Oaxaca, Mexico, December 9, 2004.
- ALTENCOA Conference – Algebra, Number Theory and Combinatorics, Antioquia University, Medellin, Colombia, July 2004.
- Great Lakes K-theory Conference, University of Illinois at Urbana-Champaign, May 2004.
- Topology Festival, Cornell University, Ithaca, NY, May 2002.
- MAA Seaway Section Meeting, SUNY Brockport, Brockport NY, April 2002
- Join Mathematics Meeting AMS-MAA, San Diego, CA, January 2002
- NExT/PFF (New Experiences in Teaching/Preparing Future Faculty) Workshop, SUNY Binghamton, Binghamton, NY, October 2001
- School on High-Dimensional Manifold Topology, Abdus Salam International Center for Theoretical Physics, Trieste, Italy, May2001.
- Topology Festival, Cornell University, Ithaca, NY, May 2001.
- MAA Spring Meeting, SUNY Binghamton, Binghamton, NY, April 2001
- Zassenhaus Group Theory Conference, New College of University of South Florida, Sarasota, NY, January 2001.
- Topology Festival, Cornell University, Ithaca, NY, May 2000.

Professional Service

I. Service to the Profession

- I was a co-organizer (with N. D. Broaddus, M. Davis, and J.-F. Lafont) of the conference *Topological Methods in Group Theory in honor of of Ross Geoghegan's 70th birthday*, The Ohio State University, Columbus, OH, June 16th-20th, 2014.

- I was the co-organizer (with D. Farley and J.-F. Lafont) of the Special Special *Interactions Between Geometry and Topology*, at the AMS Fall Central Sectional Meeting at University of Akron, October 20-21, 2012. Akron, OH.
- Served in a NSF Panel.
- Member of the Association for Women in Mathematics (AWM) Mentor Network. The net-work is intended to link mentors with a variety of groups: recent PhD's graduate students, undergraduates, high school and grade school students, and teachers.
- I was the co-organizer (with Ross Geoghegan and Kim Ruane) of a Special Session on *Geometric Group Theory/Geometric Topology* at the Spring Topology and Dynamics Conference at the University of Wisconsin at Milwaukee, March 13–15, 2008.
- I was the co-organizer (with J.-F. Lafont) of a Special Special *Session in Geometric Topology* for the American Mathematical Society Spring Sectional Meeting in Oxford, Ohio, March 2007.

II. Service to the University/Department

- Graduate Committee, Fall 2009, Fall 2010, Fall 2011, Fall 2015 - present.
- Chair of Colloquium Committee (Department of Mathematics and Statistics), Fall 2005 - Spring 2007. Chair of Colloquium Committee (Department of Mathematics) Fall 2012 - Spring 2020.
- Faculty Research Committee, Fall 2012 - Spring 2015 - Chair of the ANS subcommittee, Fall 2013 - Spring 2015.
- Mathematics Search Committee, 2009 - 2010 Academic Year.
- Award Committee meeting, Spring 2008.
- Latin American Studies Committee, Miami University, Spring 2005 - Spring 2008.
- Mathematics Search Committee, 2005-2006 Academic Year.
- Undergraduate Committee (Department of Mathematics and Statistics), Fall 2003 - Summer 2005, Spring 2008, Fall 2008.

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CURRICULUM VITAE

RESEARCH INTEREST

- Applied Analysis
- Differential Equations
- Infinite Dimensional Dynamical Systems
- Stability theory, Operator theory, Semigroups of linear operators
- Evolution equations in Banach spaces

EDUCATION

- **Ph.D** in Mathematics, August 2004-May 2008, University of Missouri-Columbia, Missouri, USA. Advisor: Yuri Latushkin
- **M.S.** in Mathematics, September 1999-June 2001, West University of Timişoara, Romania
- **B.S.** in Mathematics, September 1995-June 1999, West University of Timişoara, Romania

APPOINTMENTS

- Assistant Professor, Miami University, USA, 2014-present
- Visiting Assistant Professor, Indiana University, USA, 2011-2014
- Dunham Jackson Assistant Professor, University of Minnesota, USA, 2008-2011
- Teaching/Research Assistant, University of Missouri-Columbia, USA, 2004-2008
- Tenured Assistant Professor, West University of Timişoara, Romania, 2002-2006 (on leave during 2004-2006)
- Teaching Assistant, West University of Timişoara, Romania, 1999-2002

HONORS and AWARDS

- Mathematics Distinguished Teaching Award, University of Missouri-Columbia, 2007
- Graduate Assistantship, University of Missouri–Columbia, 2005
- McFarlan Fellowship Award, University of Missouri-Columbia 2004-2005
- Merit Award, West University of Timişoara, Romania, 1998
- "Student Eminent" Award, (established by the academic association "Orizonturi Universitare"), Romania 1997
- Member in the organizing committee of the Mathematical Contest "Traian Lalescu" (for Middle and High School students) , 1996-2004
- Several awards in National(Romania) Mathematics contests
- Romanian National Merit Scholarship, 1996-2001
- Erasmus-Socrates European Scholarship

GRANTS SUPPORT

- PI, Simons Foundation: Collaboration Grants for Mathematicians, Miami University, 2017-2022, USA
- Co-PI, NSF conference grant, Miami University 2016, USA
- summer research grant, Miami University, 2015, USA

- travel support University of Minnesota, 2008-2011, USA
- travel support from NSF grant 0806614, 2008-2009, USA
- summer support from the grant URC-05-027 provided by the Research Board of the University of Missouri, USA
- travel support from NSF grant 0338743, 2005, USA
- CNCSIS grant A-124, 246/2002 and 249/2003-2004, Romania

SERVICE TO THE PROFESSION

MINISYMPOSIA and CONFERENCE ORGANIZING

- Organizer of AMS Special Session on Nonlinear Waves and Patterns, 2018, Columbus, OH, USA
- Organizer of minisymposium at the 2017 SIAM Conference on Analysis and Partial Differential Equations, Baltimore, MD, USA
- Member of the organizing committee of the Forty-fourth Fall 2016 Miami University Mathematics Department Conference
- Organizer of minisymposium at the 2016 SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, PA, USA
- Organizer of minisymposium at the 2010 SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, PA, USA
- Organizer of minisymposium at the 2009 SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, USA

PAPER REVIEWS

- Referee for Physica D: Nonlinear Phenomena;
- Referee for Journal of Differential Equations;
- Referee for Journal of Dynamics and Differential Equations;
- Referee for Journal of Mathematical Analysis and Applications;
- Referee for Journal of Difference Equations and Applications;
- Referee for Communications on Pure and Applied Analysis;
- Referee for Mathematical Models and Methods in Applied Sciences;
- Referee for Discrete and Continuous Dynamical Systems;
- Referee for Dynamics of Partial Differential Equations;
- Referee for SIAM Journal on Mathematical Analysis;
- Referee for Journal of Difference Equations and Applications;
- Referee for Differential and Integral Equations;
- Referee for Journal of Evolution Equations;
- Referee for Journal of Function Spaces;
- Referee for Proceedings of Edinburgh Mathematical Society;
- Referee for Philosophical Transactions of the Royal Society A;
- Referee for Canadian Journal of Mathematics;
- Referee for Applicable Analysis and Discrete Mathematics;
- Referee for Mathematical Modeling of Natural Phenomena;
- Referee for Electronic Journal of Differential Equations;
- Referee for Mathematische Annalen;
- Referee for Indiana University Mathematical Journal;
- Referee for Journal of the Belgian Mathematical Society;
- Referee for Dynamics of Partial Differential Equations;
- Reviewer for Mathematical Reviews, 2005-present

SERVICE TO THE UNIVERSITY

- Organizer of the 2015 Mathematics Patterson examination
- Organizer of the Forty-fourth Fall 2016 Mathematics Department Conference
- Pi Mu Epsilon Adviser, 2017-present
- Mathematics Department Hiring Committee, 2016-2017
- Mathematics Department Governance Committee, 2016-2017
- Mathematics Department Colloquium Committee, 2016-2017
- Mathematics Department Hiring Committee, 2015-2016
- Mathematics Department Governance Committee, 2015-2016
- Mathematics Department Colloquium Committee, 2015-2016
- Mathematics Department Undergraduate Committee, 2014-2015
- Mathematics Department Colloquium Committee, 2014-2015

PAPERS IN REFEREED JOURNALS (in reverse chronological order)

(41) Bounded C_0-semigroups and applications to linear stability of heteroclinic solutions in precipitation models, J. Math. Anal. Appl. **495** (2021), no. 2, Paper No. 124763, 22 pp.

(40) Reverse norms and L^∞ exponential decay for a class of degenerate evolution systems arising in kinetic theory, J. Math. Anal. Appl. **475** (2019), no. 1, 190–202. (with K. Zumbrun).

(39) Stable manifolds for a class of degenerate evolution equations and exponential decay of kinetic shocks, *Kinetic and Related Models*, Kinet. Relat. Models **12** (2019), no. 1, 1-36. (with K. Zumbrun).

(38) Spectrum of non-planar travelin waves, *Integral Equations Operator Theory* **90** (2018), no. 3, 90:30. (with A. Ghazarian and Y. Latushkin).

(37) Center manifolds for a class of degenerate evolution equations and existence of small amplitude kinetic shocks, *J. Differential Equations* **264** (2018), no. 11, 6752-6808. (with K. Zumbrun).

(36) Traveling waves bifurcating from stable layers in the Presence of Conservation Laws, *Discr. Cont. Dyn. Sys. A*, **37** (2017), no. 5, 2619-2651. (with A. Scheel).

(35) $O(2)$-Hopf bifurcations of viscous conservation laws in a channel, *Phys. D*, **308** (2015), 59-79. (with J. Yao and K. Zumbrun)

(34) The Infinite Dimensional Evans Function, *J. Funct. Anal.*, **268** (2015), no. 6, 1509-1586 (with Y. Latushkin).

(33) Constrained variational problems, Sylvester's Law of Inertia, and stability of spatially periodic patterns, *Diff. Int. Eqns.*, **26** (2013), no. 3-4, 389-438. (with A. Scheel and K. Zumbrun)

(32) Instability of radially–symmetric spikes in systems with a conserved quantity, *Fields Institute Communications,* **64** (2013), 119-140. (with A. Scheel).

(31) Layers in the Presence of Conservation Laws, *J. Dyn. Diff. Eqns.* **24** (2012), no. 2, 249-287. (with A. Scheel)

(30) Fredholm properties of radially symmetric, second order differential operators, *International Journal of Dynamical Systems and Differential Equations*, **3** (2011), no. 3, 289-327. (with A. Scheel).

(29) Instability of spikes in the presence of conservation laws, *Zeitschrift für Angewandte Mathematik und Physik*, **61** (2010), 979-998 (with A. Scheel).

(28) The Dichotomy Theorem for evolution by-families, *Journal of Differential Equations*, **245** (2008), 2267-2306. (with Y. Latushkin).

(27) Dichotomy and Fredholm properties of evolution equations, *Journal of Operator Theory*, **58** (2007), 101–128. (with Y. Latushkin and R. Schnaubelt).

(26) Schaffer spaces and exponential dichotomy for evolutionary processes, *Journal of Differential Equations*, vol. **230**, no.1. (2006), 378-391. (with C. Preda and P. Preda).

(25) Functionals on function and sequence spaces connected with the exponential stability of evolutionary processes, *Czechoslovak Mathematical Journal*, **56** (131) (2006), 425-435. (with C. Preda and P. Preda).

(24) Individual stability for evolutionary processes, *Dynamics of Continuous, Discrete and Impulsive Systems, series A: Mathematical Analysis*, vol. **13**, no. 5 (2006), 525-536. (with C. Preda and P. Preda).

(23) A Lyapunov type equation for the exponential stability of evolution families, *Italian Journal of Pure and Applied Mathematics*, vol. **20** (2006), 97-102. (C. Chilarescu and C. Preda).

(22) Schaffer spaces and uniform exponential stability of linear skew-product semiflows, *Journal of Differential Equations*, **212** (2005), no. 1, 191–207. (with C. Preda and P. Preda).

(21) Discrete admissibility and exponential dichotomy for evolution families, *Dynamics of Continuous, Discrete and Impulsive Systems, serie A: Mathematical Analysis*, vol. **12**, no. 5 (2005), 621-633. (with C. Preda and P. Preda).

(20) A discrete Lyapunov theorem for the exponential stability of evolution families, *New York Journal of Mathematics* **11** (2005), 457-463. (with C. Preda and P. Preda).

(19) Functionals on sequence spaces connected with the exponential stability of evolutionary processes, *Acta Mathematicae Universitae Comenianae*, vol. **74**, no. 2 (2005), 211-219. (with C. Preda and P. Preda).

(18) A Characterization of the exponential stability of evolutionary processes in terms of the admissibility of a Orlicz space, *Rend. Sem. Mat. Politecnic. Torino*, **63** (2005), no. 2, 169–178. (with C. Chilarescu and C. Preda).

(17) The Perron problem for C-semigroups, *Math. J. Okayama Univ.*, **46** (2004), 141–151. (with C. Preda and P. Preda).

(16) On the connection between the exponential stability of C_0-semigroups and the admissibility of a certain Sobolev space, *Systems Control Lett.*, **53** (2004), no. 3-4, 299–302. (with C. Chilarescu and C. Preda).

(15) (L^p, L^q)-admissibility and exponential dichotomy of evolutionary processes on the half-line, *Integral Equations Operator Theory*, **49** (2004), no. 3, 405–418. (with C. Preda and P. Preda).

(14) On (a, b)-dichotomy for evolutionary processes on a half-line, *Glasgow Math. J.*, **46** (2004), no. 2, 217–225. (with C. Preda and P. Preda).

(13) Discrete characterizations of exponential dichotomy for evolution families, *Irish Math. Soc. Bull.*, No. **52** (2003), 19–30. (with C. Preda and P. Preda).

(12) Admissibility and exponential dichotomy of evolutionary processes on half-line, *Rend. Sem. Mat. Univ. Politec. Torino*, **61** (2003), no. 4, 461–473. (with C. Preda and P. Preda).

(11) Generalization of Rolewicz's theorem for semigroups of linear operators in Banach spaces, *Analele Universităţii Timişoara*, **41** (2003), no. 2, 33–50. (with M. Megan).

(10) On the Perron Problem for Exponential Dichotomy of C_0-semigroups, *Acta Mathematica Universitas Comenianae*, vol. **LXXII**, 2 (2003), 207-213. (with C. Preda and P. Preda).

(9) Generalizations of a theorem of Datko and Pazy, *Applicable Analysis*, vol. **81**, No. 5 (2003), 1085-1090. (with M. Megan).

(8) On exponential h-expansiveness of semigroups of linear operators in Banach spaces, *Nonlinear Analysis, Theory, Methods, Applications*, **52A**, No.2 (2003), 545-556.(with M. Megan).
(7) Exponential stability and instability of semigroups of linear operators in Banach spaces, *Math. Inequal. Appl.* **5**, No. 3 (2002), 557-567 (with M. Megan, A. L. Sasu and B. Sasu).
(6) On a theorem of Zabczyk for semigroups of linear operators in locally convex spaces, *Novi Sad Journal of Mathematics*, vol. **32**, Nr. 1 (2002), 59-71.(with M. Megan).
(5) On uniform exponential stability in locally convex spaces, *Dynamical Systems and Applications*, **10** (2001), 261-272.(with M. Megan).
(4) Individual exponential stability for evolution families of linear and bounded operators, *New Zealand Journal of Mathematics*, vol. **30** (2001), 15-24.(with C. Buşe).
(3) On uniform stability of Φ-semigroups in locally convex spaces, *Analele Universităţii Timişoara*, vol **XXXIX**, fasc. 1 (2001), 125-132.
(2) On a theorem of Rolewicz for semigroups of operators in locally convex spaces, *Ann. Math. Blaise Pascal*, vol. **7**, Nr. 1 (2000), 23-35. (with M. Megan).
(1) On exponential dichotomy for C_0-semigroups in locally convex spaces, *Analele Universităţii Timişoara*, vol **XXXVI**, fasc. 2 (1998), 279-286. (with S. Drăgan and M. Megan).

LECTURE NOTES for UNDERGRADUATE COURSES

- Real Analysis, Mirton, 2003 (with C. Preda and P. Preda), (in Romanian).
- A brief course in Fixed point Theory, West University of Timişoara, 1997 (with C. Grecu, L. Radu, V. Radu and T. Venţe), (in Romanian).

INVITED PRESENTATIONS at CONFERENCES and SEMINARS

- SIAM Conference on Nonlinear Waves and Coherent Structures, Anaheim, CA, USA, 2018.
- AMS Special Session on Nonlinear Waves and Patterns, Columbus, OH, USA, 2018.
- Colloquium talk, University of Missouri, Columbia, MO, USA, 2018.
- SIAM Conference on Analysis and Partial Differential Equations, Baltimore, MD, USA, 2017.
- Colloquium talk, College of Charleston, Charleston, SC, USA, 2017.
- 2017 SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, USA, 2017.
- PDE/Applied Math Seminar, Indiana University, Bloomington, IN, USA, February 2017.
- SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, PA, USA, 2016.
- KUMU Conference on PDE, Dynamical Systems, and Applications, University of Missouri, Columbia, MO, USA, April 2016..
- PDE/Applied Math Reading Seminar, Indiana University, Bloomington, IN, USA, November 2015.
- PDE/Applied Math Reading Seminar, Indiana University, Bloomington, IN, USA, May 2015.
- Analysis/PDE Reading Seminar at Texas A&M University, College Station, TX, USA, May 2015.
- The Ninth IMACS International Conference on, Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, GA, USA 2015. Invitation to talk in "Spectral methods in Stability of Traveling Waves"

- AMS Central Spring Sectional Meeting, Michigan State University, East Lansing, MI, USA 2015. Invitation to talk in "Special Session on Nonlinear Waves: Dynamics and Stability".
- AMS Southeastern Spring Sectional Meeting University of Tennessee, Knoxville, TN, USA 2014.
- Mathematics Department Colloquium, Miami University, Oxford, OH, January 2014.
- The Eighth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, GA, USA, 2013.
- PDE/Applied Math Seminar, Indiana University, Bloomington, IN, USA, February 2013.
- AMS Fall Central Sectional Meeting, University of Akron, Akron, OH, USA, 2012.
- AMS Spring Central Section Meeting, University of Kansas, Lawrence, KS, USA, 2012.
- Mathematics Department Colloquium, Miami University, Oxford, OH, April 2012.
- PDE/Applied Math Seminar, Indiana University, Bloomington, IN, USA, March 2012.
- 2011 SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, USA, 2011.
- Seventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, GA, USA, 2011.
- PDE/Applied Math Seminar, Indiana University, Bloomington, IN, USA, 2011. H
- Mathematics Department Colloquium, North Carolina State University, Raleigh, NC, January 2011.
- Differential Equations Seminar, University of Missouri, Columbia, MO, USA, January 2011.
- SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, PA, USA, 2010.
- Dynamical Systems Seminar, University of Minnesota, Minneapolis, MN, USA, 2010.
- 2009 SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, USA 2009.
- Symposium on Spatio-Temporal Reaction-Diffusion Phenomena, Institute for Mathematics and its Applications, Minneapolis, MN, USA, May 2009.
- Dynamical Systems Seminar, University of Minnesota, Minneapolis, MN, USA, November 2008.
- AIMS Seventh International Conference on Dynamical Systems, Differential Equations and Applications, Arlington, TX, USA, 2008.
- Mathematics and Statistics Department Colloquium ,Missouri University of Science and Technology, Rolla, MO, USA, 2008.
- Computational and Applied Mathematics Seminar Univ of Kansas, Lawrence, KS, USA, March 2008.
- Great Plains Operator Theory Symposium, University of Nebraska-Lincoln, Lincoln, NE, USA, 2007.
- Differential Equations Seminar, University of Missouri, Columbia, MO, USA, 2006.
- Differential Equations seminar, Institute for Mathematics, Martin Luther University, Halle-Wittenberg Germany, June 2005.
- Workshop on Analytic Semigroups and Reaction Diffusion Problems, Cassalmaggiore, Italy, June 2005.
- ICNPAA Mathematical Problems in Engineering and Aerospace Sciences, Timişoara, Romania, 2-4 June 2004.
- Seventh International Congress Mathematics, Economics and insurance, Lyon, France, June 2003.

- International Conference on Mathematical Analysis and Applications, Cluj-Napoca, Romania, 2003.
- International Conference on Mathematical Analysis and Applications Craiova, Romania, 2-3 November 2001.
- Seventh International Conference on Functional Equations and Inequalities, Timişoara, Romania, 2001.
- National Conference on Mathematical Analysis and Applications, Timişoara, Romania, 2000.
- Conference in Analysis, Functional Equations, Approximation Theory and Convexity-Tiberiu Popovici, Cluj-Napoca, Romania, 1999.
- National Conference on Mathematical Analysis and Applications, Timişoara, Romania, 1998.

OTHER CONFERENCES

- The Eighteenth Riviere-Fabes Symposium on Analysis and PDE and Spring 2015 Midwest PDE Conference, University of Minnesota, Minneapolis, MN, USA, 2015.
- Forty-second Annual Conference on Optimization, Miami University, Oxford, OH, USA 2014.
- The Eighteenth Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2014.
- The Seventeenth Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2014.
- The Sixteenth Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2013.
- The Fifteenth Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2012.
- Conference on Geometric Methods for Infinite-Dimensional Dynamical Systems, Providence, Rhode Island, USA, 2011.
- The Fourteenth Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2011.
- The Thirteens Riviere-Fabes Symposium on Analysis and PDE University of Minnesota, Minneapolis, MN, USA, 2010.
- The Twelfth Riviere-Fabes Symposium on Analysis and PDE University of Minnesota, Minneapolis, MN, USA 2009.
- Differential Equations: Analysis, Applications and Computation. A symposium in honor of Hans Weinberger's 80th Birthday, Institute for Mathematics and its Applications, Minneapolis, MN, USA, 2008.
- Fourth Yamabe Symposium, University of Minnesota Minneapolis, MN, USA, 2008.
- The Eleventh Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2008.
- The Tenth Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2007.
- The Ninth Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2006.
- Dynamical Systems Weekend-on the occasion of Carmen Chicone's 60th birthday, University of Missouri-Columbia, Columbia, MO, USA, 2006.
- The Ninth Riviere-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, MN, USA, 2006.

- Interactions between Harmonic Analysis and Partial Differential Equations, NSF FRG Conference, University of Missouri-Columbia, Columbia, MO, USA, 2006.
- Seminar on Analysis - On the occasion of Elias Saab's 60th birthday, University of Missouri-Columbia, Columbia, MO, USA, 2005.

TEACHING EXPERIENCE

Miami University:

- Instructor for Topics In Advanced Mathematics (MTH 600)
- Partial Differential Equations (MTH 455)
- Instructor for Calculus III (MTH 252)
- Instructor for Numerical Analysis (MTH 453/553)
- Instructor for Differential Equations (MTH 347)
- Instructor for Calculus II (MTH 251)
- Instructor for Linear Algebra and Differential Equations for Engineers (MTH 246)
- Instructor for Differential Equations for Engineers (MTH 245)
- Instructor for Calculus I (MTH 151)

Indiana University:

- Instructor for Calculus I (M211)
- Instructor for Calculus II (M212)
- Instructor for Linear Algebra for Undergraduates (M303)
- Instructor for Elementary Computational Methods (M371)
- Instructor for Numerical Analysis I (M 471)
- Instructor for Numerical Analysis II (M 472)

University of Minnesota:

- Course Coordinator for Precalculus II (Math 1151)
- Course Coordinator for Calculus II (Math 1272)
- Instructor for Precalculus II (Math 1151)
- Instructor for Calculus II (Math 1272)
- Instructor for IT Calculus II (Math 1372)
- Instructor for IT Linear Algebra and Differential Equations (Math 2373)
- Instructor for IT Multivariable Calculus and Vector Analysis (Math 2374)
- Instructor for Differential Equations with Applications (Math 4512)

University of Missouri-Columbia:

- Instructor for College Algebra (Math 1100)
- Instructor for Elements of Calculus (Business Calculus, Math 1320)
- Instructor for Calculus I (Math 1500)
- Instructor for Calculus II for Social and Natural Sciences (Math 2100)
- Teaching Assistant for Advanced Calculus (Math 4700/7700)

West University of Timişoara:

- Mathematical Analysis
- Real Analysis
- Complex Analysis
- General Topology
- Semigroups of Linear Operators
- Dynamical Systems (graduate level courses)

Daniel Pritikin

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Department of Mathematics
301 South Patterson Avenue
Oxford, OH 45056-3414

EDUCATION

University of Wisconsin-Madison
1984 Ph.D., Mathematics
1982 M.A., Mathematics
Pomona College,
B.A., Mathematics

PROFESSIONAL EXPERIENCE

1995 - Ongoing

Professor, Miami University, Oxford, Ohio

1989 - 1995

Associate Professor, Miami University, Oxford, Ohio, 1995

1984 - 1989

Assistant Professor, Miami University, Oxford, Ohio, 1989

PUBLICATIONS

"Hamilton cycles in k-partite graphs", DeBiasio, Krueger, Pritikin, Thompson, J. Graph Theory. Vol. 94. (1) May 2020 (pp. 92-112).

"Arranging kings k-dependently on a hexagonal chessboards", with B. Bishop, R. Doughty, J. Gonda, A. Morales, J. Reiswig, K. Slyman. Vol. 9 (2016), No. 4, 699–713.

"Game of Stones", D. Kalman, D. Pritikin April 17, 2017 issue of Math Horizons. Pgs. 5-9.

"Embedding multidimensional grids into optimal
Hypercubes", Z. Miller, I. H. Sudborough, D. Pritikin,

Theoretical Computer Science 552 (2014) 52-82.

Arrangements of k-sets with intersection constraints
Jiang, Tao; Perkel, Manley; Pritikin, Dan
European J. Combin. **33** (2012), no. 8, 1882–1899.

Representation numbers of complete multipartite graphs
Akhtar, Reza; Evans, Anthony B.; Pritikin, Dan
Discrete Math. **312** (2012), no. 6, 1158–1165.

Near optimal bounds for Steiner trees in the hypercube
Jiang, Tao; Miller, Zevi; Pritikin, Dan
SIAM J. Comput. **40** (2011), no. 5, 1340–1360.

Representation numbers of stars
Akhtar, Reza; Evans, Anthony B.; Pritikin, Dan
Integers **10** (2010), A54, 733–745.

Separation numbers of trees
Jiang, Tao; Miller, Zevi; Pritikin, Dan
Theoret. Comput. Sci. **410** (2009), no. 38-40, 3769–3781.

On the unitary Cayley graph of a finite ring
Akhtar, Reza; Jackson-Henderson, Tiffany; Karpman, Rachel; Boggess, Megan; Jiménez, Isidora; Kinzel, Amanda; Pritikin, Dan
Electron. J. Combin. **16** (2009), no. 1, Research Paper 117, 13 pp.

A solitaire game played on 2-colored graphs
Craft, David; Miller, Zevi; Pritikin, Dan
Discrete Math. **309** (2009), no. 1, 188–201.

k-dependence and domination in kings graphs
Ionascu, Eugen J.; Pritikin, Dan; Wright, Stephen E.
Amer. Math. Monthly **115** (2008), no. 9, 820–836.

Proceedings of the Twenty-fifth Southeastern International Conference on Combinatorics, Graph Theory and Computing
Congr. Numer. **104** (1994), pp. 1–224.

Applying a result of Frankl and Rödl to the construction of Steiner trees in the hypercube
Miller, Zevi; Pritikin, Dan
Discrete Math. **131** (1994), no. 1-3, 183–194.

Near embeddings of hypercubes into Cayley graphs on the symmetric group
Miller, Zevi; Pritikin, Dan; Sudborough, I. Hal
IEEE Trans. Comput. **43** (1994), no. 1, 13–22.

Minimum biclique partitions of the complete multigraph and related designs
de Caen, D.; Gregory, D. A.; Pritikin, D.
Lecture Notes in Pure and Appl. Math., 139
Marcel Dekker, Inc., New York, 1993, 93–119.

Eigenvalues and separation in graphs
Miller, Zevi; Pritikin, Dan
Linear Algebra Appl. **181** (1993), 187–219.

The harmonious coloring number of a graph
Miller, Z.; Pritikin, D.
Discrete Math. **93** (1991), no. 2-3, 211–228.

On the separation number of a graph
Miller, Zevi; Pritikin, Dan
Networks **19** (1989), no. 6, 651–666.

The harmonious coloring number of a graph
Miller, Z.; Pritikin, D.
Congr. Numer. **63** (1988), 213–228.

The bichromaticity of cylinder graphs and torus graphs
Pritikin, Dan
J. Graph Theory **11** (1987), no. 1, 101–111.

Applying a proof of Tverberg to complete bipartite decompositions of digraphs and multigraphs
Pritikin, Dan
J. Graph Theory **10** (1986), no. 2, 197–201.

Bichromaticity of bipartite graphs

Pritikin, Dan
J. Graph Theory **9** (1985), no. 4, 497–502.

CURRICULUM VITAE

Beata Randrianantoanina

Professional Preparation

Undergraduate Institution:
- Warsaw University, Poland, Major: Mathematics, No undergraduate degree awarded.

Graduate Institutions:
- Warsaw University, Poland, Major: Mathematics, Degree: Masters in Mathematics, 1986
- University of Missouri-Columbia, Major: Mathematics, Degree: Ph.D. in Mathematics, 1993

Postdoctoral Institutions:
- Mathematical Sciences Research Institute, Berkeley, California
  Post-doctoral fellow, January 1996 – May 1996.
- University of Texas, Austin, Texas
  Post-doctoral instructor, 1994 – 1996

Appointments

- Miami University, Oxford, Ohio
  - Professor, Fall 2004-present
  - Associate Professor, Fall 2000–Summer 2004
  - Assistant Professor, Fall 1996–Summer 2000
- Université de Franche-Comté, Besançon, France
  - Visiting Research Professor, May 2016–June 2016
  - Visiting Professor, January 2003–June 2003 (while on Assigned Research Appointment Leave from Miami University)
- Mathematical Sciences Research Institute, Berkeley, California
  Post-doctoral fellow, January 1996 – May 1996.
- University of Texas, Austin, Texas
  Post-doctoral instructor, 1994 – 1996
- Bowling Green State University, Bowling Green, Ohio
  Visiting at the Department of Mathematics, 1993–1994
- University of Missouri-Columbia, Columbia, Missouri
  Teaching Assistant, 1988–1993
- Polish Academy of Sciences, Warsaw, Poland
  Research Assistant at the Institute of Mathematics, 1986–1987

Publications

Research monographs

1. (with M. Popov) Narrow Operators on Function Spaces and Vector Lattices, De Gruyter Studies in Mathematics 45, Walter de Gruyter GmbH & Co. KG, Berlin, 2013. xiii+319 pp. ISBN: 978-3-11-026334-3

Editor of conference proceedings

1. (editor; with N.J. Randrianantoanina) Banach Spaces and their Applications in Analysis, Proceedings of the International Conference at Miami University, May 22-27, 2006, in Honor of Nigel Kalton's 60th Birthday, Walter de Gruyter Proceedings in Mathematics, Berlin, New York, 2007.

Articles in professional journals

1. (with M. I. Ostrovskii) On L_1-embeddability of unions of L_1-embeddable metric spaces and of twisted unions of hypercubes, Analysis and Geometry in Metric Spaces 10 (2022), no. 1, 313–329.
2. (with F. Cabello Sánchez and V. Ferenczi) On Mazur rotations problem and its multidimensional versions, São Paulo Journal of Mathematical Sciences 16 (2022), no. 1, 406–458.
3. (with M. I. Ostrovskii) Bourgain discretization using Lebesgue-Bochner spaces, Quaestiones Mathematicae. Journal of the South African Mathematical Society. 43 (2020), no. 5-6, 611–621.
4. (with M. I. Ostrovskii) A characterization of superreflexivity through embeddings of lamplighter groups, Proceedings of the American Mathematical Society 147 (2019), no. 11, 4745–4755.
5. (with M. I. Ostrovskii) Bourgain discretization using Lebesgue-Bochner spaces, to appear in Quaestiones Mathematicae, published online: 17 Apr 2019.

6. (with M. I. Ostrovskii) A new approach to low-distortion embeddings of finite metric spaces into non-superreflexive Banach spaces, Journal of Functional Analysis, 273 (2017), no. 2, 598–651.
7. On sign embeddings and narrow operators on L_2, Contemporary Mathematics 687, "Problems and Recent Methods in Operator Theory" pp. 209–218, Editors: Fernanda Botelho, Raena King and TSSRK Rao, American Mathematical Society, Providence, RI, 2017.
8. (with M. Dymond and H. Xu) On interval based generalizations of absolute continuity for functions on $\mathbb{R}^n$, Real Analysis Exchange 42 (2017), no. 1, 49–78.
9. (with M. I. Ostrovskii) Metric spaces admitting low-distortion embeddings into all n-dimensional Banach spaces, Canad. J. Math. 68 (2016), no. 4, 876–907.
10. (with S. J. Dilworth) On an isomorphic Banach-Mazur rotation problem and maximal norms in Banach spaces, J. Funct. Anal. 268 (2015), pp. 1587–1611.
11. (with H. Xu) On the Bongiorno's notion of absolute continuity, preprint, available on arXiv at `http://front.math.ucdavis.edu/1404.0064`
12. (with V. Mykhaylyuk, M. Popov and G. Schechtman) Narrow and ℓ_2-strictly singular operators from L_p, Israel J. Math. 203 (2014), no. 1, 81–108.
13. (with P.N. Dowling, D. Freeman, C.J. Lennard, E. Odell and B. Turett) A Weak Grothendieck Compactness Principle for Banach Spaces with a Symmetric Basis, Positivity 18 (2014), 147–159.
14. (with P.N. Dowling, D. Freeman, C.J. Lennard, E. Odell and B. Turett) A Weak Grothendieck Compactness Principle, J. Funct. Anal. 263 (2012), no. 5, 1378–1381.
15. (with M. Martin, J. Meri and M. Popov) Numerical index of absolute sums of Banach spaces, Journal of Mathematical Analysis and Applications 375 (2011), no. 1, 207–222.
16. (with H. Connelly) An angle bisector parallel applied to triangle construction, Forum Geometricorum, 9 (2009) 161–163.
17. (with P.N. Dowling and B. Turett) The fixed point property via dual space properties, Journal of Functional Analysis 255 (2008), 768–775.
18. (with B. Lemmens and O. van Gaans) Second derivatives of norms and contractive complementation in vector-valued spaces, Studia Mathematica 179 (2007), 149–166.
19. (with F. Lancien and E. Ricard) On contractive projections in Hardy spaces, Studia Mathematica 171 (2005), 93–102.
20. (with G. Lancien) On the extension of Hölder maps with values in spaces of continuous functions, Israel Journal of Mathematics 147 (2005), 75–92.
21. A disjointness type property of conditional expectation operators, Colloquium Mathematicum 102 (2005), 9–20.
22. Level sets of uniform quotient mappings from $\mathbb{R}^n$ to $\mathbb{R}$ do not need to be locally connected, Collectanea Mathematica 55 (2004), 139–150.
23. Contractive projections in Orlicz sequence spaces, Abstract and Applied Analysis 2004 (2004), 133–145.
24. A Visual Approach to Geometric Series, The College Mathematics Journal 35, No. 1, 2004, 43–47,
25. On the structure of level sets of uniform and Lipschitz quotient mappings from $\mathbb{R}^n$ to $\mathbb{R}$, Geometric and Functional Analysis 13 (2003), 1329–1358.
26. (with M.M. Popov) A pseudo-Daugavet property for narrow projections in Lorentz spaces, Illinois J. Math. 46 (2002), 1313–1338.
27. A characterization of Hilbert spaces, in the Proceedings of the Conference "Function spaces VI", held at the Wrocław University of Technology, Wrocław, Poland, September 2001, pp. 237–245.
28. A note on the Banach-Mazur problem, Glasgow Math. J. 44 (2002), 159–166.
29. Norm one projections in Banach spaces, Taiwanese Journal of Mathematics 5 (2001), 35–95.
30. On isometric stability of complemented subspaces of L_p, Israel Journal of Mathematics 113 (1999), 45–60.
31. Injective isometries in Orlicz spaces, Proceedings of the Third Conference on Function Spaces held in Southern Illinois University at Edwardsville, May 19-23, 1998, K.Jarosz, Editor, Contemporary Mathematics 232 (1999), 269–287.
32. One-complemented subspaces of real sequence spaces, Results in Mathematics 33 (1998), 139–154.
33. (with C. K. Li) Isometries of direct sums of sequence spaces, Asian Journal of Mathematics 2 (1998), 157–180.
34. Contractive projections and isometries in sequence spaces, Rocky Mountain Journal of Mathematics 28 (1998), 323–340.

35. 1-complemented subspaces of spaces with 1-unconditional bases, Canadian Journal of Mathematics 49 (1997), 1242–1264.
36. Isometric classification of norms in rearrangement-invariant function spaces, Commentationes Mathematicae Universitatis Carolinae 38 (1997), 73–90.
37. Isometries in Hilbert space valued function spaces, Journal of the Australian Mathematical Society Ser. A, 61 (1996), 150–161.
38. Contractive projections in nonatomic function spaces, Proceedings of the American Mathematical Society 123 (1995), 1747–1750.
39. (with N. J. Kalton) Surjective isometries of rearrangement-invariant spaces, Quarterly Journal of Mathematics Oxford 45 (1994), 301–327.
40. (with N. J. Kalton) Isometries of rearrangement-invariant spaces, Comptes Rendus de l'Académie des Sciences. Série I. Mathématique, Paris 316 (1993), 351–355.

Published Videos of Professional Presentations

1. Video of the talk " On a difference between two methods of low-distortion embeddingsof finite metric spaces into non-superreflexive Banach spaces", delivered at the conference "Non Linear Functional Analysis" 5 - 9 March 2018, at Centre International de Rencontres Mathématiques (CIRM), Luminy, France, published in CIRM Audiovisual Mathematics Library (one of 5 videos published, out of a total of 26 talks given at this conference)
   https://library.cirm-math.fr/Record.htm?idlist=1&record=19284626124910028089

Funded Grants/Awards

- The National Science Foundation and the Association for Women in Mathematics Travel Grant for Women, May 2018.
- The National Science Foundation and the Association for Women in Mathematics Travel Grant for Women, September 2012.
- Miami University the Howe Center for Writing Excellence grant "Writing Assignments in Teaching of Complex Analysis," 2011,
- Miami University Assigned Research Appointment Leave, Spring 2011.
- Miami University M. Pauline Priest Barney Distinguished Teaching Mathematics Fellowship, 2010,
- The National Science Foundation and the Association for Women in Mathematics Travel Grant for Women, May 2007.
- NSF DMS-0552245 "Conference on Banach spaces and their applications in analysis", PI, May 2006-April 2007.
- Miami University Summer Research Appointment, May-July 2004.
- Miami University Assigned Research Appointment Leave to conduct research at the Université de Franche-Comté in Besançon, France, Spring 2003.
- The National Science Foundation and the Association for Women in Mathematics Travel Grant for Women, September 2001.
- Miami University International Travel Fund, January 2000.
- The National Science Foundation and the Association for Women in Mathematics Travel Grant for Women, March 1999.
- Miami University Summer Research Appointment, May-July 1997.
- The Lee and Cozette McFarlan Fellowship, University of Missouri-Columbia, 1992.
- G. Ellsworth Huggins Scholarship, University of Missouri-Columbia, 1988-1991.

Selected recent invited presentations at conferences and external seminars/colloquia

1. The International Online Conference Current Trends In Abstract And Applied Analysis, May 2022, Ivano-Frankivsk, Ukraine,
2. Mathematics Department Colloquium at the Ramakrishna Mission Vivekananda Educational and Research Institute (RKMVERI) in Belur Math, West Bengal, India, May 28, 2021, video of the colloquium is published at https://www.youtube.com/watch?v=cpnThEpwQdo
3. Talk at the Banach Spaces Webinars, April 30, 2021. Video of the talk is published on the youtube channel Banach space theory https : //www.youtube.com/channel/UC0PAKkWpf$_y$hBjo6Q23emsg
4. Special Session on Metric Techniques in Analysis at the 2021 AMS Spring Eastern Virtual Sectional Meeting, March 20-21, 2021,

5. Jubilee Congress of Polish Mathematicians for 100-th anniversary of the Polish Mathematical Society, Kraków, Poland, September 3-7, 2019,
6. Banach Spaces and their Applications, a conference in honor of Anatolij Plichko's 70th birthday Lviv National University, Lviv, Ukraine, June 26-29, 2019,
7. The Functional Analysis Seminar at the Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Poland, June 2019,
8. Women in Mathematics at Wisconsin (WIMAW) Colloquium, The University of Wisconsin-Madison, WI, January 25, 2019,
9. Recent Advances in Functional Analysis (dedicated to the memory of Joe Diestel and Victor Lomonosov) Kent State University, Kent, Ohio, USA, October 11-14, 2018,
10. Second Brazilian Workshop in Geometry of Banach Spaces, Ubatuba, Brasil, August 13-17, 2018
11. Workshop in Analysis and Probability Seminar, Texas A&M University, College Station, TX, July 18-28, 2018,
12. Non Linear Functional Analysis 5 - 9 March 2018, Centre International de Rencontres Mathématiques (CIRM), Luminy, France,
13. Analysis Seminar at the University of Illinois, Urbana-Champain, Illinois, November 2016.
14. Conference on Metric Spaces: Analysis, Embeddings into Banach Spaces, Applications, Texas A&M University, College Station, Texas, July 2016,
15. Analysis Seminar at Laboratoire de Mathématiques de Besançon (LMB), Université de Franche-Comté, Besançon, France, June 2016,
16. Invited plenary talk at the conference "Problems and Recent Methods in Operator Theory PRMO2015" held at the University of Memphis, Memphis, Tennessee, October 15-16, 2015, organized in cooperation with the Association for Women in Mathematics (AWM) and in collaboration with the Center for Research and Innovation in STEM Teaching and Learning (CRISTAL), partially funded by the National Science Foundation. One of primary goals of this conference was to promote an active research network among women with interest in operator theory and related areas, I was one of six invited international plenary speakers.
17. Conference on Banach Spaces and their Applications in Analysis at Centre International de Rencontres Mathématiques (CIRM), Luminy, France, January 2015,
18. Conference on Geometric Functional Analysis and its Applications, Besançon, France, October 2014.

A TOTAL OF 75 PRESENTATIONS AT CONFERENCES AND EXTERNAL SEMINARS/COLLOQUIA

Master's students

- Brent Jones, 2017, (current position: high school mathematics teacher in Indiana),
- Shiv Karunakaran, 2004, (current position: Assistant Professor of Mathematics Education at Michigan State University, East Lansing, MI),
- Megan Wawro, 2005, (current position: Associate Professor of Mathematics Education at Virginia Tech, Blacksburg, VA),
- Laura Anderson, 2008, (current position: Senior Lecturer at Miami University, Oxford, OH).

Mentoring of Undergraduate Students

- In my teaching and interaction with students, both graduate and undergraduate, I pay special attention to encouragement of mathematical interests and activities of all students, and especially students who are female or who are members of groups underrepresented in mathematics. I inform students about opportunities of pursuing graduate education in mathematics and I encourage students to try their hand at mathematics research projects. This led to two of my female undergraduate students doing research that later they presented at undergraduate student conferences:
  - Stephanie Zukowski, a senior at the time, presented a talk "Approaching Constructability of Triangles" at the Young Mathematicians Conference YMC2010 held at the Ohio State University, Columbus, Ohio, August 27-29, 2010,
  - Paris Franz, a sophomore at the time, presented a talk "Proof of the Riemann Rearrangement Theorem" at the forty-third annual Student Conference of the Ohio Delta Chapter of Pi Mu Epsilon held at Miami University, Ohio, September 29, 2017.
- I directed a research project of an undergraduate student Huaqiang Xu, which resulted in a joint publication

M. Dymond, B. Randrianantoanina, H. Xu, On interval based generalizations of absolute continuity for functions on $\mathbb{R}^n$. *Real Analysis Exchange* 42 (2017), no. 1, 49–78.

Teaching and Curriculum Development

During my 24 years at Miami University I taught 17 different courses from the 100 to the 600-level. I have actively participated in the development and modernization of several of these courses. I itemize my main contributions below.

- I served as the Mathematics Undergraduate Director in the academic years 2011/12–2016/17.
  During these years I played a leading role in the work on several changes and improvements to our academic programs and courses. As the Undergraduate Director, I always paid careful attention that all actions of the Undergraduate Committee in our department are mindful of the diverse body of our students, and we design our programs and courses in a way that will be attractive to students from diverse cultural backgrounds and diverse interests.
  As the Undergraduate Director, I was actively engaged in the development and implementation of the Departmental Assessment Plan for all mathematics undergraduate degrees,
- In Spring and Summer 2011 I was one of the leading members of the department working on desining a plan to incorporate writing assignments in mathematics courses to implement the CAS Writing Policy introduced in 2011. The writing plan for BA in mathematics developed at that time was in place for many years until the University developed a new model for writing in a major.
- Jointly with Olga Brezhneva we developed a mathematics study abroad program, now known as "Mathematics in Europe". The program is taught during a Summer term in Europe, includes two mathematics courses that satisfy requirements of the major and minor in mathematics, and is additionally enriched by cultural activities exploring connections of mathematics to history, culture and the modern world. The program satisfies the Global Perspectives Requirement of Miami Plan.
  Jointly with Olga Brezhneva, I designed and developed this program improving it over the first 5 years of its running. I was teaching it abroad in years 2011, 2012, 2013, and 2015.
  Now the program "Mathematics in Europe" is well established in the offerings of our deaprtment and as a part of Miami University Study Abroad Programs.
- In 2010 I was awarded the M. Pauline Priest Barney Distinguished Teaching Mathematics Fellowship to improve our Complex Analysis courses MTH 451/551 and 651. As the result of my work as a Barney fellow I developed a proposal for inclusion of additional applied topics into the syllabus of MTH 451/551 and to increase the credit hours for these courses from 3 to 4 in order to allow time for the additional material. These changes were approved and are since then a part of the modernized curriculum of our department's Complex Analysis courses.

Organization of meetings and conferences

- co-organizer of a Special Session on "Banach Space Theory and Metric Embeddings" at the American Mathematical Society Sectional Meeting at the University of Connecticut Hartford, Hartford, CT, April 13-14, 2019,
- co-organizer of five other Special Sessions at regional and national meetings of the American Mathematical Society,
- co-director of three Miami University Annual Mathematics Conferences, 2004, 2010, and 2013,
- co-organizer of a large international research conference which gathered over 200 participants from all parts of the world "Banach spaces and their applications in analysis", held at Miami University, Oxford, Ohio, May 22-27, 2006 (co-organized with N.J. Randrianantoanina). Proceedings of this conference were published in Walter de Gruyter series *Proceedings in Mathematics* in 2007.
  (B. Randrianantoanina and N.J. Randrianantoanina, editors) *Banach Spaces and their Applications in Analysis, Proceedings of the International Conference at Miami University, May 22-27, 2006, in Honor of Nigel Kalton's 60th Birthday*, Walter de Gruyter Proceedings in Mathematics, Walter de Gruyter GmbH & Co. KG, Berlin, 2007. x+453 pp. ISBN: 978-3-11-019449-4
- member of the Scientific Committee for the Second Brazilian Workshop in Geometry of Banach Spaces, a satellite conference of the ICM 2018 (Rio de Janeiro), held in Ubatuba, São Paulo State, Brazil, August 13-17, 2018.

Other professional service

- member of the Editorial Board of the professional journal of the South African Mathematical Society *Quaestiones Mathematicae*, 2018-2021,
- member of the Editorial Board of the professional journal *Central European Journal of Mathematics* (now *Open Mathematics*), 2014-2017,
- reviewer for *Mathematical Reviews* of the American Mathematical Society,
- reviewer for *Zentralblatt MATH* of the European Mathematical Society,
- referee for professional journals.

Membership in professional societies

American Mathematical Society
Association for Women in Mathematics

CONTACT INFORMATION

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E-mail: sarabim@miamioh.edu
Homepage: https://sites.miamioh.edu/sarabi/

AREA OF RESEARCH

- Nonlinear and Variational Analysis
- Optimization and Control Theory

EDUCATION

2011–2016 **Doctor of Philosophy**, *Applied Mathematics*, Wayne State University, Detroit
Thesis Title: *Variational Analysis and Stability in Optimization*
Advisor: Boris Mordukhovich
2011–2014 **Masters of Science**, *Applied Mathematics*, Wayne State University, Detroit
2004–2006 **Masters of Science**, *Applied Mathematics*, Kharazmi University, Tehran, Iran
2000–2004 **Bachelor of Science**, *Applied Mathematics*, Kharazmi University, Tehran, Iran

ACADEMIC POSITIONS

July 2022-Present **Associate Professor**, Department of Mathematics, Miami University, Oxford
Aug. 2016–July 2022 **Assistant Professor**, Department of Mathematics, Miami University, Oxford
Sep. 2012–May 2016 **Graduate Teaching Assistant**, Department of Mathematics, Wayne State University, Detroit
May 2010–May 2011 **Resident Researcher**, Institute for Research in Fundamental Sciences, Tehran, Iran
Nov. 2008–July 2009 **Researcher**, Department of Mathematics, Avignon University, France
Jan. 2010-May 2011 **Adjunct Faculty**, Department of Science, Qom University, Qom, Iran

PUBLICATIONS

28 **Strict Proto-Differentiability of Subgradient Mappings and Its Applications in Parametric Optimization**, *preprint* (2023) (by N.T.V Hang and M. E. Sarabi)

27 **Convergence of Augmented Lagrangian Methods for Composite Optimization Problems**, *Submitted to Math. Program.* arXiv:2307.15627 (2023) (by N.T.V Hang and M. E. Sarabi)

26 **Parabolic regularity of spectral functions. Part I: Theory**, *First revision in Math. Oper. Res.* arXiv:2301.04240 (2023) (by A. Mohammadi and M. E. Sarabi)

25 **A Chain Rule for Strict Twice Epi-Differentiability and its Applications**, *To appear in SIAM J. Optim.* arXiv:2209.01489 (2022) (by N.T.V Hang and M. E. Sarabi)

24 **Role of Subgradients in Variational Analysis of Polyhedral Functions**, *Submitted to J. Optim. Theory Appl.* arXiv:2207.07470 (2022) (by W. Jung, N.T.V Hang, and M. E. Sarabi)

23 **Local Convergence Analysis of Augmented Lagrangian Methods for Piecewise Linear-Quadratic Composite Optimization Problems**, *SIAM J. Optim.* 31 (2021), 2665–2694 (by N.T.V Hang and M. E. Sarabi)

22 **Augmented Lagrangian method for second-order conic programs under second-order sufficiency**, *J. Global Optim.* 82, (2022), 51–81 (by N.T.V Hang, B. S. Mordukhovich and M. E. Sarabi)

21 **Primal superlinear convergence of SQP methods in piecewise linear- quadratic composite optimization**,*Set-Valued Var. Anal.* 30, (2022), 1-37 (by M. E. Sarabi)

20 **Generalized Newton algorithms for tilt-stable minimizers in nonsmooth optimization**,*SIAM J. Optim.* 31 (2021), 1184–1214 (by B. S. Mordukhovich and M. E. Sarabi)

19 **Twice epi-differentiability of extended-real-valued functions with applications in composite optimization**, *SIAM J. Optim.* 30 (2020), 2379–2409 (by A. Mohammadi and M. E. Sarabi)

18 **Stability of KKT systems and superlinear convergence of the SQP method under parabolic regularity**, *J. Optim. Theory Appl.* 186 (2020), 731-758 (by A. Mohammadi, B. S. Mordukhovich and M. E. Sarabi)

17 **Parabolic regularity via geometric variational analysis**,*Trans. Amer. Soc.* 374 (2021), 1711–1763 (by A. Mohammadi, B. S. Mordukhovich and M. E. Sarabi)

16 **Variational analysis of composite models with applications to continuous optimization**, *Math. Oper. Res.* (2021), 47, 397–426 (by A. Mohammadi, B. S. Mordukhovich and M. E. Sarabi)

15 **Criticality of Lagrange multipliers in extended nonlinear optimization**, *Optimization* 70 (2021), 511-544 (by Hong Do, B. S. Mordukhovich and M. E. Sarabi)

14 **Criticality of Lagrange multipliers in variational systems**, *SIAM J. Optim.* 29 (2019), 1524–1557. (by B. S. Mordukhovich and M. E. Sarabi)

13 **Second-Order Analysis in Second-Order Cone Programming**, *Math. Program.* (2018), 180 (2020), 75–116 (by N.T.V. Hang, B. S. Mordukhovich and M. E. Sarabi)

12 **Critical Multipliers in Variational Systems via Second-Order Generalized Differentiation**, *Math. Program.* 169 (2018), 605–648 (by B. S. Mordukhovich and M. E. Sarabi)

11 **Stability Analysis for Composite Optimization Problems and Parametric Variational Systemsx**, *J. Optim. Theory Appl.* 172 (2017), 554-577 (by B. S. Mordukhovich and M. E. Sarabi)

10 **Generalized differentiation of piecewise linear functions in second-order variational analysis**, *Nonlinear Anal.* 132 (2016), 240-273 (by B. S. Mordukhovich and M. E. Sarabi)

9 **Second-order analysis of piecewise linear functions with applications to optimization and stability**, *J. Optim. Theory Appl.* (2016), 1-23 (by B. S. Mordukhovich and M. E. Sarabi)

8 **Full stability in second-order cone programming**, *SIAM J. Optim.* 24 (2014), no. 4, 1581-1613 (by B. S. Mordukhovich, J. V. Outrata and M. E. Sarabi)

7 **Variational analysis and full stability of optimal solutions to constrained and minimax problems**, *Nonlinear Anal.* 121 (2015), 36-53 (by B. S. Mordukhovich and M. E. Sarabi)

6 **Characterizations of full stability in constrained optimization**, *SIAM J. Optim.* 23 (2013), 1810-1849 (by B. S. Mordukhovich, R. T. Rockafellar and M. E. Sarabi)

5 **Pseudo-Hessian and Taylor's expansion for vector-valued functions**, *Nonlinear Anal.* 72 (2010), 1938-1948 (by E. Babolian and M. E. Sarabi)

4 **Existence of solutions in variational relation problems without convexity**, *J. Math. Anal. Appl.* 364 (2010), 544-555 (by D. T. Luc, M. E. Sarabi and A. Soubeyran)

3 **Revisiting the gap function of a multicriteria optimization problem**, *Int. J. Comput. Math.* 86 (2009), 860-863 (by M. E. Sarabi and M. Soleimani-damaneh)

2 **Taylor's expansion for $C^{1,1}$ functions in Asplund spaces**, *Nonlinear Anal.* 71 (2009), 5707-5711 (by M. E. Sarabi)

1 **Sufficient conditions for nonsmooth r-invexity**, *Numer. Funct. Anal. Optim.* 29 (2008), 674-686 (by M. Soleimani-damaneh and M. E. Sarabi)

TALKS

May 2023 **2023 SIAM Conference on Optimization**, *Seattle, Washington.*

Title of talk: On the Equivalence of Metric Regularity and Strong Metric Regularity in Generalized Equations.

March 2023 **Colloquium talk, Department of Mathematics**, *Oakland University, Rochester, MI.*

Title of talk: Twice Epi-Differentiability: Past, Present, and Future.

January 2023 **The 5th seminar national seminar on control and optimization**, *Yazd University, Iran,* Online.

Title of talk: Twice Epi-Differentiability: Past, Present, and Future.

December 2022 **Variational Analysis and Optimization Seminar**, *University of Michigan,* Online.

Title of talk: Role of Subgradients in Variational Analysis of Composite Functions.

October 2022 **The 2022 Midwest Optimization Meeting**, *University of Waterloo.*

Title of talk: A Characterization of Continuous differentiability of Proximal Mappings of Composite Functions.

September 2022 **The 2022 SIAM Great Lakes Section Annual Meeting**, *Wayne State University,* Online.

Title of talk: Strict Twice Epi-Differentiability and its Applications.

January 2021 **Joint Mathematics Meetings**, *Special Session on "Variational Analysis and Optimization,"* Online.

Title of talk: Twice epi-differentiability of extended-real-valued functions ands its remarkable applications.

January 2020 **Joint Mathematics Meetings**, *Special Session on "Set-Valued and Fuzzy-Valued Analysis with Applications,"* Denver, CO.

Title of talk: Stability Properties of Lagrange Multipliers in Constrained Optimization problems.

August 2019 **Sixth International Conference on Continuous Optimization (ICCOPT)**, the Weierstrass Institute for Applied Analysis and Stochastic, Berlin, Germany.

Title of talk: A Semismooth Inverse Mapping Theorem via Tilt Stability and Its Applications in the Newton Method.

December 2018 **International Workshop on Variational Analysis and Related Topics**, Hanoi Pedagogical University 2, Vietnam.

Title of talk: Critical and Noncritical Lagrange Multipliers for generalized KKT Systems.

April 2018 **AMS Sectional Meeting**, *Special Session on "Set-Valued optimization and Variational Problems with Applications,"* Portland State University, OR.

Title of talk: A Semismooth Inverse Mapping Theorem for C^{1+} Functions under Tilt Stability.

April 2017 **Global Optimization Conference (GOC-2017)**, Texas A & M University, TX.

Title of talk: Critical Multipliers in Variational Systems via Second-Order Generalized Differentiation.

October 2016 **Midwest Optimization Meeting**, Department of Mathematics, Michigan State University.

Title of talk: Newton Method for Prox-regular Functions.

January 2016 **Joint Mathematics Meetings**, *Special Session on "Set-Valued optimization and Variational Problems with Applications,"* Seattle, WA.

Title of talk: Stability analysis of composite optimization problems with applications to critical multipliers.

October 2015 **Midwest Optimization Meeting**, Department of Mathematics, Loyola University, Cl.

Title of talk: Second-order analysis of piecewise linear functions with applications to stability.

July 2015 **22nd International Symposium on Mathematical Programming**, *Special Session on "Variational Analysis in Nonsmooth Optimization,"* Pittsburgh University, PA.

Title of talk: Second-order analysis of piecewise linear functions and its applications.

October 2014 **Midwest Optimization Meeting**, *Department of Mathematics*, Loyola University, Cl.

Title of talk: Full Stability of Optimal Solutions to Constrained and Minimax Problems.

May 2014 **Michigan Mathematics Meetings**, University of Michigan-Flint, MI.

Title of talk: Full stability in second-order cone programming.

January 2014 **Joint Mathematics Meetings**, *Special Session on "Set-Valued optimization and Variational Problems with Applications,"* Baltimore, MD.

Title of talk: Full stability in second-order cone programming.

October 2012 **Midwest Optimization Meeting**, Department of Mathematics, Western Michigan University, MI.

Title of talk: Characterizations of full stability in constrained optimization.

May 2009 **Optimization Seminar group**, *Avignon University*, France.

Title of talk: Existence of solutions in variational relation problems without convexity.

REFEREEING ACTIVITIES

- Reviewer for American Mathematical Society
- Journal of Optimization Letters
- Journal of Optimization
- Journal of Optimization Theory and Its Applications
- Journal of Global Optimization
- Set-Valued and Variational Analysis
- Journal of Inequalities and Applications
- SIAM Journal on Optimization
- Applied Mathematics and Optimization

- Operation Research Letters
- Mathematical Programming

EDITORIAL MEMBERSHIPS

2019-present A member of the editorial board of the Journal of Nonsmooth Analysis and Optimization.

2020-present A member of the editorial board of the Journal of Optimization Theory and Applications.

2022-present A member of the editorial board of Bulletin of the Iranian Mathematical Society.

PROFESSIONAL ACTIVITIES

1) Co-organizer of the 2018 Midwest Optimization Meeting, department of mathematics, Miami University, October 12-13, 2018.
2) Co-organizer of the 2020 Midwest Optimization Meeting, online, October 16-17, 2020.
3) Co-organizer of the 2023 Midwest Optimization Meeting, department of mathematics, University of Michigan, October 21-22, 2023.
4) Co-organizer of Variational Analysis and Applications cluster, 2023 SIAM Conference on Optimization, May 31 – June 3, 2023, Seattle, Washington.
5) Member of NSF Review Panel, 2018.

MEMBERSHIPS

2011-present American Mathematical Society (AMS)

2015-present Society for Industrial and Applied Mathematics (SIAM)

Awards

August 2021-August 2024 Second-Order Variational Properties of Composite Optimization Problems and its Applications, National Science Foundation, DMS 2108546 ($194,957.00)

Summer 2017 Dean's Award, School of Arts and Sciences, Miami University

January 2016 Graduate Student Travel Grants to the Joint Mathematics Meetings, American Mathematical Society

October 2015 Graduate Student Travel Grants to the AMS Sectional Meeting, American Mathematical Society

July 2015 Graduate Student Professional Travel Awards, Wayne State University

April 2015 The Karl W. and Helen L. Folley Endowed Mathematics Scholarship, Wayne State University

September 2014-May 2015 Thomas C. Rumble University Graduate Fellowship, Wayne State University

April 2014 The Karl W. and Helen L. Folley Endowed Mathematics Scholarship, Wayne State University

January 2015 Graduate Student Professional Travel Awards, Wayne State University

September 2011-September 2012 University Graduate Research Fellowship, Wayne State University

November 2008–July 2009 Graduate Student Travel Grants, Ministry of Science, Tehran, Iran

TEACHING ACTIVITIES

1) Calculus II (MTH 249): Fall 16, 17, 19, 20, 23

2) Calculus II (MTH 251): Fall 18, 22 and Spring 22
3) Calculus III: Spring 18, 21, 23 and Fall 21.
4) Differential Equations: Fall 16.
5) Introduction to Optimization: Spring 17, 20 and Fall 20, 22.
6) Advanced Optimization: Fall 17 and Spring 21, 23.
7) Real Analysis: Fall 18, 21.
8) Topics in Financial Mathematics: Spring 22
9) Introduction to Technical Computing, Fall 23

MASTER PROJECT SUPERVISION

1) Anthony Pecoraro: The Sequential Quadratic Programming Algorithm for Nonlinear Programming Problems, August 2017.
2) Obed Amo: Subgradient Methods for Convex Optimization Problems, July 2021.
3) Woosuk Jung: Reduction Lemma for Polyhedral Sets and Functions and its Applications, July 2021.
4) S. M. Mustaquim: Optimality and Duality in Linear Semidefinite Programming, July 2021.

Departmental service

2016-2017	Undergraduate Committee
2018-present	Graduate Committee
2017-August 2023	Faculty Advisor for Pi Mu Epsilon
2022-present	Chair of Strategic Planning Committee, responsible for new Programs, Certificates, and Experiential Learning Opportunities
June 2021	Optimization Comprehensive Exam for Master Students

Alim Sukhtayev: Curriculum Vitae

Department of Mathematics
Miami University
Oxford, OH 45056

Email: sukhtaa@miamioh.edu

Research Interests

Applied mathematics, analysis of partial differential equations, infinite dimensional dynamical systems and differential equations, stability of periodic and traveling waves.

Education

Ph.D. Mathematics, August 2007- July 2012, University of Missouri-Columbia , USA.
Thesis Advisor: Yuri Latushkin.
Thesis Title: "The Evans function, the Weyl-Titchmarsh function, and the Birman-Schwinger operators".

M.S. Mathematics, September 2005-June 2006, Tavrida National University, Ukraine.
Thesis Advisor: Irina Karpenko.
Thesis Title: "Spectral decomposition of normal operators in Hilbert quaternionic bimodule".

B.S. Mathematics (with Honors), September 2001-June 2005, Tavrida National University, Ukraine.

Appointments

Associate Professor, Miami University, USA, 2022-present;

Assistant Professor, Miami University, USA, 2017-2022;

Visiting Assistant Professor, Indiana University Bloomington, USA, 2015-2017;

Visiting Assistant Professor, Texas A&M University, USA, 2012-2015;

Teaching/Research Assistant, University of Missouri-Columbia, USA, 2007-2012;

Teaching Assistant, Crimean Engineering-Pedagogical University , Ukraine, 2006-2007.

Grants and Awards

NSF DMS-2317068 (2023-2024) conference grant to support Fall 2023 Mathematics Conference: Differential Equations and Dynamical Systems and Applications. PI: A. Sukhtayev, $14,880.00.

NSF DMS-1910820 (09.01.2019-08.31.2024) 'Spectral Stability and Oscillations of Dynamical Systems, Boltzmann-Like Models'. PI: A. Sukhtayev, $116,698.00.

NSF DMS-1919555 (2019-2020), conference grant to support Fall 2019 Mathematics Conference: Differential Equations and Dynamical Systems and Applications. Co-PI: A. Sukhtayev, $11,552.00

FRG (Focus Research Groups) grant from BIRS (Banff International Research Station). I spent one week (June 17- June 24, 2018) in Banff, Canada.

Summer Research Award CAS, Miami University, 2017.

AIM's SQuaRE research group (August 25-29, 2014; June 22-26, 2015) supported by American Institute of Mathematics, Palo Alto, CA (with G. Cox, M. Beck, C. Jones, Y. Latushkin).

Several awards in Mathematics High School Olympiads (Ukraine).

Publications

1. Fredholm determinants, Evans functions and Maslov indices for partial differential equations, **Mathematische Annalen**, 2023. (with G. Cox, Y. Latushkin)
2. Spectral decomposition and decay to grossly determined solutions for a simplified BGK model, submitted. (with K. Zumbrun)
   `https://arxiv.org/abs/2012.00734`
3. Renormalized Oscillation Theory for Singular Linear Hamiltonian Systems, **J. Funct. Anal.** 283 (2022), no. 3, Paper No. 109525, 74 pp. (with P. Howard)
4. Renormalized oscillation theory for linear Hamiltonian systems on [0, 1] via the Maslov index, **Journal of Dynamics and Differential Equations**, 2022. (with P. Howard)
5. A dynamical approach to semilinear elliptic equations, **Annales de l'Institut Henri Poincaré C, Analyse Non Linéaire**, 38 (2021), no. 2, 421–450. (with M. Beck, G. Cox, C. Jones, Y. Latushkin)
6. Exponential dichotomies for elliptic PDE on radial domains, **In: Dörfler W. et al. (eds) Mathematics of Wave Phenomena. Trends in Mathematics**. Birkhäuser, Cham. (2020), 49–68. (with M. Beck, G. Cox, C. Jones, Y. Latushkin)
7. A Sturm Liouville theorem for quadratic operator pencils, **Journal of Differential Equations**, Volume 268, Issue 7, 2020, Pages 3848–3879. (with K. Zumbrun)
8. The Maslov and Morse Indices for Sturm-Liouville Systems on the Half-Line, **Discr. Cont. Dynam. Systems Ser. A**, 2020, 40 (2) : 983–1012. (with P. Howard)
9. Spectral stability of hydraulic shock profiles, **Physica D: Nonlinear Phenomena**, 405 (2020), 132360, 9 pp. (with K. Zumbrun, Z. Yang)
10. Instability of pulses in gradient reaction–diffusion systems: A symplectic approach, **Philosophical Transactions of the Royal Society A** 376 (2018), no. 2117. (with M. Beck, G. Cox, C. Jones, Y. Latushkin, K. McQuighan)
11. Diffusive stability of spatially periodic patterns with a conservation law, preprint.
    `https://arxiv.org/abs/1610.05395`
12. Diffusive stability of spatially periodic solutions of the Brusselator model, **Communications in Mathematical Physics** 358 (2018), no. 1, 1-43. (with K. Zumbrun, S. Jung, R. Venkatraman)
13. The Maslov and Morse indices for Schrödinger operators on $\mathbb{R}$, **Indiana University Mathematics Journal** 67 (2018), no. 5, 1765-1815. (with P. Howard, Y. Latushkin)
14. The Morse and Maslov Indices for Schrödinger Operators, **Journal d'Analyse Mathematique** 135 (2018), no. 1, 345-387. (with Y. Latushkin, S. Sukhtaiev)
15. The Maslov and Morse indices for Lagrangian pairs on $\mathbb{R}^{2n}$, **J. Math. Anal. Appl.** 451 (2017), no. 2, 794-821. (with P. Howard, Y. Latushkin)

16. Hadamard-type formulas via the Maslov form, **J. Evol. Equ.** 17 (2017), no. 1, 443-472. (with Y. Latushkin)
17. The Maslov and Morse indices for Schrödinger Operators on $[0, 1]$, **Journal of Differential Equations** 260 (2016), no. 5, 4499-4549 (with P. Howard)
18. The Morse and Maslov indices for multidimensional Schrödinger operators with matrix-valued potentials, **Trans. Amer. Math. Soc.** 368 (2016), no. 11, 8145–8207 (with G. Cox, C. Jones, Y. Latushkin)
19. Vakhitov-Kolokolov and energy vanishing conditions for linear instability of solitary waves in models of classical self-interacting spinor fields, **Nonlinearity** 28 (2015), 577–592 (with G. Berkolaiko, A. Comech)
20. The Evans function and the Weyl-Titchmarsh function, in Special issue on stability of travelling waves, **Disc. Cont. Dynam. Syst. Ser. S** 5 (2012), no. 5, 939 - 970 (with Y. Latushkin)
21. The algebraic multiplicity of eigenvalues and the Evans function revisited, in Memorial M. Birman's volume, **Mat. Model. Nat. Phenom.**, 5 (2010) 269 - 292 (with Y. Latushkin)
22. Spectral decomposition of normal operators in Hilbert quaternion bimodules, **Scientific Notes of Taurida National University**, 19(58) (2006), no. 1, 3-20 (with I. Karpenko, D. Tyshkevich) (in Russian)
23. On an approach to differentiation of functions of a quaternion variable, **Scientific Notes of Taurida National University**, 17(56) (2004), no. 1, 30-37 (with I. Karpenko, D. Tyshkevich) (in Russian)

Teaching experience

Instructor, MTH 151 Calculus I, Fall 2020, Miami University

Instructor, MTH 246 Linear Algebra and Differential Equations for Engineers, Fall 2020, Miami University

Instructor, MTH 435/MTH 535 Mathematical Modeling Seminar, Spring 2019, Miami University

Instructor, MTH 251 Calculus II, Fall 2018, Spring 2021, Miami University

Instructor, MTH 245 Differential Equations for Engineers, Fall 2018, Miami University

Instructor, MTH 495/MTH 495H/MTH 595/MME 495/MME 595 Introduction to Applied Nonlinear Dynamics, Spring 2018, Spring 2021, Miami University

Instructor, MTH 252 Calculus III, Spring 2018, Miami University

Instructor, MTH 347 Differential Equations, Fall 2017, Miami University

Instructor, MTH 249 Calculus II, Fall 2017, Miami University

Instructor, Math M311 - Multivariable Calculus - Spring 2017, Indiana University Bloomington.

Instructor, Math M441 - Introduction to Partial Differential Equations with Applications I - Fall 2016, Indiana University Bloomington.

Instructor, Math M118 - Finite Mathematics - Fall 2015, Spring 2016, Indiana University Bloomington.

Instructor, Math 308 - Differential Equations - Spring 2013, Spring 2014, Spring 2015, Texas A&M University.

Instructor, Math 151 - Engineering Mathematics I - Fall 2012, Fall 2013, Fall 2014, Texas A&M University.

Teaching Assistant, Math 1500, Math 1500H(honors) - Calculus I, University of Missouri-Columbia.

Teaching Assistant, Math 1700, Math 1700H(honors)- Calculus II, University of Missouri-Columbia.

Teaching Assistant - College Algebra, Precalculus, Calculus III, Crimean Engineering-Pedagogical University, Ukraine.

Conference Organizing

Co-director, Fall 2023 Mathematics Conference: Differential Equations and Dynamical Systems and Applications, Miami University, Oxford, OH, September 29-30, 2023.

Co-organizer, Special Session on 'Geometric methods in spectral theory of traveling waves and patterns' at 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Wilmington, NC, May 31 - June 4, 2023.

Co-organizer (with Jared Bronski, Mathew Johnson and Robert Marangell), Special Session on "Hamiltonian methods in spectral calculations", The Twelfth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, to be held in March 29 - April 01, 2022.

Co-director, Fall 2019 Mathematics Conference: Differential Equations and Dynamical Systems and Applications, Miami University, Oxford, OH, September 20-21, 2019.

Co-organizer (with Alin Pogan, Miami University), Special Session on "Spectral Methods and Stability of Localized Patterns", the SIAM Conference on Nonlinear Waves and Coherent Structures, Sheraton Philadelphia Society Hill Hotel, Philadelphia, Pennsylvania, August 8-11, 2016.

Co-organizer (with Mathew Johnson, University of Kansas and Yuri Latushkin, University of Missouri, Columbia), Special Session on "Spectral methods in Stability of Traveling Waves", The Ninth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, April 01-04, 2015.

Co-organizer, *Analysis/PDE Reading Seminar* at Texas A&M Univertisy (joint with Andrew Comech).

Organizer, *Mathematical Physics and Harmonic Analysis Seminar* at Texas A&M Univertisy, Spring 2015.

Mentoring

Undergraduate research project, Yaqi Dai, May-July 2015.

Undergraduate research project, Hongxin Fu, Spring 2019 - Fall 2019.

Undergraduate research project, Josh Borovik, Fall 2020 - Summer 2021.

Undergraduate research project, Carissa Osborne, Spring 2021

Master's research project, Katherine Vorpe, 2020-2021.

Master's research project, Steven Evans, 2021-2022.

Undergraduate/graduate research project, Nathaniel Smith, 2021-present.

Invited Talks

34th International Workshop on Operator Theory and its Applications, University of Helsinki, Finland, July 31 - August 4, 2023.

13th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Wilmington, NC, May 31 - June 4, 2023.

The Twelfth Ohio River Analysis Meeting (ORAM 12), University of Cincinnati, March 18–19, 2023.

The Twelfth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, March 29 - April 01, 2022.

International Conference on Mathematics of Wave Phenomena, Karlsruhe Institute of Technology, February 14-18, 2022 (virtual).

AMS Fall Southeastern Sectional Meeting, to be held virtually, November 20-21, 2021.

The 44th SIAM Southeastern Atlantic Section Conference, Auburn University, September 18-19, 2021.

PDE/Applied Math Seminar, Indiana University Bloomington, March 15, 2021.

The SIAM Conference on Nonlinear Waves and Coherent Structures, Bremen, Germany, July 27-30, 2020 (canceled due to global travel restrictions).

Measure Theory Seminar, Kent State University, November 8, 2019.

Analysis in Missouri: a Midwestern symposium, University of Missouri, Columbia, September 5-8, 2019.

2019 SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 19-23, 2019.

The Eleventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, April 17-19, 2019.

PDE/Applied Math Seminar, Brigham Young University, October 18, 2018.

PDE/Applied Math Seminar, Indiana University Bloomington, September 10, 2018.

International Conference on Mathematics of Wave Phenomena, Karlsruhe Institute of Technology, Karlsruhe, Germany, July 23-27, 2018.

2018 SIAM Conference on Nonlinear Waves and Coherent Structures, DoubleTree by Hilton Hotel Anaheim-Orange County, Orange, California, June 11-14, 2018.

AMS Spring Southeastern Sectional Meeting Vanderbilt University, Nashville, TN, April 14-15, 2018.

AMS Spring Central Sectional Meeting, Ohio State University, Columbus, OH March 16-18, 2018.

Waves, Spectral Theory and Applications - Part 2, University of North Carolina at Chapel Hill, October 20-22, 2017.

2017 SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 21-25, 2017.

The Tenth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, March 29 - April 01, 2017.

2017 Joint Mathematics Meetings, AMS Special Session on Dynamics of Fluids and Nonlinear Waves, Atlanta, January 5-7, 2017.

PDE/Applied Math Seminar, Indiana University Bloomington, November 28, 2016.

2016 SIAM Conference on Nonlinear Waves and Coherent Structures, Sheraton Philadelphia Society Hill Hotel, Philadelphia, Pennsylvania, August 8-11, 2016.

AMS Fall Eastern Sectional Meeting, Rutgers University, New Brunswick, NJ, November 14-15, 2015.

PDE/Applied Math Seminar, Indiana University Bloomington, September 14, 2015.

The Ninth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, April 01-04, 2015.

Mathematical Physics and Harmonic Analysis Seminar, Texas A&M University, December 16, 2014.

Workshop "Stability of solitary waves", University of Pisa – DiGiorgi center, Pisa, May 26-30, 2014.

AMS Western Spring Sectional Meeting, University of New Mexico, Albuquerque, April 4-6, 2014.

AMS Southeastern Spring Sectional Meeting, University of Tennessee, Knoxville, March 21-23, 2014.

Mathematical Physics and Harmonic Analysis Seminar, Texas A&M University, September 27, 2013.

AMS Spring Central Sectional Meeting, Iowa State University, Ames, April 26-28, 2013.

Math Webinar on Maslov Index, March 20, 2013 (one hour talk).

Mathematical Physics and Harmonic Analysis Seminar, Texas A&M University, February 22, 2013.

Math Webinar on Maslov Index, January 30, 2013 (one hour talk).

Differential Equations Seminar, University of Missouri-Columbia, October 6, 2011.

2011 SIAM Conference on Applications of Dynamical Systems Snowbird, Utah, USA, 2011.

Workshop on Gradient systems, Kacov, June 2010.

Differential Equations Seminar, University of Missouri-Columbia, March 15, 2009.

Invited Workshops and Visits

AIM workshop on Computer assisted proofs for stability analysis of nonlinear waves, San Jose, CA, June 5 - June 9, 2023.

Joint Alabama-Florida Conference on Differential Equations, Dynamical Systems and Applications, Auburn University, May 13-14, 2023.

The zoom conference on the occasion of the 70th birthday of Ari Laptev, August 12 - 13, 2020.

The Fall 2019 Informal Analysis Seminar organized by Kent State University on November 9-10, 2019.

Stability of Nonlinear Waves: Analysis and Computation, The Henri Poincaré Institute, Paris, France, July 1-5, 2019.

BIRS FRG Workshop, Banff, Canada, 'Stability Indices for Nonlinear Waves and Patterns in Many Space Dimensions', June 17 - 24, 2018.

KUMU Conference on PDE, Dynamical Systems, and Applications, University of Missouri-Columbia, Columbia, MO, April 23 - April 24, 2016.

SQuaRE (AIM's research program) "Maslov Index for Multidimensional Problems", American Institute of Mathematics, San Jose, June 22-26, 2015.

SQuaRE (AIM's research program) "Maslov Index for Multidimensional Problems", American Institute of Mathematics, Palo Alto, August 25-29, 2014.

Math Webinar on Maslov Index, 2012-2013.

2012 SIAM Conference on Nonlinear Waves and Coherent Structures, University of Washington, Seattle, June 13-16, 2012.

Workshop on Stability of Coherent Structures and Patterns, University of Washington, Seattle, June 11-12, 2012.

Geometric Methods for Infinite-Dimensional Dynamical Systems, Brown University, Providence, 4-6 November 2011.

14th International Internet Seminar on Evolution Equations 2010/2011.

The 28th Southeastern Atlantic Regional Conference on Differential Equation, Little Rock, October 10-11, 2008.

International conference "Modern Analysis and Applications", Odessa, Ukraine 2007.

International Conference "XVI Crimean Autumn Mathematical School-symposium" (KROMSH), Laspi-Batiliman, Crimea, Ukraine 2005.

Educational and Professional Experience

Education:

1982-1984	Dalhousie University, Halifax, Nova Scotia, Canada Ph.D. Mathematics conferred January 21, 1985 Thesis title: *Tangent Cones, Generalized Subdifferential Calculus and Optimization*
1979-1982	Carnegie-Mellon University, Pittsburgh, Pa. M.S. Mathematics conferred May 1981
1975-1979	Haverford College, Haverford, Pa. B.A. (with mathematics major) conferred May 1979

Professional Experience:

1995-	Professor, Miami University
1989-1995	Associate Professor, Miami University
1991-1992	Visiting Associate Professor, Dept. of Combinatorics and Optimization, University of Waterloo (on a faculty improvement leave)
1984-1988	Assistant Professor, Miami University

Refereed Publications

1. "Nonsmooth calculus in finite dimensions" (with J.M. Borwein), *SIAM Journal on Control and Optimization* **25** (1987) 1312-1340.
2. "Convex subcones of the contingent cone in nonsmooth calculus and optimization," *Transactions of the American Mathematical Society* **302** (1987) 661-682; Corrigendum **311** (1989) 429-431.
3. "Isotone tangent cones and nonsmooth optimization," *Optimization* **18** (1987) 769-783.
4. "Exact penalties and sufficient conditions for optimality in nonsmooth optimization," *Journal of Optimization Theory and Applications* **57** (1988) 485-499.
5. "The quantificational tangent cones," *Canadian Journal of Mathematics* **40** (1988) 666-694.
6. "Which subgradients have sum formulas?" *Nonlinear Analysis: Theory, Methods, and Applications* **12** (1988) 1231-1243.

7. "Directional dervative calculus and optimality conditions in nonsmooth mathematical programming," *Journal of Information and Optimization Sciences* **10** (1989) 81-96.

8. "General constraint qualifications in nondifferentiable programming" (with R.R. Merkovsky), *Mathematical Programming* **47** (1990) 389-405.

9. "Upper D.S.L. approximates and nonsmooth optimization" (with R.R. Merkovsky), *Optimization* **21** (1990) 163-177.

10. "Convex directional derivatives in optimization," pp. 36-51 in *Generalized Convexity and Fractional Programming with Economic Applications*, A. Cambini et. al., Eds., Springer-Verlag, Berlin, 1990.

11. "Chain rules for nonsmooth functions," *Journal of Mathematical Analysis and Applications* **158** (1991) 519-538.

12. "A constraint qualification in quasidifferentiable programming," *Optimization* **22** (1991) 661-668.

13. "Differential stability in non-Lipschitzian optimization," *Journal of Optimization Theory and Applications* **73** (1992) 101-120.

14. "Calculus for parabolic second-order derivatives," *Set-Valued Analysis* **1** (1993) 213-246.

15. "A chain rule for parabolic second-order epiderivatives," *Optimization* **28** (1994) 223-236.

16. "Characterizations of strict local minima and necessary conditions for weak sharp minima," *Journal of Optimization Theory and Applications* **80** (1994) 551-571.

17. "Epiderivatives of the marginal function in nonsmooth parametric optimization," *Optimization* **31** (1994) 47-61.

18. "A comparison of second-order epiderivatives: calculus and optimality conditions," *Journal of Mathematical Analysis and Applications* **193** (1995) 465-482.

19. "Upper bounds on a parabolic second-order directional derivative of the marginal function," pp. 418-437 in *Recent Advances in Nonsmooth Optimization*, Ding-Zhu Du, Robert Womersley, and Liqun Qi, Eds., World Scientific, Singapore, 1995.

20. "Dini derivatives of the marginal function of a non-Lipschitzian program," *SIAM Journal on Optimization* **6** (1996) 198-211.

21. "Sufficient conditions for weark sharp minima of order two and directional derivatives of the value function," pp. 419-436 in *Mathematical Programming with Data Perturbations*, Anthony V. Fiacco, Ed., Marcel Dekker, New York, 1998.

22. "Second-order necessary conditions in nonsmooth programming," pp. 216-224 in *System Modelling and Optimization*, M. Polis, A. Dontchev, P. Kall, I. Lasiecka, A. Olbrot, Eds., Chapman and Hall/CRC, Boca Raton, Florida, 1999.

23. "Weak sharp minima: characterizations and sufficient conditions" (with Marcin Studniarski), *SIAM Journal on Control and Optimization* **38** (1999) 219-236.

24. "Generalized properly efficient solutions of vector optimization problems" (with Gue Myung Lee), *Mathematical Methods of Operations Research* **53** (2001) 215-232.

25. "Upper subderivatives and generalized gradients of the marginal function of a non-Lipschitzian program" (with Gue Myung Lee), *Annals of Operations Research* **101** (2001) 299-312.

26. "On relations between vector optimization problems and vector variational inequalities" (with Gue Myung Lee), *Journal of Optimization Theory and Applications* **113** (2002) 583-596.

27. "First- and second-order directional differentiability of locally Lipschitzian functions," *Journal of Mathematical Analysis and Applications* **337** (2008) 1182-1189.

28. "A chain rule for first- and second-order epiderivatives and hypoderivatives," *Journal of Mathematical Analysis and Applications* **348** (2008) 324-336.

29. "Toward second-order sensitivity analysis in set-valued optimization," (with Akhtar A. Khan), *Journal of Nonlinear and Convex Analysis* **13** (2012) 65-83.

30. "An epigraph-based approach to sensitivity analysis in set-valued optimization," (with Stephen E. Wright), pp. 681-701 in *Computational and Analytical Mechanics*, Springer Proceedings in Mathematics and Statistics **50**, 2013.

31. "Characterizing the Contingent Cone's Convex Kernel," (with B.A. Neuhaus), *Pure and Applied Functional Analysis* **5** (2020) 653-669.

32. "Maximum Elements of Ordered Sets and Anselm's Ontological Argument," pp. 214-217 in the Proceedings of the Association of Christians in the Mathematical Sciences, 2020.

33. "Convex Kernels and Tangent Cone Chain Rules," *Communications in Optimization Theory*, **2023** (2023), Article ID 26, pp. 1-13.

Conference Presentations and Colloquia

1. "Isotone tangent cones and nonsmooth optimization," presented at the SIAM Spring Meeting, Pittsburgh, Pa., June 24-26, 1985.

2. "A note on exact penalties in nonsmooth optimization," presented at the Twelfth International Mathematical Programming Symposium, Boston, August 5-9, 1985.

3. "Convex subcones of the contingent cone in nonsmooth optimization," presented at the ORSA/TIMS Joint National Meeting, Atlanta, November 4-6, 1985.

4. "Tangent cones and subdifferential calculus," invited lecture given at the Workshop on Differentiability Properties of Real-Valued Functions, Montreal, June 2-4, 1986.

5. "Which subgradients have sum formulas?", presented in the special session on theoretical optimization at the 93rd Annual Meeting of the AMS, San Antonio, January 21-24, 1987.

6. "Constraint qualifications in nondifferentiable programming" (with R.R. Merkovsky), presented in the special session on optimization at the 94th Annual Meeting of the AMS, Atlanta, January 6-9, 1988.

7. "Nonsmooth Kuhn-Tucker theory," talk given to the mathematical economics seminar at the University of Illinois at Champaign-Urbana, January 20, 1988.

8. "Convex directional derivatives in optimization," invited presentation given at the International Workshop on Generalized Concavity, Fractional Programming and Economic Applications, Universita di Pisa, Italy, May 30-June 1, 1988.

9. "Upper convex approximates in nonsmooth optimization," seminar lecture given at Dalhousie University on March 16, 1989.

10. "Calmness in nonsmooth optimization," lecture given at the Eleventh Symposium on Mathematical Programming with Data Perturbations, George Washington University, May 25-26, 1989.

11. "Differential stability in non-Lipschitzian optimization," presented at the 96th Annual Meeting of the American Mathematical Society, Louisville, Kentucky, January 17-20, 1990.

12. "Differential stability in non-Lipschitzian optimization," lecture given at the Twelfth Symposium on Mathematical Programming with Data Perturbations, George Washington University, May 24-25, 1990.

13. "Strict local minima of order m in nonsmooth optimization," invited presentation in the special session on nonsmooth optimization at the Canadian Mathematical Society Summer Meeting, Sherbrooke, Quebec, May 30-June 1, 1991.

14. "Quasidifferentiable programming," colloquium talk, Dept. of Combinatorics and Optimization, University of Waterloo, Oct. 11, 1991.

15. "Directional derivatives of the marginal function of a nonsmooth program," lecture given at the 14th Symposium on Mathematical Programming with Data Perturbations, George Washington University, May 21-22, 1992.

16. "Second-order epiderivatives: calculus and optimality conditions," lecture given at Waterloo 92: An International Conference on Combinatorics and Optimization, University of Waterloo, Waterloo, Ontario, June 22-26, 1992.

17. "Second-order epiderivatives: contrasts and questions," invited lecture given at the Workshop on Convex, Differentiability, and Monotonicity, Fields Institute for Research in Mathematical Sciences, Waterloo, Ontario, March 5-7, 1993.

18. "Calculus for parabolic second-order epiderivatives"; "First- and second-order epiderivatives of marginal functions"; "Characterizations of strict local minima", invited

lectures given at the Workshop on Nonsmooth Analysis and its Applications to Optimization, Banach Center, Warsaw, Poland, May 4-14, 1993.

19. "Second-order directional derivatives of the marginal function," lecture given at the 16th Symposium on Mathematical Programming with Data Perturbations, George Washington University, May 26-27, 1994.

20. "Parabolic second-order directional derivatives of the marginal function," invited presentation in the session on nonsmooth optimzation at the 15th International Symposium on Mathematical Programming, Ann Arbor, Michigan, August 15-19, 1994.

21. "Sufficient conditions for weak sharp minima and sensitivity analysis," lecture given at the 18th Symposium on Mathematical Programming with Data Perturbations, George Washington University, May 22-23, 1996.

22. "Sufficient conditions for weak sharp minima of order two and directional derivatives of the value function," lecture given in the special session on optimization and variational analysis at Meeting 922 of the AMS, Wayne State University, Detroit, May 2-4, 1997.

23. "Second-order necessary conditions in nonsmooth programming," lecture given at the 18th IFIP TC7 Conference on System Modelling and Optimization, Detroit, July 22-25, 1997.

24. "A second-order upper convex approximate and its applications," lecture given at the 20th Symposium on Mathematical Programming with Data Perturbations, George Washington University, May 21-22, 1998.

25. "Differential stability for problems with non-isolated minima," lecture given at the Midwest Optimization Seminar, Western Michigan University, August 21, 1998.

26. "Tangent cones of graphs and epigraphs," colloquium given at the University of Łodz (Poland), May 22, 2001.

27. "Value functions and variational analysis," colloquium given at Northern Illinois University, November 29, 2001.

28. "Tangent cones of epigraphs, hypographs, and graphs," presented at the 110th Annual Meeting of the American Mathematical Society, Phoenix, Arizona, January 7-10, 2004.

29. "First- and second-order directional differentiability of locally Lipschitzian functions," lecture given at the Midwest Optimization Seminar, Miami University, October 13-14, 2006.

30. "On an inclusion of Tanino in multiobjective optimization," presented in the special session on optimization theory and applications at the 2007 Spring Central Section Meeting of the AMS (Meeting 1025), Oxford, OH, March 16-17, 2007.

31. "Sensitivity analysis in set optimization," presented at the World Congress of Nonlinear Analysts, Orlando, FL, July 2-9, 2008.

32. "An Epigraph-Based Approach to Second-Order Sensitivity Analysis in Set-Valued Optimization," presented in the AMS Special Session on Set-Valued Optimization

and Variational Problems at the Joint Mathematics Meetings, Boston, Massachusetts, January 4, 2012.

33. "A Chain Rule for Generalized Directional Derivatives," colloquium talk given at Rochester Institute of Technology, May 9, 2012.

34. "Generalized Dini Derivatives of the Perturbation Map in Parametric Set-Valued Optimization," presented in the AMS Special Session on Set-Valued Optimization and Variational Problems with Applications at the Joint Mathematics Meetings, San Diego, California, January 11, 2013.

35. "Value functions and varational analysis," colloquium talk given at Rochester Institute of Technology, November 21, 2013.

36. "Second-Order Sensitivity Analysis in Set-Valued Optimization," presented at the 22nd International Symposium on Mathematical Programming, Pittsburgh, Pennsylvania, July 12-17, 2015.

37. "Generalized Directional Derivatives of the Perturbation Map in Parametric Set-Valued Optimization," presented in the AMS Special Session on Set-Valued Optimization and Variational Problems with Applications at the Joint Mathematics Meetings, Seattle, Washington, January 6, 2016.

Some Other Scholarly Activities

- I was a coeditor, with Diethard Klatte (Zürich) and Jan Rückmann (Bonn), of a collection of papers entitled *Optimization with Data Perturbations 2*, which appeared as volume 101 of *Annals of Operations Research* in 2001.
- I have written 163 reviews for *Mathematical Reviews* through 2022.
- I have refereed 71 papers for professional journals during the period from 1992 through 2022.
- I have been the adviser for 14 master's final projects from 2007-2015. I have been an external examiner for seven PhD dissertations.
- I have developed three new courses during my time at Miami: MTH 632 Advanced Optimization (late 1980s); MTH 435/535 Mathematical Modeling Capstone (2000); MTH 133 Mathematical Foundations of Data Analytics (2021).

Some Service Activities

- I was the department graduate director from 2008-2016 and director of graduate recruiting from 2002-2008.
- I was in charge of writing the Mathematics and Statistics Department self studies for program review in 2007 and 2016.
- I have chaired four departmental search committees for assistant professor positions during my time at Miami, and served on several others.

- I was a co-organizer of our department's fall conference in 1995, 1999, 2014, and 2022.
- I chaired the department awards committee for a period of several years ending in 2002.
- I took my turn as chair of the department's tenure committee and committee of full professors (2002-2005).
- I served on the CAS Curriculum Committee (2004-2006).
- I served on the Graduate School Graduate Students' Achievement Fund Committee (2000-2002).
- I have been involved with mathematics placement advising for Freshman Summer Orientation for over 30 years.
- I have led a discussion section for Miami's Freshman Summer Reading Program 15 times.
- I have given a general audience lecture entitled "Nonsmooth Analysis: Or, What Do You Set Equal to Zero When the Derivative Does Not Exist?" for undergraduates and faculty at Miami, Northern Kentucky University, Rose-Hulman Institute of Technology, Franklin College, Hanover College, Defiance College, Muskingum College, Wabash College, Wittenberg University, Youngstown State University, and Grand Valley State University.
- I have been faculty adviser for a number of Miami student teams in the annual international Mathematical Contest in Modeling over the past 30 years.

Trevor Wilson

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Education

- PhD, Mathematics, University of California, Berkeley, 2012
  Thesis title: "Contributions to Descriptive Inner Model Theory"
  Advisor: John Steel
- BS, Mathematics, California Institute of Technology, 2006

Professional experience

- Associate Professor, Department of Mathematics, Miami University, 2021–present
- Assistant Professor, Department of Mathematics, Miami University, 2015–2021
- Visiting Assistant Professor, Department of Mathematics, University of California, Irvine, 2013–2015
- Postdoctoral Fellow, Thematic Program on Forcing and its Applications, Fields Institute, Toronto, Fall 2012

Peer-reviewed journal articles

- M. Stawiski and T. Wilson, The distinguishing index of graphs with infinite minimum degree, to appear in Journal of Graph Theory.
- J. Bagaria and T. Wilson, The Weak Vopěnka Principle for definable classes of structures, Journal of Symbolic Logic, 88 (2023), no. 1, pp. 145–168.
- T. Wilson, The large cardinal strength of weak Vopenka's principle. Journal of Mathematical Logic, 22 (2022), no. 1, 2150024, 15 pp.
- R. Schindler and T. Wilson, The consistency strength of the perfect set property for universally Baire sets of reals, Journal of Symbolic Logic, 87 (2022), no. 2, pp. 508–526.
- N. Trang and T. Wilson, Determinacy from strong compactness of ω_1, Annals of Pure and Applied Logic, 172 (2021), no. 6, 102944, 30 pp.
- T. Wilson, A game-theoretic proof of Shelah's theorem on labeled trees, Mathematical Logic Quarterly, 66 (2020), no. 2, pp. 190–194.
- T. Wilson, Weak Vopěnka's Principle does not imply Vopěnka's Principle, Advances in Mathematics, 363 (2020), 106986, 11 pp.

- T. Wilson, Weakly remarkable cardinals, Erdős cardinals, and the generic Vopěnka principle, Journal of Symbolic Logic, 84 (2019), no. 4, pp. 1711–1721
- T. Wilson, Generic Vopěnka cardinals and models of ZF with few $\aleph_1$-Suslin sets, Archive for Mathematical Logic, 58 (2019), no. 7–8, pp. 841–856
- T. Wilson, Universally Baire sets and generic absoluteness, Journal of Symbolic Logic, 82 (2017), no. 4, pp. 1229–1251.
- T. Wilson, The envelope of a pointclass under a local determinacy hypothesis, Annals of Pure and Applied Logic, 166 (2015), no. 10, pp. 991–1018.
- T. Wilson, Scales on Π^2_1 sets, Mathematical Research Letters, 22 (2015), no. 1, pp. 301–316.
- T. Wilson, A continuous movement version of the Banach–Tarski paradox: A solution to De Groot's problem, Journal of Symbolic Logic, 70 (2005), no. 3, pp. 946–952.

Recent invited conference talks

- "Virtual Woodin cardinals and the virtual n-Woodin hierarchy," Mid-Atlantic Mathematical Logic Meeting, Rutgers University, 2023
- "Logical and topological characterizations of supercompact and huge cardinals," European Set Theory Conference (online), September 2022.
- "Weak Vopěnka cardinals," North American annual meeting of the Association of Symbolic Logic (online), June 2021.
- "Characterizing strong cardinals, virtually strong cardinals, and other large cardinals by Löwenheim–Skolem properties," European summer meeting of the Association of Symbolic Logic (online), July 2021.
- *Weakly remarkable cardinals, Erdős cardinals, and the generic Vopěnka principle,* American Mathematical Society Sectional Meeting, University of Michigan, Ann Arbor, 2018
- *The perfect set property for universally Baire sets of reals,* Young Set Theory Workshop, International Centre for Mathematical Sciences, Edinburgh, United Kingdom, 2017
- *The consistency strength of two-step generic absoluteness for the pointclass* $\exists^{\mathbb{R}}(\mathbf{\Sigma}^2_1)^{\mathrm{uB}}$, Annual Meeting of the Association for Symbolic Logic, University of Connecticut, Storrs, 2016
- *Covering properties of derived models,* Boise Extravaganza in Set Theory, San Francisco State University, 2015
- *Covering properties of derived models,* Annual Meeting of the Association for Symbolic Logic, University of Illinois at Urbana–Champaign, 2015
- *A model of set theory in which every set of reals is universally Baire,* Winter Meeting of the Association for Symbolic Logic, San Antonio, Texas, 2015

Recent invited seminar talks

- "The large cardinal strength of Vopěnka's principle for trees and for rayless trees," Set theory seminar (online), University of Barcelona, January 2021.
- "The large cardinal strength of Vopěnka's principle for trees and for rayless trees," Set theory seminar (online), City University of New York, January 2021.
- *Generic Vopěnka cardinals and models with few Suslin sets,* Univ. Illinois at Chicago, 2018
- *Forcing the pointclass of universally Baire sets to be equal to* $\mathbf{\Delta}^1_2$, Rutgers University, 2018
- *A closure property of derived models,* Ohio State University, 2016

Other recent talks

- "Virtual Woodin cardinals and partition relations," Workshop on the Frontiers of Set Theory, Fields Institute, Canada, June 2023.
- "Weak forms of Woodin cardinals and Vopěnka cardinals," XVII International Luminy Workshop in Set Theory, France, October 2023.
- "Virtually strong cardinals and virtually Woodin cardinals," Oberwolfach Set Theory Workshop, Germany, January 2022.
- *Rigidity and non-rigidity for labeled trees and for structures with one unary function and one unary relation.* Conference on Inner Model Theory, University of California, Berkeley, 2019.
- *The large cardinal strength of the weak and semi-weak Vopěnka principles.* Conference on Inner Model Theory, University of California, Berkeley, 2019.
- *Tutorial on Determinacy and Scales.* Workshop on the Core Model Induction and Other Inner Model Theoretic Tools, Rutgers University, 2019
- *Generic Vopěnka cardinals and models with few Suslin sets.* Conference on Inner Model Theory, University of Girona, Spain, 2018
- *Martin's closure operation and scales on local* Π^2_1 *sets,* Conference on Inner Model Theory, University of Münster, Germany, 2017
- *The consistency strength of* ZFC + *"every universally Baire set has the perfect set property,"* Set Theory Workshop, Oberwolfach Mathematical Research Institute, Germany, 2017
- *Generic absoluteness and universally Baire sets of reals,* Conference on Descriptive Inner Model Theory and Hod Mice, University of California, Irvine, 2016
- *Determinacy from strong compactness of* ω_1, Conference on Inner Model Theory, the Core Model Induction, and Hod Mice, University of Münster, Germany, 2015

Funded grants and awards

- CAS Summer Research Grant ($5000), 2016
- NSF Graduate Research Fellowship, 2006–2009

Courses taught at Miami

- Calculus I (MTH 151), Fall 2015
- Introduction to Linear Algebra (MTH 222), Fall 2015 and Fall 2019
- Elements Of Discrete Math (MTH 231), Fall 2018, Fall 2020, Fall 2021, and Spring 2023
- Calculus II (MTH 249), Fall 2016 and Fall 2018
- Calculus II (MTH 251), Spring 2016, Spring 2020, and Spring 2022
- Calculus III (MTH 252/252H), Fall 2017
- Proof: Introduction to Higher Mathematics (MTH 331), Fall 2019, Spring 2021, Spring 2022, and Fall 2022
- Introduction to Linear Algebra / Proof combined course (MTH 222T/331T), Fall 2022
- Introduction to Abstract Algebra (MTH 421/521), Spring 2016, Spring 2020, Spring 2021, and Fall 2021
- Real Analysis (MTH 441), Spring 2019
- Introduction to Mathematical Logic (MTH 483/583), Fall 2017
- Introduction to Topology (MTH 491/591), Fall 2016, Fall 2020, and Spring 2023
- Topology (MTH 691), Spring 2017

Professional service

- Referee for the Journal of Symbolic Logic, Notre Dame Journal of Formal Logic, Canadian Journal of Mathematics, Archive for Mathematical Logic, Mathematical Logic Quarterly, Fundamenta Mathematicae, Contemporary Mathematics, Journal of Mathematical Logic, Journal of Geometry, Synthese, Springer Proceedings in Mathematics and Statistics, and Lecture Notes in Logic.
- Reviewer for Mathematical Reviews since 2017

Course Syllabus

MTH 222, Section A
Linear Algebra
Fall 2023

Objective

To provide an introductory course in Linear Algebra, with a focus on Euclidean space and matrices. Topics include systems of equations, matrix algebra, determinants, vector spaces and linear transformations, eigenvalues, and orthogonality.

Lecture times and location

MWF 8:55 - 9:50 a.m., Bachelor Hall 219

Contact Information

Professor: Dr. Reza Akhtar
Office: 122B Bachelor Hall
Phone: 529-1902
E-mail: akhtarr@miamioh.edu
Office Hours: MW 1:15 p.m. - 2:35 p.m. or by appointment.

Prerequisites

Credit for Calculus I (MTH 151) or equivalent.

Office Hours / mode of contact

You do *not* need an appointment to come to my scheduled office hours; simply show up. If you cannot make that time but want to meet, I will be happy to set up an appointment to meet with you, either in person or via Zoom. If the latter, I will connect my iPad to help with discussing the math.

If at any time you have a question about homework or some other aspect of the course that doesn't require a meeting, feel free to send it by e-mail and I'll respond as soon as I get a chance. Don't worry about typing out mathematical symbols; it's fine to write your question down on paper and send a photo.

Zoom backup plan

In the event that someone in my household falls ill, weather conditions prohibit travel, or anything else interferes with my coming to campus, I will let you know as soon as possible. If that happens (and the Oxford campus is open), class will be conducted on Zoom. The link to connect is posted on the Canvas site, towards the top of the "Modules" section.

Text

The textbook for this class is:
Poole, David. *Linear Algebra: A Modern Introduction.* 4th edition, ISBN13: 9781337769907.

Detailed information on the textbook may be found on the department website. For this course, you will need to purchase:

- A copy of the textbook. The electronic and paper versions are identical; either is fine.
- A code giving access to WebAssign, the online problem on which you will complete and submit your homework.

These two items are usually bundled together in a single purchase option. This is almost always cheaper than buying them separately. **Please note that there is no "class code" for access to WebAssign.** I have set things up so that you will be able to access WebAssign using your credentials directly through Canvas.

Lecture Notes

Most of what I write down in class will be written on an iPad and projected onto a screen. I will post pdf files of the notes thus captured on the Canvas page for that day. I will also occasionally use the chalkboard to supplement those notes. In the event that class needs to be conducted remotely via Zoom, I will post both the lecture notes and the video recording for that day on the Canvas site.

Homework

At the end of each section of the textbook covered, I will assign problems from that section on WebAssign. You will complete the problems directly on WebAssign and they will be graded (automatically) after the due date.

In-class Activities

Experience has led me to believe that in-class group activities are overused: they offer some value to students, but that value is limited. Exercises that help cultivate and practice skills introduced during lecture tend to be more effective. Since these skills ultimately need to be developed on an individual level, you will have the option of working on your own or with others when completing in-class work. Use the insights of your peers to enhance your own understanding! I will not announce when these activities will be given, but you will receive full credit for the work as long as you are present when it is assigned. If you contact me before class with a valid excuse for absence, you will still receive credit for the in-class work.

Exams

There will be three 'hour' exams in this course, given in class. Each exam will begin at 8:40 a.m. and I will allow you 70 minutes to complete it. The exam dates are listed below. **I do not give make-up exams.** If you need to miss an exam, you **must** contact me (by e-mail) *before* the fact; the only exceptions are medical emergencies that arise before the exam and continue through the exam (example: you went into a coma at 8 a.m. on the day of a 2 p.m. test and came out of it at 8 p.m..) I will review your situation and decide whether or not to exempt you from the exam. If I do not exempt you, you will receive a score of zero for that exam. Generally speaking, religious observance, university-related travel, and family/medical emergencies are legitimate reasons for missing an exam.

Exam Dates

The exams for this course are scheduled as follows.

Hour Exam 1: Friday, September 22, in class.
Hour Exam 2: Friday, October 20, in class.
Hour Exam 3: Friday, November 17, in class.
Final Exam: Wednesday, December 13, 8:00 - 10:00 a.m., in class.

Academic Dishonesty

In recent years, academic dishonesty has become a serious problem at universities everywhere. Miami University takes academic dishonesty very seriously, and there are stiff penalties for those found responsible for such acts. As a faculty member, I will not hesitate to take action if I find evidence that you might have committed an act of academic dishonesty. Detailed information on academic dishonesty policies, as well as procedures for addressing cases of academic dishonesty may be found on the university's Academic Integrity page: `www.miamioh.edu/integrity/undergraduates/index.html`.

For this course, acts of dishonesty include, but are not confined, to:

- Use of any written materials (other than the test paper itself) during exams.
- Use or attempted use of **any** electronic device during exams.
- Copying the work of another student on an exam.
- Copying solutions to problems from other textbooks or the internet.
- Communicating with or receiving help from any individual with any person (other than me) during a quiz or exam.
- Taking an exam on behalf of another student.

Calculator Policy

No calculators of any sort are permitted on exams in this course.

Accommodations

If you have a condition requiring special accommodations for exams (e.g. 150% or 200% time, distraction-reduced environment) or other aspects of the course, you will need to register with Student Disability Services (SDS), if you have not already done so. The SDS staff will evaluate your situation and send me a letter detailing your particular needs. Once I receive that letter, I work with you to implement whatever accommodations are recommended. If you are (or think you might be) in this category, please let me know as possible so that I can work with you to accommodate your needs as appropriate. All correspondence will be kept confidential. Please do not delay! Accommodations cannot be made at the last minute, so please have all paperwork processed well in advance of the exam date(s).

Grading

In-class assignments: 10 %
WebAssign homework: 15 %
Highest hour exam score: 22 %
Middle hour exam score: 17 %
Lowest hour exam score: 12 %
Final exam: 20 %
Class participation: 4 %

At the end of the course, I will compute a numerical score based on the above weighting and apply some sort of "curve" to that data to determine final grades.

Course Policies: PLEASE READ CAREFULLY

1. Course policies are fixed and will not change. You don't have to like them or agree with them, but if you continue with this course, I expect you to abide by them. Complaints about course policy will not be entertained.

2. When communicating with me by e-mail, please have the courtesy to address and sign it, and to use grammatically correct language in the body. The point isn't that I'll get upset if you make a grammatical error. (I won't.) The point is that etiquette in communication is important, regardless of who is interacting with whom.

3. In recent years, disruption has become a serious problem in classrooms across the university and beyond. Therefore:

   - It is your decision whether or not to attend class; naturally, all decisions have consequences. If you wish to attend but know in advance that you will be absent from class for some valid reason (e.g. illness, family or other university commitment), please have the courtesy to let me know of your situation, if possible **before** class meets. For an ordinary class meeting, I generally won't ask for a doctor's note or other form of justification.
   - If you choose to attend class, ***all electronic devices must be stowed in a bag or other receptacle.*** They should not be on your desk, in your lap, or anywhere else. The only exception is a tablet for taking notes. Anyone caught using a phone, laptop, or anything else during class will be asked to leave the classroom for the day. On the rare occasion that you are expecting an urgent communication and need to have your phone out to do so, please let me know about that in advance, and I'll consider granting you an exemption for the day.
   - If you need to use the bathroom, please try to do that *before* class begins. If an urgent situation arises and you need to use the bathroom, go ahead, but please keep such visits to a minimum. It it very distracting when people are constantly getting up, leaving the room, and returning.
   - There are a variety of reasons why a student might reasonably be delayed coming to class. If you're in that situation, don't worry about it. Simply take your seat as quietly as possible; nothing will be held against you. If you know you're going to be late on a regular basis, please let me know.

4. As a matter of policy, I don't offer pre-tests, re-tests, test corrections, or extra credit opportunities. Please don't ask.

5. Before each hour exam, I will circulate some practice questions. The purpose of this is twofold: first, to give you an idea of the length and format of the exam;

second, to help focus your studying on topics of importance. The actual exam questions may or may not be similar to the practice questions; nevertheless, understanding how to solve the practice problems should help you do well on the exam, even if the particular content differs. I will be happy to discuss solutions to the practice problems in class or on an individual basis; however, I will **not** provide written solutions. Please don't ask for them.

6. If you need an extension on a homework assignment, you may request one. However, if you do so more than twice, the likelihood of my agreeing (in the absence of mitigating circumstances) will be low.

7. When taking a calculus or differential equations course, students are exposed to the theory behind the subject, but most of the problems they are required to do are computational and do not require much depth of understanding.
   Linear Algebra is very different. While you won't be required to reproduce proofs of major results, it is **essential** that you understand the meaning of the definitions and theorems we develop. Even the computations you will need to do depend intrinsically on a strong grasp of definitions and theorems.

   The good news is that the objects we will be working with are very simple: for the most part, nothing beyond linear equations. The hard part of this course is understanding how everything fits together. Learning Linear Algebra is much like learning grammar: first one needs to learn the various parts of speech, then how they can be combined into phrases, and finally how those can be used to form sentences. Do **not** make the mistake of thinking that you can skip the theory because you're not a math major. Just as writers of the English language need to master grammar in order to write essays, so users of Linear Algebra need to understand something of the structure of the objects they are working with. The subject takes some getting used to, but once you've mastered it, you will appreciate its usefulness and maybe even the beauty inherent in it.

8. This course moves fast. There is a lot of material, and you simply cannot do all your learning in class. The point of the classroom lecture is to introduce you to the course material and add some human perspective which is not as easily gleaned from a textbook, but this is only the "spark" to set off your learning. Even with in-class activities, you still need to put in considerable time outside class to do the homework and digest the material. Don't allow yourself to fall behind; due to the cumulative nature of mathematics, you may well find yourself foundering if you do not have a firm grasp on some part of the course.

9. If you aren't prepared to abide by these policies, please drop the course. I will not take offense if you take that step; in fact, I'll respect you for having the maturity to recognize that my section is not a good fit for you.

Tentative Calendar of Coverage:

Week 1: Vector Algebra (1.1), Dot Product and Geometry (1.2, 1.3), Solving Linear Systems (2.1)

Week 2: Solving Linear Systems (2.2), Spanning and Linear Independence (2.3)

Week 3: Applications (2.4), Matrix Algebra (3.1, 3.2)

Week 4: Invertible Matrices (3.3), **EXAM 1**

Week 5: LU-Decomposition (3.4), Subspaces, Basis, Dimension, and Rank (3.5)

Week 6: Linear Transformations (3.6), Determinants (4.2)

Week 7: Eigenvalues (4.1, 4.3)

Week 8: Similarity and Diagonalization (4.4), **EXAM 2**

Week 9: Computation (4.5), Applications of Eigenvalues (4.6)

Week 10: Orthogonality (5.1), Orthogonal Complements and Projections (5.2)

Week 11: Gram-Schmidt and QR-Decomposition (5.3), Orthogonal diagonalization of symmetric matrices (7.1)

Week 12: Least squares approximations (7.3), Vector Spaces (6.1), **EXAM 3**

Week 13: Linear Independence, Basis, Dimension (6.2), Change of Basis (6.3)

Week 14: Linear Transformations (6.4), Kernel and Image (6.5).

SYLLABUS

MTH252: Calculus III, Section B, Spring Semester 2024

Section B, Mon., Wed., Fri., 10:05am - 11:20am BAC 114.

Instructor: Alin Pogan
Office: 220 BAC
Office Hours: Mon., Wed., Fri.,(11:30 a.m-12:30 p.m) or by appointment
Office Phone: 513-529-2184
E-Mail: pogana@miamioh.edu

Text: *Multivariable Calculus* by J. Stewart, **Ninth Edition**. Your book should include Chapters 12, 13, 14, 15, 16 to be appropriate.

Course Description: Continuation of Calculus I and II. Three-dimensional analytic geometry, vectors, derivatives, multiple integrals, applications.

Prerequisites: A grade of C or better in MTH251 (Calculus II). I expect that you have taken and mastered the material in a calculus course equivalent to MTH251. You should be thoroughly familiar with limits, continuity, derivatives and integrals, and you should be able to perform all the routine computations associated with these ideas efficiently and accurately. Of course, it's not reasonable to expect that you remember every small detail, but you should be able to use the text or your previous book to look these details up as needed.

Advising: Not sure if this is the right level course for you? You might see Laura Anderson in 296 Bachelor (andersl@miamioh.edu), the Chief Departmental Adviser for Math.

Quizzes: There will be a weakly quiz. Each quiz will be 10 or 15 minutes long, and will generally consist of 2 problems. The 2 lowest scores will be dropped.

Homework: Ordinarily, homework does not get turned in or graded in this section of this course. **However**, I will assign lists of homework exercises to try. Take these seriously as being your guide concerning what to prepare for on exams and quizzes.

Midterm Exams:

- **Exam 1: Monday, March 4, in class**
- **Exam 2: Wednesday, April 3, in class**
- **Exam 3: Monday, April 29, in class**

Final: The departmental final exam is given on Wednesday, May 15, 2024 10:15 a.m–12:15 p.m, and it will be cumulative.

Writing assignment: There will be one assignment for which the objective is not so much to solve a problem and get a correct answer, but to **clearly explain** the problem's solution, or something involving writing in some other context. More on this later.

Other important dates:

- February 15: last day to drop with no grade markings
- April 8: last day to drop with a W (no grade, but designated as having withdrawn)

Grading: Midterm Exams: $3 \times 15\%$, Final exam: 30% , Quizzes: 15% points, Writing assignments: 10%.

Grading complaints: If you strongly believe that a problem on a homework assignment, quiz or exam has been graded incorrectly or that your score has been recorded incorrectly, you must bring this to my attention immediately, in the same day that you have received this quiz or exam back from me . Grading complaints not initiated within this time period will not be considered.

Attendance: The class will be conducted under the presumption that you have attended all lectures. In particular, you are responsible for all the announcements made in class. MU policy **already** requires that every student is expected to attend every class session for which the student is duly registered, so there is never any excuse for a poor attendance record. **Excessive (¿4) number of unexcused absences will result in a warning and consequent removal of the student from the roster**.

Makeup quizzes: If you tell me your documentable good reason (like a Miami U. sanctioned event) well in advance, Make-ups might well be available, but otherwise not. If you find on a quiz day that you are too ill to take the quiz, then you are probably too ill to come to class. Since you never know when an emergency or illness will pop up, do not squander your opportunities at quizzes.

Makeup exams: Makeup midterms are given only under exceptional circumstances (a solid, valid excuse must be presented with proof, before the date of the exam). **There will absolutely be no make-up Final exam.**

Calculator policy: Calculators which can do symbolic derivatives (eg., TI-89, TI-92) are not allowed on any exam or quiz. Graphing calculators are allowed, but you won't need to use the graphing functionality.

Disabilities: Whether you have a physical disability or learning disability that affects exam performance, please discuss this with me during the first week of class. Some students think that it is a good idea to wait and see whether a disability-related problem will matter in this particular class, but then when a problem develops it is often to late to make proper arrangements. Concerning learning disabilities, get me one of the official university agreement forms concerning your documented disability, and we will work something out, which often amounts to your having extra time available on exams and quizzes.

Technical Comp-F23

Jump to Today ✎ Edit

Course:

- Introduction to Technical Computing (MTH 253-Section A)
- Day(s): Tuesday 10:05 - 11:55 pm
- Classroom: 245 BAC

Instructor:

- Dr. Ebrahim Sarabi
- E-m@il: **sarabim@miamioh.edu (mailto:sarabim@miamioh.edu)** (Please send your questions or requests directly to my email by using your miami account and do not use Canvas to communicate with me.)
- Office: 211 BAC

Lectures:

In this course, we are going to use Jupyter notebook. All lecture will be jupyter notebook files and will be posted in **Files (https://miamioh.instructure.com/courses/198520/files)** on Canvas. In this course, we will use the **Anaconda (https://www.anaconda.com/)** Python distribution.

Instructions for installing Anaconda

- **MAC OS:** If you have a Macbook laptop, you need to first download the graphical version of anaconda from this **link (https://www.anaconda.com/download#macos)** . Prior to downloading, you should check whether your Macbook has an M1 chip or an Intel processor via "About this mac". Then you have follow the instruction in this **link (https://docs.anaconda.com/free/anaconda/install/mac-os/)** to install Anaconda on your Macbook. You can also see this pdf **file (https://miamioh.instructure.com/courses/198520/files/28847840?wrap=1)** for more information.
- **Windows:** If you have a laptop with Windows as its operating system, you need to first download the graphical version of anaconda from this **link (https://www.anaconda.com/download#macos)** . Then you have follow the instruction in this **link (https://docs.anaconda.com/free/anaconda/install/mac-os/)** to install Anaconda on your laptop or the instructions in this pdf **file (https://miamioh.instructure.com/courses/198520/files/28847839?wrap=1)** .

Installing New Packages in Anaconda

To install new packages in Anaconda, you can use the instructions in this **link (https://conda.io/projects/conda/en/latest/user-guide/tasks/manage-pkgs.html)** .

Office Hours:

I will hold the following office hours throughout the semester:

- Tuesday from 12:00-1:00 pm;
- Wednesday from 11:00-12:00

Text:

- We will not be following a specific textbook in this course. Lecture notes will be made available to give you the information discussed in class. However, if you would like to read a book to help you with the course, I recommend: **Scientific Computation: Python Hacking for Math Junkies (http://calculuscastle.com/pythonbook.html)** , by B. Shapiro and the free online textbook ***Python Data Science Handbook*** **(https://jakevdp.github.io/PythonDataScienceHandbook/)** by Jake VanderPlas. We will use parts of these books to understand how python modules numerical computations work.

Course Outline: This course will teach you the basics of Python programming from a mathematical viewpoint. Programming is an essential skill in modern society, and will open the door for many interesting practical and intellectual endeavors for you. We will be covering the following topics in this course:

- Introduction to Jupyter notebook and Python;
- Loops, slicing, list comprehensions, conditional statements;
- Dictionaries and Functions;
- Basic graphics with mathplotlib;
- Linear Algebra topics in Python including matrices, solving linear equations, and finding eigenvalues and eigenvectors of matrices, linear and nonlinear least squares;
- Numerical Optimization.

Class work. Each lecture note consists of a set of problems that you are going to solve during our class meeting. You should complete your solutions and submit it to obtain the class participation part of your final grade.

Homework: There will be 6 sets of homework problems. You are welcome to collaborate on the homework as long as every line of code you submit is typed by you, when you are alone. You are not allowed to take notes from your colleagues' or anybody else's solutions. You should not copy paste any code onto your notebooks or scripts.

Projects: There will be there projects during the semester, each worths 20% of your final grade.

Grade Distribution:

- Projects 40%
- Homework 36%
- Class work and participation 24%

Final Exam:

- There is no final exam in this course.

Letter Grade Distribution:

>= 98.00	A+	----	77.00 - 79.99	C+
93.00 - 97.99	A	----	73.00 - 76.99	C
90.00 - 92.99	A-	----	70.00 - 72.99	C-
87.00 - 89.99	B+	----	67.00 - 69.99	D+
83.00 - 86.99	B	----	63.00 - 66.99	D
80.00 - 82.99	B-	----	60.00 - 62.99	D-

Course Policies:

- Using cell phones in class is not allowed.
- Attendance is not a part of your grade but is expected. There will be a sign sheet every day in class that you must sign at each meeting. Excessive absenteeism is defined by 4 or more occurrences of unexcused absence in the semester. I will send you an email when the number of your absences reaches 3 to remind you about this policy. Any student with such an excessive absenteeism will be dropped from class at any point during the semester.

Student Disability:

If you are a student with a disability and feel you may need a reasonable accommodation to fulfill the essential functions of this course, you are encouraged to connect with Student Disability Services (SDS).

SDS provides accommodations and services for students with a variety of disabilities, including physical, medical and psychiatric disabilities. You are encouraged to contact SDS to learn more about the affiliation process and procedures for requesting accommodations.

- Oxford Campus: **SDS@MiamiOH.edu (mailto:sds@miamioh.edu)**
- Hamilton Campus: **MUHODS@MiamiOH.edu (mailto:muhods@miamioh.edu)**
- Middletown Campus: **MUMDC@MiamiOH.edu (mailto:mumdc@miamioh.edu)**

Current SDS affiliated students should request accommodations according to **SDS procedure (https://www.miamioh.edu/student-life/sds/student-tools/accommodation-procedures/how-to-request-accommodations/index.html)** . You are strongly encouraged to request and discuss your accommodations needs during the first 1-2 weeks of the semester.

Academic Integrity:

Academic dishonesty is defined as any activity that compromises the academic integrity of the institution or subverts the educational process. Examples of academic dishonesty in this course include:

1. completing or participating in the completion of any portion of an academic assignment for another student to submit as his or her own work, including taking a quiz or an examination for another student;
2. providing assistance, information, or materials to another student in a manner not authorized by the instructor;

Academic dishonesty by a student will not be tolerated and will be treated in accordance with the policy of Miami University.

Resources and Support for Students:

As an instructor, I have a **duty to report (https://www.miamioh.edu/policy-library/employees/general-employment/non-discrimination/duty-to-report.html)** . This means I am required to promptly report to the Deputy Title IX Coordinator (**titleix@miamioh.edu (mailto:titleix@miamioh.edu)** or 513-529-1870) any information a student shares with me regarding harassment, discrimination, sexual misconduct and interpersonal violence, or retaliation. A report does not initiate an investigation. It engages a discussion of your resources, supportive measures, and options available. If students want to speak with someone confidentially, they can speak with Student Counseling Services, Student Health Services, and an advocate with Women Helping Women.

Speaking with a confidential resource person does not preclude students from making a formal report to the University if and when they are ready.

https://miamioh.edu/diversity-inclusion/programs-resources/report-incident/index.html (https://miamioh.edu/diversity-inclusion/programs-resources/report-incident/index.html)

For more information, please visit https://miamioh.edu/campus-safety/sexual-assault/ (https://miamioh.edu/campus-safety/sexual-assault/) and https://www.miamioh.edu/diversity-inclusion/oeeo/index.html (https://www.miamioh.edu/diversity-inclusion/oeeo/index.html) .

Important Dates:

- Last day to drop without a grade: Sept. 15
- Last day to drop with a grade of “W”: Oct. 30
- Holidays (no class): Fall break (Oct. 13-15)

Course Summary:

Date	Details	Due
Sun Sep 10, 2023	class work-Week2 (https://miamioh.instructure.com/courses/198520/assignments/2555170)	due by 11:59pm
	Classwork-Week1 (https://miamioh.instructure.com/courses/198520/assignments/2550429)	due by 11:59pm
Sun Sep 24, 2023	class work-week3 (https://miamioh.instructure.com/courses/198520/assignments/2563120)	due by 11:59pm
Tue Sep 26, 2023	HW1 (https://miamioh.instructure.com/courses/198520/assignments/2559596)	due by 11:59pm
Sun Oct 1, 2023	Classwork5-Week5 (https://miamioh.instructure.com/courses/198520/assignments/2565382)	due by 11:59pm
Sun Oct 8, 2023	Class work-Week6 (https://miamioh.instructure.com/courses/198520/assignments/2568691)	due by 11:59pm
Sun Oct 15, 2023	Classwork-week7 (https://miamioh.instructure.com/courses/198520/assignments/2572783)	due by 11:59pm
Mon Oct 16, 2023	Project 1 (https://miamioh.instructure.com/courses/198520/assignments/2566828)	due by 11:59pm
Sun Oct 22, 2023	Classwork-Week8 (https://miamioh.instructure.com/courses/198520/assignments/2576509)	due by 11:59pm

Date	Details	Due
Tue Oct 24, 2023	**HW2** (https://miamioh.instructure.com/courses/198520/assignments/2573655)	due by 10am
Mon Oct 30, 2023	**Classwork-Week9** (https://miamioh.instructure.com/courses/198520/assignments/2580518)	due by 11:59pm
Sun Nov 5, 2023	**Classwork-Week10** (https://miamioh.instructure.com/courses/198520/assignments/2582807)	due by 11:59pm
Sun Nov 12, 2023	**Classwork-Week11** (https://miamioh.instructure.com/courses/198520/assignments/2586001)	due by 11:59pm
Fri Nov 17, 2023	**HW3** (https://miamioh.instructure.com/courses/198520/assignments/2582638)	due by 11:59pm
Tue Dec 5, 2023	**Project 2** (https://miamioh.instructure.com/courses/198520/assignments/2582637)	due by 11:59pm

MTH 331B Proof: Introduction to Higher Mathematics Spring 2024

Time and place:	Monday, Wednesday, and Friday, 1:15-2:10 Bachelor Hall, Room 110
Instructor:	Doug Ward (email wardde@miamioh.edu), 204 Bachelor Hall
Office hours:	10-11:30 MTWRF, TR 4-5 or by appointment
Phone number:	529-3534
Text:	*Book of Proof* (Edition 3.3, 2018) by Richard Hammack, available online (a copy is posted at the course site)
Prerequisite:	MTH 249 or MTH 251 or equivalent
Pre- or Corequisite:	MTH 222 or equivalent

Grades will be based on

a) three exams worth 100 points each, given in class on Feb. 23, Mar. 22, and April 26.

b) homework assignments worth a total of 150 points. There will at least eleven 15-point assignments, and I will count your highest ten scores. Please acknowledge any outside sources that you use, including other students. Please write legibly and leave plenty of room for my comments.

c) a comprehensive final exam worth 150 points, given in Bachelor 110 at 12:45 PM on Monday, May 13.

Grading scale:

90-100	A	74-77	B^-	58-61	$D+$
86-89	A^-	70-73	C^+	54-57	D
82-85	B^+	66-69	C	50-53	D^-
78-81	B	62-65	C^-		

Some other dates to remember:

Feb 15: Last day to drop a course without a grade.

Apr 8: Last day to drop a course with a W.

Differential Equations
MTH 347 – Fall 2023

SECTION: A, CRN: 10911 & HA, CRN: 18478

PROFESSOR: Narcisse Randriana

E-mail: randrin@miamioh.edu

MWF 2:50 pm–3:45 pm, 110 BAC

OFFICE: 225 BAC

OFFICE HOURS: T & Th: 1:00 pm-2:00 pm or by appointment.

TEXTBOOK: *, Differential Equations and Boundary value Problems, 5th edition* by C. Henry Edwards, David E. Penney, and David T. Calvis.

MyLab Math: You need to register with "Pearson/MyLab and mastering" to get access to the homework platform.

GENERAL PROCEDURES

1. Prerequisites: Calculus III and Linear algebra (MTH 252 and MTH 222)

2. Examinations and Gradings:

(a) **Midterms.** There will be three exams (on Friday, September 22; Friday, October 20; Friday, November 17). Each of the three exams is worth 100 points.

There will be no make-ups for in class tests. A student may miss a *maximum* of one of the three provided that some UNCONTROLLABLE circumstance conflicts with the time of the test (for example, an illness). The student must inform me (and provides written evidence) about the circumstance conflicting with the test as soon as s/he becomes aware of it. If the student and I both agree that the circumstance is uncontrollable and unavoidable the grade for the missed test will be replaced by the percentage grade that the student receives on the Final Exam.

(b) **Weekly Quizzes.** We will have weekly quizzes (given at the beginning of the week) The total score for quizzes will be scaled to 50 points.

(c) **MyLab Math homework** will be given every week. Assignments will be posted on Friday and will be available through the weekend. MyLab is now integrated with the course canvas site (click on the MyLab and mastering).

The total score for MyLab homework will be scaled to 50 points.

(d) **Written project** due Friday, December 8 worth 25 points. In this assignment you will be asked to present briefly most important concepts and skills that we have learned during the semester. The preferred format is a sample final test with detailed solution. The purpose of this assignment is to help you prepare for the final exam.

(e) **Final Exam.** (**Wednesday, December 13, 3:00 pm–5:00 pm**). The final exam is comprehensive and is worth 200 points.

3. Attendance Policy: Class attendance is obligatory. Students with excessive absences will be dropped from class.

There will be 20 points awarded to each student at the beginning of the semester. These points will be subtracted for non-attendance according to the following schedule. No points lost for the first 2 missed classes, 5 points lost for each next absence.

4. ADA and Students with disabilities:

Miami University is committed to ensuring equal access to students with disabilities. Miami's Office of Student Disability Services (SDS) assists students with determining eligibility for services and accommodation planning. Students who are entitled to disability-related academic adjustments, auxiliary aids, etc., must register with SDS to receive accommodations in university courses. Please understand that formal communication from SDS must be presented prior to the coordination of accommodations for this course. For more information, students may contact SDS at (513) 529-1541 or via email at sds@miamioh.edu.

5. Academic/Personal Integrity:

Academic dishonesty will not be tolerated. You are expected to do your own work on all quizzes and exams (and collaborate/discuss problems and ideas with NO ONE). Academic Integrity is at the heart of the mission and values of Miami University and is an expectation of all students. Maintaining academic integrity is a reflection of your character and a means to ensuring that you are achieving the outcomes of this course and that your grades accurately reflect learning and understanding of the course material. According to the Miami University Student Handbook, "Academic dishonesty is defined as any activity that compromises the academic integrity of the institution or subverts the educational process."

• Collaboration is permitted and encouraged on homework, any class activities, and preparing for exams.

• During assessments, the following will be treated as an act of academic dishonesty: looking at or copying another student's work (in whole or part), using an unapproved electronic device (including smartphones, Apple watches, tablets, etc.), using a formula sheet or notes, communicating verbally or non-verbally with another person.

• If you are suspected of academic dishonesty, it will be reported to the Office of Academic Integrity. For more information on the policy and procedure regarding academic integrity, Anyone caught cheating or copying anyone else's work will receive a zero on the piece of work for which they were caught cheating (if this is a quiz score, it is one that cannot be dropped). Additional punishment may come from the department and the university.

7. Duty to Report. Resources and Support for Students.

As an instructor, I have a duty to report. This means I am required to promptly report to the Deputy Title IX Coordinator (titleix@miamioh.edu or 513-529-1870) any information a student shares with me regarding harassment, discrimination, sexual misconduct and interpersonal violence, or retaliation. A report does not initiate an investigation. It engages a discussion of your resources, supportive measures, and options available. If students want to speak with someone confidentially, they can speak with Student Counseling Services, Student Health Services, and an advocate with Women Helping Women.

Speaking with a confidential resource person does not preclude students from making a formal report to the University if and when they are ready. https://miamioh.edu/diversity-inclusion/programs-resources/report-incident/index.html

For more information, please visit https://miamioh.edu/campus-safety/sexual-assault/ and https://www.miamioh.edu/diversity-inclusion/oeeo/index.html.

6. Calendar

–Labor Day: Monday, September 4;
–Last day to drop without a grade, Friday, September 15;
–Exam 1: Friday, September 22;
–Fall Break: Friday, October 13;
–Exam 2: Friday, October 20 ;
–Last day to drop with "W": Monday, October 30;
–Exam 3: Friday, November 17;
–Thanksgiving Holiday: Wednesday, November 22–Sunday, November 26;
–Written project: Friday, December 8;
–Final Exam: Wednesday, December 13, 2023 (3:00 pm–5:00 pm).

Real Analysis MTH 441/541 (section A) Spring 2024

Time and Place: 11:40 - 12:35 MWF, 112 Bachelor Hall

Instructor: Patrick Dowling, 205 Bachelor Hall (# 529 - 5831) dowlinpn@miamioh.edu

Office Hours: 10:00 - 11:00 MWF or by appointment.

Text: There is no required text. However, if you would like to have a text, then, *Introduction to Real Analysis* by Manfred Stoll is a good choice. I will somewhat follow this text but not so closely that it should be required. I am confident you can find versions of this text online.

Syllabus: The course will cover at least chapters 1 -- 6 and chapter 8.

Examinations: For the course there will be eleven quizzes, the lowest three of which will be dropped, three tests and a final. Homework will be assigned weekly. Homework will not be collected or graded. However, quiz and test problems will be based on material covered in class and on the assigned homework. For students taking the course for graduate credit, there will be several projects assigned during the semester. The dates for the tests and the final are as follows:

Final: Wednesday, May 15, 2024, 12:45 p.m. - 2:45 p.m.

Test #1: Feb. 28

Test #2: Apr. 3

Test #3: May 1

Quiz #1: Jan. 31
Quiz #2: Feb. 7
Quiz #3: Feb. 14
Quiz #4: Feb. 21
Quiz #5: Mar. 6
Quiz #6: Mar. 13
Quiz #7: Mar. 20
Quiz #8: Apr. 10
Quiz #9: Apr. 17
Quiz #10: Apr. 24
Quiz #11: May 8

Grades: The total of the three tests, the eight best quizzes and the final will be used to determine your grade for the course. The final accounts for 34% of the course grade, the quizzes account for 15% of the course grade, and each test accounts for 17% of the course grade. Grades will be distributed on the following basis (with +'s at the upper end and -'s at the lower end):

Undergraduate	**Graduate**
85% - 100% **A**	90% - 100% **A**

70% - 84% **B**	75% - 89% **B**
55% - 69% **C**	60% - 74% **C**

Note that there will be NO make-up examinations given.

MIAMI UNIVERSITY
OXFORD, OH · EST. 1809

INDEPENDENT STUDY FORM

To submit the completed form:

In person: Take form to the One Stop for Student Success, Room 101 Campus Ave. Bldg.
By campus mail: Send form to Office of the University Registrar, 301 S. Campus Avenue, Oxford OH 45056

REGISTRATION IS NOT COMPLETE UNTIL THIS FORM IS SUBMITTED TO THE ONE STOP FOR STUDENT SUCCESS OR THE OFFICE OF THE UNIVERSITY REGISTRAR

STUDENT INFORMATION:

Unique ID: _____ Phone: _____

Name: _____ _____ _____
Last *First* *Middle Initial*

COURSE INFORMATION:

Term: ☐ Fall ☐ Winter ☐ Spring ☐ Summer

Course Subject: _____ Course Number: _____ Section: _____ Cr. Hrs: _____

To be taken: ☐ Letter grade OR ☐ Credit/No-Credit Change of Hrs: _____ _____
(from) *(to)*

Subject of Study: _____

INSTRUCTOR INFORMATION:

Unique ID: _____ Phone: _____

Name: _____ _____ _____
Last *First* *Middle Initial*

REQUIRED SIGNATURES:

Instructor: _____ Date: _____

Dept. Chair/Regional Campus Coordinator: _____ Date: _____

Rev. 10/2014

INDEPENDENT STUDY AGREEMENT

Department of Mathematics
Miami University
Oxford, Ohio

Indicate the course: 477, 600, other 377 Semester: _____

Number of credit hours: _____ Major: _____

Is the study for honors: _____

1. Give a short "title" of the topic. Then, if appropriate, add a few sentences that describe more Precisely the content of the proposed study.

2. Does this study cover an existing course? _____ If so, what course? _____
   If so, explain why it is necessary to do it as an independent study:

3. How will the study be conducted, supervised and evaluated? (Indicate what the student and the Instructor will do, e.g. how often they will meet, whether there will be tests and a final examination, etc.:

_____	_____	_____	_____
Student	Date	Instructor	Date
(University form completed: _____)		_____	_____
		Chair	Date

Signatures: (After signatures, copies to student and instructor, original to be filed in department office. If student is a math/stat major, one for student folder.)

INTERNSHIP LEARNING AGREEMENT

Miami University

(To be used for Undergraduate Student Initiated and Arranged, Non-Credit Professional Experiences)

1. STUDENT INFORMATION

Student Name ("Intern"): _____ Today's Date: _____

Email Address: _____ Phone: _____

Mailing Address: _____

2. INTERNSHIP SPONSOR INFORMATION

Business / Agency Name ("Sponsor"): _____

Business / Agency Address: _____
Number / Street City State Zip

Business / Agency Supervisor: _____ Phone: _____

Title: _____ Fax: _____

Email address: _____ Sponsor Website: _____

---

3. GENERAL DECLARATIONS

The purpose of this Learning Agreement is to ensure that the internship experience is productive and beneficial to both parties.

- Internship Site: _____.
- This Internship will begin on _____, 20___ and will be completed by _____20___.
- The Intern WILL / WILL NOT be paid during the period of the internship. If the intern is paid, pay will be made at the rate of _____ per _____ for the duration of the internship.
- The Intern will work approximately __ _____ hours and the scheduled hours will be as follows: __ _____ _____.
- It is understood that the internship is temporary, and the Sponsor is under no obligation to continue the internship or to make any offer of permanent employment following the internship.

4. WORK PLAN

a) Intern Learning Outcomes (specify at least three Learning Outcomes that will demonstrate the educational value of the experience for the Intern):

b) How will the Intern learn (e.g., formal training opportunities, didactics, assigned reading, modeling by supervisor, individual supervision, group supervision)?

c) The following are considered Regular Internship Assignments for the intern:

d) The following are considered Special Projects assigned to the intern:

e) Describe any additional training and instruction be provided by the Sponsor:

f) Specify at least one products/output the Intern will produce (e.g., case notes, scored protocols, data analysis, specific project, paper). The product/output may be directly related to one of the learning objectives described above.

5. SUPERVISION:

a. Internship Sponsor Supervisor's Name:

b. Position/Title:

c. Relevant degree(s) and field of study :

d. Nature of the supervision (e.g., individual, group, etc.)

e. How much supervision/contact will the Intern receive (e.g., 60 minutes 1 X week)?

6. INTERN AGREEMENT AND RELEASE of MIAMI UNIVERSITY

I, _____, acknowledge that an internship is a unique opportunity to gain valuable professional experience. I have reviewed the Internship Work Plan set forth in Paragraph 4, above, and believe that I will be able to fulfill the duties described in a timely and professional manner. I also acknowledge that for this internship to be considered an academic experience I will be required to submit information that will permit Miami to evaluate the academic benefit of the experience, specifically:

- My ability to perform in a professional manner, as indicated by my ability to arrive on time, my ability to meet deadlines, my ability to take initiative in learning, and my ability to interact with my supervisors and colleagues;
- My learning during the internship, as indicated by my ability to fulfill the duties described in the work plan and my achievement of the learning outcomes identified in the work plan.

Such information may include a log of my[weekly monthly quarterly?] summary of hours and duties, organized to show daily activities, which I will submit to _____ via email or other electronic means, and which will be forwarded to my supervisor for review [Summary of the experience?]

WHAT FOLLOWS IS A RELEASE OF LEGAL RIGHTS—READ AND UNDERSTAND BEFORE SIGNING.

I recognize that Miami University does not control in any way the manner in which the internship work experience and the internship site is structured or operated. The University's involvement is limited to rendering a reasonable judgment, based solely on information supplied by me and by the Sponsor/Organization, that the internship is a valid education experience. The University makes no other assurances, express or implied concerning the internship. I understand that participation in the internship involves risks not found in study at the University. These include risks involved in traveling to and returning from the internship location (s) and risks that may arise not only from my own action, inaction, or negligence, but also from the action, inaction, or negligence of others, or the condition of the internship location (s) or of any equipment used. I also recognize that there may be other risks involved in participating in the internship that are not presently known or reasonably foreseeable. I understand that Miami University does not require me to participate in the internship, but I freely choose to do so, despite the possible dangers and risks. I understand that I am responsible for evaluating the risks presented by the internship program and for taking all reasonably prudent steps to protect my health and safety, including securing my own health, personal injury and disability insurance coverage.

Knowing the risks described above, and in consideration of Miami University's review and acknowledgement of the educational value of the Work Plan set forth in Paragraph 4, I agree, on behalf of my family, heirs, and personal representative(s), to assume all the risks and responsibilities surrounding my participation in the internship. To the maximum extent permitted by law, I release and indemnify the Miami University, its Trustees officers, employees, and agents, from and against any present or future claim, loss, or liability for injury to person or property that I may suffer, or for which I may be liable to any other person, arising from my participation in the internship (including periods in transit to or from the internship location(s)).

I have carefully read and understand this Internship Learning Agreement and the release and indemnity provisions of this Paragraph 6. No other representations, statements, or inducements, oral or written, apart from the foregoing written statement, have been made.

_____ _____

Signature of Intern Date

7. SPONSOR AGREEMENT

I, _____, on behalf of Sponsor agree to supervise the above-referenced student as an intern at _____. I affirm that the description of the internship agreement set forth in this Internship Learning Agreement is an accurate description of the activities to be experienced and performed by the Intern. I further I acknowledge and agree that the internship is intended to be both an academic and a professional experience for the Intern and to that end I agree to provide learning assistance and supervision throughout the internship. I certify that during the internship, the Intern will gain experience with the skills outlined in the work plan. I understand that, if the internship involves work for pay, such arrangements will be negotiated and agreed upon solely between the Sponsor and Intern and I further understand and acknowledge that the Sponsor/Organization is solely responsible for complying with any applicable wage and hour laws, benefits, health and safety, workers compensation, and all other labor, employment and workplace laws, rules, ordinances and requirements that may arise from or are related to the relationship between the Intern and the Sponsor. I further understand and acknowledge that health insurance are the Intern's responsibility.

As supervisor for the Intern, I agree to:

- Consult with both the intern and Instructor before making any major changes to the work plan;
- Complete a midterm and final evaluation for the intern and submit these evaluation to the T Instructor via email or other means as follow:
    - The midterm evaluation, submitted approximately half way through the internship, can be simply an overview of the Intern's progress and notes any areas of needed change or improvement.
    - The final evaluation can take the form of either a standard employee or intern evaluation as used by the Sponsor/Organization or as a letter of summary by the supervisor(s) which outlines the overall success of the Intern in the internship.

_____ _____

Supervisor Signature Date

7. MIAMI UNIVERSITY- INSTRUCTOR ACKNOWLEDGEMENT

I, _____, have reviewed the Work Plan set forth in Paragraph 4, above, and agree that, based on the description provided herein by Intern and Sponsor/Organization, the internship will be a valid academic learning experience. Any assessment of the value of the experience shall be subject to an evaluation of the materials submitted pursuant to this Internship Leaning Agreement.

_____ _____

Miami University Date

Python

Jump to Today ✎ Edit

Course:

- Applied Mathematics with Python (MTH 400/500-Section A)
- Day(s): Tuesday 10:05 - 11:25 pm
- Classroom: 114 BAC

Instructor:

- Dr. Ebrahim Sarabi
- E-m@il: sarabim@miamioh.edu (mailto:sarabim@miamioh.edu) (Please send your questions or requests directly to my email by using your miami account and do not use Canvas to communicate with me.)
- Office: 211 BAC

Lectures:

In this course, we are going to use Jupyter notebook. All lecture will be jupyter notebook files and will be posted in **Files** (https://miamioh.instructure.com/courses/214972/files) on Canvas. In this course, we will use the **Anaconda** (https://www.anaconda.com/) Python distribution.

Instructions for installing Anaconda

- **MAC OS:** If you have a Macbook laptop, you need to first download the graphical version of anaconda from this **link** (https://www.anaconda.com/download#macos) . Prior to downloading, you should check whether your Macbook has an M1 chip or an Intel processor via "About this mac". Then you can follow the instruction in this **link** (https://docs.anaconda.com/free/anaconda/install/mac-os/) to install Anaconda on your Macbook. You can also see this pdf **file** (https://miamioh.instructure.com/courses/214972/files/30765729?wrap=1) for more information.
- **Windows:** If you have a laptop with Windows as its operating system, you need to first download the graphical version of anaconda from this **link** (https://www.anaconda.com/download#macos) . Then you can follow the instruction in this **link** (https://docs.anaconda.com/free/anaconda/install/mac-os/) to install Anaconda on your laptop or the instructions in this pdf **file** (https://miamioh.instructure.com/courses/214972/files/30765728?wrap=1) .

Installing New Packages in Anaconda

To install new packages in Anaconda, you can use the instructions in this **link (https://conda.io/projects/conda/en/latest/user-guide/tasks/manage-pkgs.html)** .

Office Hours:

I will hold the following office hours throughout the semester:

- Tuesday and Thursday from 12:00-1:30 pm.

Text:

- We will not be following a specific textbook in this course. Lecture notes will be made available to give you the information discussed in class. However, if you would like to read a book to help you with the course, I recommend: **Scientific Computation: Python Hacking for Math Junkies (http://calculuscastle.com/pythonbook.html)** , by B. Shapiro and the free online textbook ***Python Data Science Handbook*** **(https://jakevdp.github.io/PythonDataScienceHandbook/)** by Jake VanderPlas. We will use parts of these books to understand how python modules numerical computations work.

Course Outline: This course will teach you the basics of Python programming from a mathematical viewpoint. Programming is an essential skill in modern society, and will open the door for many interesting practical and intellectual endeavors for you. We will be covering the following topics in this course:

- Introduction to Jupyter notebook and Python;
- Loops, slicing, list comprehensions, conditional statements;
- Dictionaries and Functions;
- Basic graphics with matplotlib;
- Vectorization with Numpy
- Classes in Python;
- Topics in Linear Algebra topics including matrices, solving linear equations, and finding eigenvalues and eigenvectors of matrices, linear and nonlinear least squares;
- Probability and randomness, Random walks, Law of large numbers and the central limit theorem
- Numerical Optimization.
- Graph theory and its applications to social network analysis;
- Data visualization in Python

Class work. Each lecture note consists of a set of problems that you are going to work during our class meeting. You should complete your solutions and submit it to obtain the class participation part of your

final grade. For each missing classwork, you will lose 1% from the class participation score. For each two unexcused absences, you will also lose 1% from the class participation score.

Project: There will be 7 sets of projects. You are welcome to collaborate on the projects as long as every line of code you submit is typed by you, when you are alone. You are not allowed to take notes from your colleagues' or anybody else's solutions. You should not copy paste any code onto your notebooks or scripts.

Exams: There will be a midterm exam on March 14. More detail about the exam will be discussed in class on the week leading to the exam.

Grade Distribution:

- Projects 56%
- Midterm Exam 18%
- Final Exam 18%
- Class participation 8%

Final Exam:

- There will be a final exam in this course.

Letter Grade Distribution:

>= 98.00	A+	----	77.00 - 79.99	C+
93.00 - 97.99	A	----	73.00 - 76.99	C
90.00 - 92.99	A-	----	70.00 - 72.99	C-
87.00 - 89.99	B+	----	67.00 - 69.99	D+
83.00 - 86.99	B	----	63.00 - 66.99	D
80.00 - 82.99	B-	----	60.00 - 62.99	D-

Course Policies:

- Using cell phones in class is not allowed.

- There will be a sign sheet every day in class that you must sign at each meeting. Excessive absenteeism is defined by 6 or more occurrences of unexcused absence in the semester. Any student with such an excessive absenteeism will be receive 0 for the class participation score.

Student Disability:

If you are a student with a disability and feel you may need a reasonable accommodation to fulfill the essential functions of this course, you are encouraged to connect with Student Disability Services (SDS). SDS provides accommodations and services for students with a variety of disabilities, including physical, medical and psychiatric disabilities. You are encouraged to contact SDS to learn more about the affiliation process and procedures for requesting accommodations.

- Oxford Campus: **SDS@MiamiOH.edu (mailto:sds@miamioh.edu)**
- Hamilton Campus: **MUHODS@MiamiOH.edu (mailto:muhods@miamioh.edu)**
- Middletown Campus: **MUMDC@MiamiOH.edu (mailto:mumdc@miamioh.edu)**

Current SDS affiliated students should request accommodations according to **SDS procedure (https://www.miamioh.edu/student-life/sds/student-tools/accommodation-procedures/how-to-request-accommodations/index.html)** . You are strongly encouraged to request and discuss your accommodations needs during the first 1-2 weeks of the semester.

Academic Integrity:

Academic dishonesty is defined as any activity that compromises the academic integrity of the institution or subverts the educational process. Examples of academic dishonesty in this course include:

1. completing or participating in the completion of any portion of an academic assignment for another student to submit as his or her own work, including taking a quiz or an examination for another student;
2. providing assistance, information, or materials to another student in a manner not authorized by the instructor;

Academic dishonesty by a student will not be tolerated and will be treated in accordance with the policy of Miami University.

Resources and Support for Students:

As an instructor, I have a **duty to report (https://www.miamioh.edu/policy-library/employees/general-employment/non-discrimination/duty-to-report.html)** . This means I am required to promptly report to the Deputy Title IX Coordinator (**titleix@miamioh.edu (mailto:titleix@miamioh.edu)** or 513-529-1870) any information a student shares with me regarding harassment, discrimination, sexual misconduct and interpersonal violence, or retaliation. A report does not initiate an investigation. It engages a discussion of your resources, supportive measures, and options available. If students want to speak with someone

confidentially, they can speak with Student Counseling Services, Student Health Services, and an advocate with Women Helping Women.

Speaking with a confidential resource person does not preclude students from making a formal report to the University if and when they are ready.

https://miamioh.edu/diversity-inclusion/programs-resources/report-incident/index.html (https://miamioh.edu/diversity-inclusion/programs-resources/report-incident/index.html)

For more information, please visit **https://miamioh.edu/campus-safety/sexual-assault/ (https://miamioh.edu/campus-safety/sexual-assault/)** and **https://www.miamioh.edu/diversity-inclusion/oeeo/index.html (https://www.miamioh.edu/diversity-inclusion/oeeo/index.html)**.

Important Dates:

- Last day to drop without a grade: Feb 15
- Last day to drop with a grade of “W”: Apr 8
- Spring break (no class): Mar 25-31

Course Summary:

Date	Details	Due
Sun Feb 4, 2024	**Week1** (https://miamioh.instructure.com/courses/214972/assignments/2713803)	due by 11:59pm
Fri Feb 9, 2024	**Week 2** (https://miamioh.instructure.com/courses/214972/assignments/2717031)	due by 11:59pm
Sun Feb 11, 2024	**Week2-2** (https://miamioh.instructure.com/courses/214972/assignments/2719186)	due by 11:59pm
Fri Feb 16, 2024	**Proj1** (https://miamioh.instructure.com/courses/214972/assignments/2718490)	due by 11:59pm

Math 432/532 Optimization Fall 2023

Time and place:	Tuesday and Thursday, 10:05-11:25 Bachelor Hall, Room 201
Instructor:	Doug Ward (email wardde@miamioh.edu), 204 Bachelor Hall
Office hours:	MWF 10-11:30; MTRF 4-5 or by appointment
Phone number:	529-3534
Text:	Course notes available at Oxford Copy Shop ($14.96 + tax)
Prerequisites:	Grade of at least C^- in MTH 222, 252, 331

Grades will be based on

a) three exams worth 100 points each, to be given in class on Sept 26, Oct 24, and Nov 21.

b) homework assignments worth a total of 150 points. Assignments are due in class on the due date. I will post solutions online a few days after the due date, and I will not accept any papers submitted after solutions are posted.

   Please acknowledge any outside sources, including other students. Please write legibly and leave plenty of room for my comments.

c) a comprehensive final exam worth 150 points, given in Bachelor 201 at 8:00 AM on Thursday, Dec 14.

Grading scale:

90-100	A	74-77	B^-	58-61	$D+$
86-89	A^-	70-73	C^+	54-57	D
82-85	B^+	66-69	C	50-53	D^-
78-81	B	62-65	C^-		

Note: On tests you are permitted to use a scientific calculator—a TI30 or comparable model.

Day-by-Day Schedule

Date	**Topic**	**Homework/Tests**
Tues Aug 29	One-variable unconstrained case	
Thurs Aug 31	Examples; setting $\nabla f = 0$	
Tues Sept 5	Taylor's Theorem; Hessian matrix	
Thurs Sept 7	classifying matrices	Homework 1 due
Tues Sept 12	second deriv test	
Thurs Sept 14	saddle pts; coercivity	Homework 2 due
Tues Sept 19	examples; convex functions	
Thurs Sept 21	Gradient inequality	Homework 3 due
Tues Sept 26		Test 1
Thurs Sept 28	Identifying convex functions	
Tues Oct 3	AGM inequality	Homework 4 due
Thurs Oct 5	AGM; least squares	
Tues Oct 10	Nearest pt; min. norm	Homework 5 due
Thurs Oct 12	Orthogonal complements	
Tues Oct 17	Newton's method	Homework 6 due
Thurs Oct 19	Gradient method	
Tues Oct 24		Test 2
Thurs Oct 26	KKT examples	
Tues Oct 31	KKT examples	
Thurs Nov 2	KKT proof	Homework 7 due
Tues Nov 7	Lagrangian sufficiency	
Thurs Nov 9	Extreme points; LP intro	Homework 8 due
Tues Nov 14	Simplex method for LP	
Thurs Nov 16	Two-phase method	Homework 9 due
Tues Nov 21		Test 3
Tues Nov 28	Wolfe's method for QP	
Thurs Nov 30	Duality; dual simplex method	Homework 10 due
Tues Dec 5	Duality for various LP models	
Thurs Dec 7	KKT & duality; strong duality	Homework 11 due
Thurs Dec 14		Final Exam 8:00 AM

MTH433/533: Applied Linear Algebra, FALL 2023 Syllabus

1. Basic Stuff

Instructor: Caleb Eckhardt
Contact Info: The best way to contact me is via email: `eckharc@miamioh.edu`.
Office/Hours: Bachelor 231. 11-12 on MWF. I am free many other times, just send me an email, talk to me before or after class or drop by my office.

2. Course materials

Required, free text: The required text is *Applied Linear Algebra 2nd Edition* by Olver and Shakiban. This book can be **freely downloaded**[1] from the Miami University library. I also placed a pdf copy in the 'Files' section of our Canvas course.

Required, free software: The applications we learn in this course are highly computational. We will not do those computations by hand. We will use Jupyter notebooks that use the programming language Python. We will mainly use the packages numpy and pandas. **No previous experience with any programming language is necessary or assumed.** See our Canvas site for installation options for Jupyter. If you're reading this before the first day of class I will talk about all of this extensively on the first day.

3. Detailed Course Description

I assume that you have (i) taken an introductory linear algebra course (like MTH 222) and (ii) forgotten a lot of it.[2] This is actually kind of a good thing–as we review it provides an opportunity to learn all of the relevant Python. Our syllabus is loosely centered around three main applications each of which have subapplications. We might stray somewhat from the following plan but this is more-or-less what I expect to cover

(1) **Review 1:** Solving systems of linear equations with Gaussian elimination, matrix operations; Sections 1.1-1.6
(2) LU and LDV factorizations; Chapter 1
(3) **Review 2:** Subspaces, span, linear independence, basis, dimension, column and null space, range and kernel. Chapter 2
(4) **Application 1; Least squares and data fitting**
    (a) Inner product basics; Sections 3.1-3.2
    (b) Positive (semi)definite matrices and tests for positivity; Sections 3.4-3.5

[1] There are many Springer books available for free download from Miami libraries!

[2] This is common, it usually takes a second or third in-depth exposure to linear algebra (or really anything technical) for the ideas to click.

(c) Orthogonality, orthonormal bases, projections, QR factorization; Sections 4.1-4.4
(d) Solution of least squares problems, Linear regression; Sections 5.2-5.4
(e) Data fitting and interpolation; Sections 4.5, 5.5

(5) **Application 2; Image compression, data retrieval, statistical data analysis**
(a) **Review 3:** Eigenvalue/vector review; Sections 8.2-8.5
(b) Singular values and the SVD; Sections 8.7
(c) The SVD in image compression
(d) The SVD for dimensionality reduction in data analysis (Principal Component Analysis); Section 8.8
(e) The SVD for smart data retrieval (Latent Semantic Indexing); Outside sources

(6) **Application 3; Markov chains, Perron-Frobenius eigenvectors and ranking**
(a) Perron-Frobenius eigenvectors/eigenvalues, stationary vectors for Markov chains; Section 9.3 and outside sources
(b) Ranking via Perron-Frobenius (Google PageRank, Uneven sporting competition, etc.)
(c) (How eigenvalues are *actually* calculated/estimated) Numerical estimation of eigenvalues and eigenvectors; Section 9.5

4. Evaluation:

4.1. **Homework.** Homework will comprise a large portion of your grade. A lot of homework will be done in a Jupyter notebook that you upload to Canvas. I *may* also assign some paper-and-pencil exercises to make sure you have a solid conceptual understanding of the material. Working with each other to discuss the problems is fine, but you must complete your own work. Of course, talk to me at any time about the homework.

4.2. **Projects:** We will have two projects during the semester–one around the midterm and one at the end of the semester which will be your final exam. These will be very very long homework assignments. Much more information will be given during the course.

4.3. **Quizzes.** We will have (about) 5-6 quizzes during the semester. Each will take the entire lecture period. Roughly once every 2 weeks and skipping those weeks when projects are due. You will be given at least a week notice before each quiz.

4.4. **Grade breakdown:** Your final grade will be calculated as follows

Homework:		45%
Projects:	2 @ 17.5% each =	35%
Quizzes:		20%

I will use the standard 60/70/80/90 to D-/C-/B-/A- scale.

MTH435/535 A

Instructor: Dr. Anna Ghazaryan

Email: *ghazarar@miamioh.edu*

Class: Tue and Th 1:15 - 2:35 pm, BAC 219

Office Hours: Tue and Th 12:15 - 1:15 pm, BAC122A, and by appointment in person and by zoom

Textbook: *Mathematical Modeling, by K. K. Tung. We will us 2-3 chapters of the chapters from the book, but not all. You also can choose a topic for your final presentation from the book, unless you suggest your own topic. Used copies of the textbook are very inexpensive (under 20$). Any edition will do, no disks/supplements are required. If the price is prohibitive, let me know.*

Grades: Your grade will be based on scores for several assigned projects and a number of smaller assignments. Throughout the semester you also will be working on one if the topics suggested to the class that will result in the final presentation.

The form of the submission of the projects will be announced for each project and can be either in the form of written technical report or a presentation. You will be working on the projects and assignments in and outside of class time, in groups or individually.

The grade distribution is standard. A range: 90% - 100%; B range: 80% - 89%; C range: 70% - 79%; D range: 60% - 69%; F: 59% and less.

Attendance: A lot of the work for this course will be done is small groups during the class-time. You are allowed to miss one class without an explanation and a penalty. After that missing a class without an excuse will result in a 3% grade deduction.

Academic Integrity Statement: Students are expected to follow university guidelines - http://blogs.miamioh.edu/miamipolicies/?p=1994. Please read carefully.

MATH 438/538, Theory & Applications of Graphs Fall 2023

Dr. Dan Pritikin
289 Bachelor Hall
Office: 529-5842

Cell: 461-4118
Mailbox: In 123 BAC
email: pritikd@miamioh.edu

Office Hours
On Zoom! T 8:30 p.m. – 9:30 (longer before exams)
In person: I teach another class until 9:45, MWF, and will hold office hours in BAC 106 once done with that.
Also in BAC 106, 11:30-12:15 MWF
Also in BAC 106, MW 3:30-4:30
(**office hours also by appointment**)

I reserve the right to adjust the syllabus, particularly if Covid conditions make a comeback. : (

Topics: The textbook is "packed" with material, a small fraction of which we can cover. Even from a single chapter section, often we cover only a fraction. Extra supplements will be made available for more coverage of applications/algorithms, since the book doesn't emphasize those. Expect to cover much of Ch. 1, selected parts of Ch. 2,3,4, and only a little bit of Ch. 5, and not much of anything further.

Text: Douglas B. West's Introduction to Graph Theory (second edition)

Estimated Schedule of Exams and Quizzes (but likely **none** of these will change):

Date		**Points Worth**
W SEP 20 EXAM#1	Exams (80 points each, with ½ drop)	**200**
W OCT 18 EXAM#2	Final Exam, 2 hrs.	**120**
W NOV 15 EXAM#3	Homework	**180**
F DEC 15 FINAL 10:15-12:15		
(Final's location in BAC 114)	TOTAL	**500**

All graphing calculators and calculators that perform symbolic algebraic manipulations (CAS) are disallowed on exams, as are devices that can access the internet. Ordinary and scientific calculators are otherwise allowed.

Advising: NOT SURE IF THIS IS THE RIGHT LEVEL COURSE FOR YOU? See Laura Anderson in 122C Bachelor (andersL@miamioh.edu 9-2185), the Chief Departmental Adviser for Math.

Do you understand the policies at M.U. concerning dropping a course? Except in certain medical circumstances, petitions to drop a course later than an official deadline are typically denied. So, pay attention to your progress and to the deadlines for dropping.
Below are some of the deadlines, to my knowledge. It is each student's responsibility to check these.
F, Sep a: last day to add a class
F, Sep 15: last day to drop with no grade markings
M, Oct 30: last day to drop with a W (no grade, but designated as having withdrawn)
This semester there are no classes on Monday, Sep 4 (Labor Day), Friday Oct 13 (Fall Break), and WRF Nov 22,23,24 (Thanksgiving Break).

Trying to add a course or change sections? For MTH classes, do not bother instructors with individual requests… instead use the ROR system (Registration Override) to make requests.
https://miamioh.edu/cas/academics/advising/at-miami/ror.html

This course has lots of proof content, so we need to work through many proof practice problems in class in order to get used to the nature and quirks of proof techniques and attitudes specific to graph theory. I'll also introduce applications and sometimes algorithms, both because they are useful and interesting, but also because they provide some relief from the typical proof-heavy nature of the textbook. The procedures and notation for work shown for following graph algorithms will NOT be in the book, so be sure to attend regularly so as to not miss out on what kind of work to show on such straightforward problems. There will be some supplementary videos, and there will be an updated set of notes.

In general, in this course it is not enough to simply read the textbook… students should be practicing extra problems, even when they are not due, and read the various sample solutions and notes that I shall provide and post at the course's Canvas site.

Grades: A: $\geq$ 92%, A-: 90%, B+: 88%, B: 82%, B-: 80%, C+: 78%, C: 72%, C-: 70%, D+: 68%, D: 60%. Some exams or homework sets may get their scores 'increased' in the sense that you will have what I'll call a 'raw score' based on points earned, and then (the score that counts) an 'adjusted score' after compensating for a difficult set of problems or a difficult exam. Such raw scores will never get lowered.

"Adjusted scores": Proof problems in graph theory can take lots of time, even for students who are good at it. Even for homework (as opposed to exams), some problems will have low percentages associated. So, there won't really be a percentage system concerning 'raw scores', just for 'adjusted scores'! I can predict for you already, for instance, that on the final exam, the minimum A will be for a raw score of roughly 75% credit (adjusted to 92%), the minimum B being for roughly 60% (adjusted to 82%), and the minimum C being roughly 40% (adjusted to 72%). Scores on Exams 1,2,3 won't likely need to be adjusted so drastically.

Graduate Students: A few class members are taking MTH 538, not MTH 438, for graduate credit. Students in MTH 438 are not in competition with students in MTH 538. In MTH 438, "Adjusted scores" for graded work will be based on scores and my expectations for just the MTH 438 students.
The "adjustments" will be essentially the same for graduate students, except…
*I expect better, clearer, more precise explanation and notation from graduate students, so my grading standards are slightly higher for them.
*Some problems will be for graduate students only, and those problems will have separate "adjustments" for them.
*Some exams may be designated for graduate students only, but very few.

Partially dropping a midterm exam: On whichever of Exams #1,2,3 you earn the least adjusted score, that exam score will (at the end of the term) get counted as if out of only 40 points, not 80, where your effective score will be reduced to half of your adjusted score. For instance, if your lowest adjusted score is 46 out of 80, then at the end of the term that exam will count instead as a score of 23 out of 40. So, no one poor score on Exams #1,2,3 will totally ruin your course grade.

To find Dr. Dan? Sometimes a useful way to track down where I am, even during office hours, is by checking the "Dial-A-Dan" thingy on my office door, but you never know when some wise-guy has turned the dial! Room BAC 106 (near large lecture rooms 101, 102) has lots of board space and seating available, and is near the classroom, so that will serve effectively as my office, except for turning in homework, you can slide it under my BAC 289 office door, not the 106 door.

Canvas: At the course's Canvas site I'll post lots of information. The Files section will contain copies of this syllabus, solutions to exams and homework, and occasional class handouts.

The Homepage will list recent things to keep up with, and what to be prepared with for keeping up with each class session, etc. (so the Homepage serves as a 'to-do' list). Some videos will be posted, maybe at the Media Gallery tab, maybe via links.

Review Sessions: Before each exam (including the Final Exam), I'll hold a review session on Zoom. Such sessions will be recorded, so that students can later access the videos for them.

SDS Accommodations: Please discuss / work out any such accommodations (extended exam time, etc.) with me during the first week of class. Some students think that it's a good idea to wait and see whether accommodations will matter in a particular class, but then when a problem develops it is often too late to make proper arrangements!

As an instructor, I have a duty to report. This means I am required to promptly report to the Deputy Title IX Coordinator (titleix@miamioh.edu or 513-529-1870) any information a student shares with me regarding harassment, discrimination, sexual misconduct and interpersonal violence, or retaliation. **A report does not initiate an investigation. It engages a discussion of your resources, supportive measures, and options available.** If students want to speak with someone confidentially, they can speak with Student Counseling Services, Student Health Services, and an advocate with Women Helping Women.

Speaking with a confidential resource person does not preclude students from making a formal report to the University if and when they are ready.
https://miamioh.edu/diversity-inclusion/programs-resources/report-incident/index.html

For more information, please visit https://miamioh.edu/campus-safety/sexual-assault/ and https://www.miamioh.edu/diversity-inclusion/oeeo/index.html.

Make-up Exams: Be prepared with verification of your legitimate difficulty. Expect that you will be given different questions to answer than those from the regularly scheduled exam, and that part or all of such an exam might turn out to be oral (not written), with you writing some on a chalkboard.

The set of M.U. Undergraduate Student Policies at
https://miamioh.edu//policy-library/students/undergraduate/index.html
has detailed information concerning attendance and academic conduct and disabilities, but I'll comment some on these topics.

Attendance: I do not make attendance a part of the grading system. (Then again, if you are not there on quiz days, your grade will surely suffer. And if you miss lots of class, you'll miss out on how we are solving problems and what kinds of work I require, so again your grade will likely suffer.) Instead of incorporating attendance as part of student grades, **I reserve the right to drop a student from the course in cases of abuse, with one warning given first so that such students have a chance to correct their attendance problem**. MU policy ALREADY requires that "Every student is expected to attend every class session for which the student is duly registered", and instructors are indeed allowed to drop students for very poor attendance, so there is never any excuse for a poor attendance record.

Academic Conduct: I'm pretty flexible about this during lecture/discussion time, so long as students are not disrupting the lecture or discussion. For instance, if you need to use the restroom or need to leave class early, then don't ask, just get up and go with a minimum of disturbance. Eating or drinking during class is not a problem. If on rare occasions you end up coming to class late, just quietly seat yourself. If you know in advance that you need to leave particularly early, then sit near the door, and/or let me know just before class. If you dance atop one of the student desks, or throw food at other students, consider yourself too disruptive (no matter how exquisite the dance or the food). Leave cellular phones off. Don't be so noisy that others cannot hear or so that I get distracted… I might require you to leave the classroom for the rest of the period in some rare such cases.

Exam times are no-nonsense times in this class. On exam days,
1. If you wear a hat, don't wear it so that its brim obscures your face.
2. Don't even bring out an electronic device if it isn't an approved one. Don't share calculators unless I approve it on a case-by-case basis.
3. None of your notes are available on exams and quizzes, but on occasion there may be some formulas already given to you on the front board or on the exam or quiz pages.
4. When time is called, then STOP WORKING! Turn in your work. If I turn off the classroom lights at the end of an exam or quiz, that's to be understood as a very clear indication that you are to stop working! Failure to stop working can result in credit reduction or me not accepting your exam for a grade, in other words, zero credit.
5. If you think there is something wrong with some problem's instructions or statement, please ask about it! Maybe there is an error that I can fix in time for everyone else, or maybe I can straighten you out if the instructions are correct. At worst, I might have to tell you that I cannot comment or help with your concern, because the problem is correct and it is intended as part of your job to understand those particular directions. To ask, either walk up to me and ask, or raise your hand for me to come around. Occasionally, I award a point of extra credit for the first student to point out an important (not minor) error or typo on an exam.
6. I reserve the right to make a student move to a different seat during an exam. If your eyes are straying too far from your own work paper, don't be surprised if I make you move. I might even make you move because I believe that other students are trying to look at your paper!
7. For scrap paper on exams, use only the scrap paper that I provide as available.
8. If you are looking in the direction of another student's written work, that constitutes academic dishonesty in this section. I do not want to hear students tell me that they weren't cheating because they weren't reading or using what another student wrote…. Keep your eyes generally on your paper, and don't look in the direction of another student's paper, so as to not violate M.U. policy.

Math 439/539 (Combinatorial Mathematics) Course Plan - Dr. Zevi Miller

Texts: Applied Combinatorics (second edition) by Roberts and Tesman for certain topics, class notes for others.

I. Outline of Topics

A. Basic definitions, introduction (parts of 1.1,1.2)

B. Basics of counting: Product rule, sum rule, permutations, r-permutations, combinations, a little on Pascal's triangle.

C. Occupancy Problems, multinomial coefficients

D. Generating functions, including exponential generating functions

E. Recurrence relations

F. Inclusion and Exclusion Principle and applications

G. Polya counting theory

H. Other topics if time allows

II. Grades, course activities.

A. There will be roughly 7-8 homework assignments

B. There will be 3 in-class exams; two midsemesters and a final.

C. Homework will be 60% and exams 40% of your final grade.

D. I will grade on a class curve; that is, on your relative standing in the class.

III. Office hours, telephone, etc.

- Office is 288 Bachelor Hall.
- Hours are Monday through Friday 1:30-2:30 pm. If you wish to see me but cannot make it during scheduled hours, then you can make an appointment with me for another time.
- Telephone numbers - Office 9-3520
- My e-mail is millerz@miamioh.edu

FinMATH-SP22

Jump to Today ✎ Edit

Course:

- Topics in Mathematical Finance (MTH 447/547 A)
- Day(s): MWF 4:05 - 5:20 pm

Instructor:

- Dr. Ebrahim Sarabi
- E-m@il: sarabim@miamioh.edu (mailto:sarabim@miamioh.edu) (Please send your questions or requests directly to my email by using your miami account and do not use Canvas to communicate with me.)
- Office: 211 BAC

Office Hours:

I will hold the following office hours via Zoom throughout the semester:

- Tuesday from 5:30-6:30 pm
- Friday from 11:30-12:30 pm
- Wednesday 1:30-2:30 pm
- If you can not attend my office hours and would like to meet to discuss your questions, you send me an email with times on which you can meet.

  You can reserve a time slot in my google calendar using the following link :

https://calendar.google.com/calendar/u/0/selfsched?sstoken=UU1DUmxiNjRzVWt5fGRlZmF1bHR8NzIxMzFjMjJhY2U3ODI5NmVjYmY3NjczZDVhNGMzMzM (https://calendar.google.com/calendar/u/0/selfsched?sstoken=UU1DUmxiNjRzVWt5fGRlZmF1bHR8NzIxMzFjMjJhY2U3ODI5NmVjYmY3NjczZDVhNGMzMzM)

To join me over the zoom for office hours, you can use the link below in this semester:

https://miamioh.zoom.us/j/87308728714?pwd=WUdlMThTUUJxZzhXc2J2MWRPcks2Zz09 (https://miamioh.zoom.us/j/87308728714?pwd=WUdlMThTUUJxZzhXc2J2MWRPcks2Zz09)

(https://miamioh.zoom.us/j/83083403630?pwd=RXhnYklwOWs2L05oM3FlWEsxdkx0dz09) Please note that office hours must be reserved at least half an hour in advance. If you think your questions will take more than 15 minutes to be discussed, I advise to reserve two time slots.

Text: I will be following loosely the first four chapters of the book below for this course:

Financial Mathematics: A Comprehensive Treatment

(https://www.amazon.com/Financial-Mathematics-Comprehensive-Treatment-Textbooks-ebook-dp-B07JNJ4H3N/dp/B07JNJ4H3N/ref=mt_other?_encoding=UTF8&me=&qid=)

Buying the book is not required for the course since I will post my notes and all homework problems from the book on canvas in case you want to work on them. For those who want to study more about probability, Chapters 2 and 3 of the following book can be useful:

An Undergraduate Introduction to Financial Mathematics

Course Outline: The content of MTH 447/547 includes

- Review some important concepts from probability (weeks 1-2). The topics include an introduction to the concept of probability functions, random variables, Bernoulli and binomial random variables, independent random variables, normal distribution.
- Risk-free Assets (week 3). The topics include simple interest, periodic compounding interest, continuous compounding interest, equivalent rates, time value of money, annuity, and bonds.
- Basic price models for risky assets (week 4): The topics include binomial model, binomial tree model, and log-normal pricing model.
- An introduction to the concept of arbitrage and the law of one price (week 5). The topics include the concept of arbitrage and the proof of the law of one price, arbitrage in single-period binomial model, and pricing with replication
- Risk-neutral probability and risk-neutral log-normal model (week 6)
- Forward contracts (week 7)
- European and American Options and their properties (week 8)
- Option pricing (week 9)
- Black-Scholes-Merton formula for European options, Black-Scholes equations (weeks 10-11)
- Risk and Portfolio management (weeks 12-14)
- Value at risk (if time allows)

Homework:

There will be a bi-weekly homework in this course. You are allowed to discuss homework problems with other students in the class, but you must write up solutions on your own. If you collaborate with another student, you need to state that on your submitted work. If you copy solutions to homework problems from **chegg.com** or similar websites, I will file a report of academic dishonesty.

I will post a solution for each homework. It is your responsibility to read them carefully and to make sure you fully understand each of homework problems. They are important for all exams given in this course.

Project:

In this project, you are going to estimate the price of European options and to plot their Black-Scholes price function. You can work in a group consisting at most 3 students if you prefer to do so. You can program in any language you choose. You must include your code when you turn in the assignment. Make sure your code is neat and well annotated. The deadline for submitting your project is May 06 at 11:59 pm. If you want to use Python to write your codes, this **file** can help you.

Tests:

- There will be two in-class exams during the semester. The dates for the tests are as follows:

  Exam I: Mar. 04

  Exam II: April 22

Missing exams:

Under no circumstances may an exam be taken at any time **sooner** than the period for which it is scheduled. I will give a make-up exam/quiz if you miss one due to **health related issues**. However, you should provide an official document that shows your absent during an exam or a quiz was justified. If you need to miss a quiz or an exam, **you must inform me** before that quiz or exam. A request, received after an exam or a quiz, will **not** be granted.

Calculator Policy:

You are allowed to use a scientific calculator on exams. The use of graphing calculators or calculators with symbolic manipulation capabilities is not allowed under any circumstances.

Grade Distribution:

- Exams (I) and (II) 40% (each 20%)
- Homework 30%
- Extra credit: Project 5%
- Final Exam 30%

Final Exam:

- The final exam will be given on our regular classroom on May 11 from 3:00-5:00 pm.

Letter Grade Distribution:

>= 99.00	A+	77.00 - 79.99	C+
93.00 - 98.99	A	73.00 - 76.99	C
90.00 - 92.99	A-	70.00 - 72.99	C-

87.00 - 89.99	B+	67.00 - 69.99	D+
83.00 - 86.99	B	63.00 - 66.99	D
80.00 - 82.99	B-	60.00 - 62.99	D-

Course Policies:

- Face masks are required during all class meetings to promote the health and safety of all university members. There may be university approved exceptions to this requirement. Students who cannot wear a facial covering due to medical or disability-related reasons should contact the **Miller Center for Student Disability Services (http://www.miamioh.edu/sds)** at **sds@miamioh.edu (mailto:sds@miamioh.edu)** or **Regional Student Disability Services (https://www.miamioh.edu/regionals/student-life/regional-disability-services/index.html)** at **regionalsds@miamioh.edu (mailto:regionalsds@miamioh.edu)** .
- If a student comes to class without a face mask or refuses to maintain physical distancing, I will first ask the student to comply (e.g. put on a face mask). If the student refuses, I will ask the student to leave the classroom and inform the student that the class will not proceed until the student either complies or leaves. If the student continues to refuse, I will dismiss the class and immediately report the student to the Office of Community Standards.
- Attendance is not a part of your grade but is expected. Miami University policy requires that “Every student is expected to attend every class session for which the student is duly registered.”

Student Disability:

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services. If you are (or think you might be) in this category, please talk to me as soon as possible so that I can work with you to accommodate your needs appropriately.

Academic Integrity:

Academic dishonesty is defined as any activity that compromises the academic integrity of the institution or subverts the educational process. Examples of academic dishonesty in this course include:

1. looking at or using information from another student’s work during an exam;
2. receiving assistance from **chegg.com** or similar websites for an exam, or an assignment;
3. completing or participating in the completion of any portion of an academic assignment for another student to submit as his or her own work, including taking a quiz or an examination for another student;
4. providing assistance, information, or materials to another student in a manner not authorized by the instructor;
5. using your notes during an exam or a quiz;

Academic dishonesty by a student will not be tolerated and will be treated in accordance with the policy of Miami University.

Important Dates:

- Last day to drop without a grade: Feb 10
- Last day to drop with a grade of “W”: Apr 4
- Holidays (no class): Spring break (Mar. 21-27)

Course Summary:

Date	Details	Due
Sat Feb 12, 2022	HW1 (https://miamioh.instructure.com/courses/160636/assignments/2029358)	due by 11:59pm

MTH451/551: SPRING 2021 SYLLABUS

1. Basic Stuff

Instructor: Caleb Eckhardt
Meetings: Our classes will meet in BAC102. Some of you will attend these lectures via zoom. See Miami's zoom page for information on using zoom

`https://miamioh.edu/zoom`

If you are attending remotely, then a reasonable internet connection with a webcam and microphone is required to participate in this course. See Section 3 for the setup of our zoom courses.
Website: Canvas
Contact Info: `eckharc@miamioh.edu`.
Office Hours: Office hours will be 1-3 on Tuesday and Thursday. These will be held via zoom. If these times do not work, email me and we can set up another time. I will also stay around class afterwards if you have any questions.

2. Academic Integrity

I take cases of academic dishonesty very seriously and report all cases of suspected academic dishonesty. Please see the Student Handbook Section I.5 for Miami University's policies governing academic dishonesty.

3. Class setup

If you attend in person then this course will be like any other, except I will write on a tablet and project it instead of writing on the board. If you attend via zoom, then...

- The zoom link for each class will be on the calendar in Canvas.
- **Do not hesitate to ask questions.** You can either type your question in chat or turn on your microphone and ask it.
- I will treat my tablet like the blackboard. I will make pdfs of everything I write on the tablet and put the pdfs on Canvas after each lecture.
- The lectures are live. Attending each live lecture, asking questions and doing the in-class exercises are the best way to keep current in the course. I will also record each lecture–the video will be my tablet and the audio will be what happens in lecture–and put them on Canvas.

4. Text/Software/Topics

Required Text: Our main text is *Complex Analysis with Applications* by Asmar and Grafakos. It is a bit lacking[1] in its discussion of the Fourier transforms so I will provide resources when we get to those topics at the end of the semester. There is an electronic solutions manual for 1/4 of the exercises. There is a link on this page

`https://www.springer.com/gp/book/9783319940625`

I have also put the solutions manual in our 'Files' section of the Canvas course. We *plan* to cover the following topics.

Chapter 1: All Sections
Chapter 2: All Sections
Chapter 3: 3.1-3.4,3.8
Chapter 4: 4.1-4.5
Chapter 5: 5.1 and a selection of cool examples from 5.2-5.5
Chapter 6: All Sections. Probably extra material on Fourier series and discrete Fourier transform.
Chapter 7: 7.2

MATLAB: Complex analysis is very geometric and many of the applications are heavily computational. Therefore since you all have access to a free[2] copy of MATLAB I suggest you download and install your copy:

`https://www.miamioh.edu/matlab`

MATLAB will be helpful when we discuss mapping properties of complex functions and the discrete Fourier transform.

5. Evaluation

5.1. **Homework.** Homework will be assigned frequently and posted on Canvas. I will collect some of the homework assignments and grade selected problems.

5.2. **Long quizzes: All quizzes are open book.** Every two weeks we will have a 30-40 minute quiz for a total of 7 quizzes. The best way to prepare for these quizzes is to do the homework assignments. If you attend lecture normally, then quizzes will be in lecture. Otherwise you will take the quizzes with Proctorio. The in-class quizzes and Proctorio quizzes will be different. If you don't attend lectures but want to take quizzes/exams in class that is no problem just let me know.

[1] There doesn't seem to be an undergraduate text that treats the basics of complex analysis **and** the classical/discrete Fourier transorms....

[2] paid for with your tuition/fees

Make-up Policy: Every one will have **one** excused quiz absence. You do not need to clear your excuse with me or even notify me that you can not attend a quiz. I will implement this policy by dropping everyone's lowest quiz score at the end of the semester.

5.3. **Exams. Both exams are open book.** Our exam schedule (also on Canvas) is:

- Exam 1 on Friday, March 12
- Exam 2 on Wednesday, May 12 at 10:15 am (During Finals week)

5.4. **Uploading Files/Taking Quizzes and Exams (Remote students only):**

(1) You will take pdf **scans** of your work with a phone and upload them via Canvas.
(2) Use an app like Genius Scan or CamScanner to take scans of your work and produce one single pdf file.
(3) Make sure you have good, readable scans before you upload them. **If I can not read your scans I can only assign you a 0.**
(4) **In case of Emergency:** If there is a problem with any aspect of uploading the quiz, then email the quiz to me. **Please only use this as a last resort.**
(5) **If you have any questions during the quiz or exam:** I will have chat open on our Canvas page. Ask your questions there.

5.5. **Using Proctorio on Quizzes/Exams (Remote students only):** Miami typically uses Proctorio on Quizzes/Exams and we will do the same.

(1) To prepare for quizzes and exams, please download and install Google Chrome.
(2) Then within Chrome, install the Proctorio extension

5.5.1. *Make-up Policy.* If you miss an exam you will receive a 0 for that exam. The only exception is if you have a valid excuse, such as a serious illness or a serious emergency. In this case, you must inform me before the exam, or if this is physically impossible, as soon as possible afterwards. **If you have a valid excuse**, then we will work out a make-up.

6. Grade Breakdown

Exams:	2 @ 20% each = 40%
Quizzes:	45%
Homework:	15%

There may be a slight curve in this course, but you should assume there will not be and that I will use the standard 60/70/80/90 to D-/C-/B-/A- scale.

SYLLABUS

MTH 453/553: Numerical Analysis

Section A, Mon., Wed., Fri., 8:55am-9:50am, BAC 118.

Instructor: Alin Pogan
Office: 220 BAC
Office Hours: Online, by appointment, 1:15 p.m-2:15 p.m, Mon., Wed., Fri.
Office Phone: 513-529-2184
E-Mail: pogana@miamioh.edu

Prerequisites: A grade of C- or better in MTH 222 and MTH 252.

Course Description: This course provides an introduction to the design, analysis, and implementation of the numerical techniques used to solve problems from mathematics, engineering, and science. The course will roughly follow the text; in addition, material from other sources will be provided in the lectures notes.

Textbook:

- *Elementary Numerical Analysis* by K. Atkinson and W. Han, 3rd Edition, John Wiley & Sons, 2004
- Course materials from the author, including Lecture Notes, Matlab tutorial, Matlab programs: http://homepage.math.uiowa.edu/ atkinson/ena_master.html

Language: MATLAB. For the computer implementations, we will be using Matlab. Download MATLAB on your personal computer using the IT Services software download page:

https://software.muohio.edu/store/catalog/19/matlab_mathworks

Homeworks: There will be weekly homework assignments. The homework will be collected once every three weeks on Wednesday. You can work on the homework with other students if you find it helpful, but you must write up the "final product" by yourself, in your own words.

Grading: Midterm Exams: $2 \times 15\%$, Final exam: 30% , Homework: 25% points, Project: 15%.

Midterm Exams:

- **Exam 1: March 5, in class**
- **Exam 2: April 16, in class**

Final Exam: Wednesday, May 12, 2021: 8:00 a.m-10:00 a.m.

Missed exams: The instructor must be notified **at least 2 hours prior to the exam** if a student is unable to take an exam. Documentation for the absence must be provided **in writing** (note from a physician, etc.) before a makeup exam is given.

Attendance: The class will be conducted under the presumption that you have attended all lectures and recitation sessions. In particular, you are responsible for all the announcements made in class.

Other important dates:

- February 11: last day to drop with no grade markings
- April 1: last day to drop with a W (no grade, but designated as having withdrawn)
- Wellness days - no classes meet : February 17, March 9, March 25, April 12, May 7.

Course Format: We will have synchronous Zoom meetings during our usual meeting time. Here is the information to join the class on Zoom:

https://miamioh.zoom.us/j/85258261239?pwd=bU5KQmVlSFZrN2dtd0liaTJKSGY3UT09

Meeting ID: 852 5826 1239

Passcode: 181320

Proctorio Testing: In this course, we will use Proctorio for proctoring of online assessments. You will need a computer with audio and webcam. A mobile device is not sufficient to complete assessments. The purpose of online proctoring is to create a testing environment similar to that of a face-to-face class, in which the presence of a proctor observing student behavior often deters academic dishonesty. Academic dishonesty in online courses carries the same penalties as those in face-to-face classes. Potential cases of academic dishonesty will be submitted and handled through the procedures outlined in the Miami University Academic Integrity Policy. Such cases can be for (but is not limited to): not following the items outlined on the testing expectations page, any questionable/suspicious behavior on the exam, suspicious behavior from the Proctorio recording. Proctorio

requires that you use Google Chrome as your browser. Please download and install Chrome as well as install the Proctorio Extension for Chrome (you can simply Google it to find it). The Proctorio proctoring program will record all students AND will record students desktops when completing exams. This program will flag suspicious behaviors, and a report will be generated for the instructor. It also identifies your location based on your IP address. During the exam, you may be directed to show the environment in which the test is being taken; if you have concerns about this, please arrange to take your test in a library study room or similar location where you have privacy.

Grading complaints: If you strongly believe that a problem on a homework assignment, quiz or exam has been graded incorrectly or that your score has been recorded incorrectly, you must bring this to my attention immediately, in the same day that you have received this quiz or exam back from me . Grading complaints not initiated within this time period will not be considered.

Attendance: The class will be conducted under the presumption that you have attended all lectures. In particular, you are responsible for all the announcements made in class. MU policy **already** requires that Every student is expected to attend every class session for which the student is duly registered, so there is never any excuse for a poor attendance record.

Makeup quizzes: If you tell me your documentable good reason (like a Miami U. sanctioned event) well in advance, Make-ups might well be available, but otherwise not. If you find on a quiz day that you are too ill to take the quiz, then you are probably too ill to come to class. That is part of why you get to drop TWO quiz scores. Since you never know when an emergency or illness will pop up, do not squander your opportunities at quizzes.

Makeup exams: Makeup midterms are given only under exceptional circumstances (a solid, valid excuse must be presented with proof, before the date of the exam). **There will absolutely be no make-up Final exam.**

Netiquette Expectations: At Miami University there are two core principles: love and honor. Those principles should not only be applied in the face-to-face classroom environment, but in the online course space as well. Diversity has many manifestations, including diversity of thought, opinion, and values. We encourage all learners to be polite and respectful of that diversity and to refrain from inappropriate or offensive commentary. If inappropriate or offensive content is either emailed or posted on the class site, the teacher may recommend

college disciplinary action. Students guilty of academic misconduct, either directly or indirectly through participation or assistance, are subject to disciplinary action through the regular procedures of the students home institution. Learners as well as faculty should be guided by common sense and basic etiquette. Criticism should be presented in a positive light. The following are good guidelines to follow:

- Never post harassing, threatening, or embarrassing comments.
- Never post content that is harmful, abusive; racially, ethnically, or religiously offensive; vulgar; sexually explicit; or otherwise potentially offensive.
- Never post, transmit, promote, or distribute content that is known to be illegal.
- If you disagree with someone, respectfully respond to the subject, not the person.

Remember that tone can usually be detected accurately in verbal communication, but often can be misunderstood in electronic communication. Because of this phenomenon, we encourage you to err on the side of politeness.

ADA Standard and Information for Students with Disabilities: Miami University is committed to ensuring equal access to students with disabilities. Miami's Office of Student Disability Services (SDS) assists students with determining eligibility for services and accommodation planning. Miami's AccessMU provides resources and guidance toward equal opportunity for all individuals. Refer to Miami University's Accessible Technology Policy (Links to an external site.) for definitions and additional information.

Students who are entitled to disability-related academic adjustments, auxiliary aids, etc., must register with SDS to receive accommodations in university courses. Please understand that formal communication from SDS must be presented prior to the coordination of accommodations for this course. For more information, students may contact SDS at (513) 529-1541 or via email at sds@miamioh.edu.

Learning Objectives:

- Obtain a theoretical understanding of the numerical methods for some basic problems of numerical analysis, namely, how, why and when the numerical techniques can be expected to work.
- Understand the concept and origin of errors, and the need to analyze and predict computational errors.
- Develop experience in the implementation of numerical methods by using a computer.
- Develop theoretical background and knowledge for numerical methods.

Student Learning Outcomes (including outcomes required for a QL course):

- Identify the quantitative aspects of a problem arising in a real-world application. Reformulate the given numerical information using appropriate mathematical language so that a numerical method can be used to solve the problem or answer questions.
- Use methods and techniques of Numerical Analysis to solve problems arising in various areas of science and engineering.
- Use given or obtained numerical displays and/or data to analyze the numerical information and to answer relevant questions using the tools and methods of Numerical Analysis.
- Interpret the obtained results in the context of a given problem, compare various approaches to solving the problem, discuss advantages and disadvantages of the approaches, propose the most efficient method for solving a problem, and justify the choice of the method.
- Develop and implement numerical algorithms for solving a variety of mathematical problems.
- Analyze and compare numerical methods in terms of accuracy, stability, and convergence.
- Given an applied problem, choose a numerical method for its solution, solve the problem and interpret the results in the context of the given application.
- Determine the best numerical method(s) for solving a particular applied problem.

Course Syllabus

Jump to Today ✎ Edit

Partial Differential Equations, MTH 455/555 Spring 2024

About Your Instructor

Hi everyone, and welcome to MTH 455/555

My name is Anna Ghazaryan. You can call me Dr. Anna or Dr. Ghazaryan.

Here's a bit about me: I received my Ph.D. in Mathematics from The Ohio State university. Before coming to Miami University, I did my postdoctoral training at University of North Carolina at Chapel Hill and University of Kansas in Lawrence, KS.

I've taught a range of Mathematics courses. I've also led study abroad programs in Mathematics in Ireland, UK, Italy, Germany, and Spain. My research is in applied dynamical systems, partial and ordinary differential equations, and pattern formation, more particularly traveling waves. **Here is an example of my research work.** **(https://sinews.siam.org/Details-Page/front-propagation-in-a-model-for-civil-unrest)** It is an article in SIAM (Society of Applied and Industrial Mathematics) News about my recent mathematical results on spread of riots and other types of social unrest. I also recently published a book with Taylor & Frances Publishing House **"Introduction to Traveling Waves** **(https://www.taylorfrancis.com/books/mono/10.1201/9781003147619/introduction-traveling-waves-anna-ghazaryan-st%C3%A9phane-lafortune-vahagn-manukian)** ". The book is an introduction to research in this particular area for undergraduate and graduate students. The book is available as an e-book at Miami libraries. Besides work, I enjoy traveling, visiting parks and art museums, and spending time with my children and my dog Aralez.

Instructor Contact Information

- **Name**: Anna Ghazaryan
- **Email**: **ghazarare@miamioh.edu** **(mailto:ghazarare@miamioh.edu)**
- **Class Time and Place:** TR 11.40 AM - 1:00 PM - 01/29/24 To 05/17/24 - 201 Bachelor Hall.

- **Office Hours**: TR 1.00pm-2.00pm or by appointment, BAC 122A
- **Other**: The best way to reach me is by email: **ghazarar@miamioh.edu (mailto:ghazarar@miamioh.edu)**

About the Course

Textbook. You are not required to purchase a textbook. My notes will be based in part on Partial Differential Equations for Scientists and Engineers (Dover) by Stanley J. Farlow. *Other sources will also be used. I will provide slides for most of the lectures.*

Grades: The homework will be collected once every two/three weeks. You can work on the homework with other students if you find it helpful. (40%). There will be two tests (20% each), and a final project/presentation (20%). The dates for the final and tests will be announced.

The examinations and assignments for MTH555 will be, in part, different.

Grades will be distributed on the following basis: A range: 90% - 100%; B range: 80% - 89%; C range: 70% - 79%; D range: 60% - 69%; F: 59% and less. Grades with + and - are assigned

There will be make-up examinations given, if a documented excuse is provided.

The assignments and the grades will be posted on Canvas.

Prerequisites: MTH 245, (https://bulletin.miamioh.edu/search/?P=MTH%20245) MTH 246 or MTH 347 (https://bulletin.miamioh.edu/search/?P=MTH%20347), or another course in elementary differential equations, or permission of the instructor.

Course Description

Course focuses on first and second order partial differential equations (PDEs), boundary value problems and their applications. Topics include physical examples of PDEs, classification of second order linear PDEs, method of characteristics, D'Alembert's formulation, maximum principles, heat kernels, separation of variables, and Fourier series.

Course Summary:

Date	Details	Due

MIAMI UNIVERSITY

MME/MTH 495/595: Nonlinear Systems

Course Description and Objectives: Study of nonlinear dynamics of dynamical systems with an understanding of associated one-dimensional and two-dimensional flows/maps, bifurcations, phase plane dynamics, stability and control. Applications and examples from physics, biology, chemistry, and engineering will be utilized throughout the course and inference drawn based on the visualization of the results. The text and material to be covered have been selected to give student a classical background in nonlinear dynamics. Specific outcomes of this course are to enable the student to:

- Interpret and apply the concepts of nonlinear dynamics, such as fixed point, flows/maps, phase space
- Utilize the concept of bifurcations and limit cycles in nonlinear systems
- Identify and apply methods and concepts of stability analysis to nonlinear systems
- Apply the basic control methods to their associated nonlinear dynamics settings including bifurcation phenomenon
- Apply the concepts and methods of nonlinear dynamics to study nonlinear dynamical systems encountered in engineering and science.

Prerequisites: MTH 245 or MTH 347

Reference: Nonlinear Dynamics and Chaos (with Applications to Physics, Biology, Chemistry and Engineering) by Steven H. Strogatz, Preseus Publishing, MA, 2014 (ISBN: 978-0-8133-4910-7)

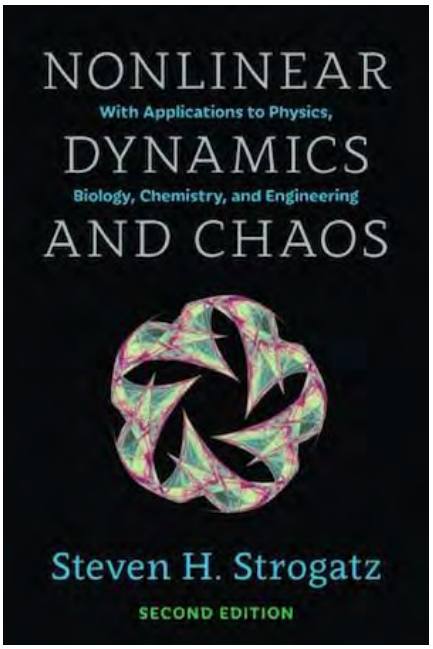
Lecture: MWF 10:05 – 11:00 AM

Instructor: Dr. James Chagdes, Assistant Professor
Office: Garland Hall, Room 56 K
Email: James.Chagdes@MiamiOH.edu

Office Hours: MWF 11:00 AM – 12:00 PM or by appointment

Grading:

Participation	5%
Homework	20%
Case Study Project	25%
Exam 1	15%
Exam 2	15%
Final Exam	20%
Total	100%



Grade Distribution:

Final grade	Course grade*	Final grade	Course grade	Final grade	Course grade
[97-100]	A+	[80-83)	B-	[63-67)	D
[93-97)	A	[77-80)	C+	[60-63)	D-
[90-93)	A-	[73-77)	C	[0-60)	F
[87-90)	B+	[70-73)	C-		
[83-87)	B	[67-70)	D+		

*The instructor reserves the right to *curve* grades as necessary.

Participation: In this course, collaboration is encouraged through the discussion forum. It is expected that students pose questions and discuss concepts associated with a given topic in these forums. For example, after each module activity, students can discuss in the forum what he/she understood from the module. They can pose any questions regarding the topics discussed in the module and pose questions related to the methodologies used to solve problems on homework assignments. Use this discussion forum regularly and you will find additional questions/answers which you may not have thought about while learning a given topic or concept by yourself. Your participation in discussion forums will be tracked and included in the class participation grade.

Homework: Each lecture will be accompanied by a set of homework problems based on the material covered. The homework assignment will be posted on Canvas at the beginning of each week and will be due on Monday of the following week. If the University has a holiday on the day a homework assignment is due, the assignment will instead be due on the next day that the University does not have a holiday. Late homework will only be accepted within 24 hours of the due date but will receive a 50% reduction in points.

Credit for each homework assignment will be given based on completeness and correctness of procedure for solving an individual problem. The completeness of work will make up 50% of the homework grade awarded if each problem is sufficiently attempted and completed. Correctness of the procedure will make up the remaining 50% of the grade awarded based on the steps taken to solve a selected problem from the assignment. The lowest one (1) homework score will be dropped from the calculation of the final grade. If more than ten (10) homework assignments are assigned, the lowest two (2) homework scores will be dropped from the calculation of the final grade.

Each homework problem should be completed on a new piece of engineering or lined paper and must include the following:

- Name: Last, First – placed in the upper left corner of the page.
- Course #: ECE/MME 495/536 Sec. # – placed in the upper center of the page.
- Assign. #: Homework # - placed in the upper right corner of the page.
- Given: All provided information, a sketch of the problem, units, and direction
- Find: Statement describing what needs to be found, designed, or performed.
- Solution: Step by step procedures and equations to find the result. Indicate answer by drawing a rectangle around it.

Case Study Project: Different science and engineering cases will be pursued throughout the semester to enable the students to apply the concepts and methods of nonlinear dynamical systems to real-world

situations. Student teams will select the topic from a set of given topics and upon approval of the instructor will conduct detailed study working in small teams. Each team will be required to conduct research, examine the original material, conduct computational studies, deduct conclusions and present their findings in a technical manner. A final written report and a short presentation will be required during the 15th week of the semester. Student teams will be highly encouraged to present and publish their reports at suitable conferences related to the subject matter.

In addition, graduate students will develop a review paper for the state-of-the-art in an applied area of nonlinear dynamics within their interest area. This could range from topics in arts, sciences, and engineering. This will be in addition to the case study project and will account for 20% of the case study grade.

Exams: There will be two (2) midterm exams and one (1) final exam at the end of the term. The midterm exams will be based on material from selected sections. The final exam will be cumulative. No additional materials (for example, class notes, old exams, and other worked out problems) will be allowed during the exams.

Exam schedules

- **Exam 1**: Friday, February 25, 2022
- **Exam 2**: Wednesday, March 30, 2022
- **Final Exam**: Wednesday, May 11, 2022

Make-up Exams: Make-up exams will not be given except in special cases arranged before the test date. Only documented extraordinary circumstances will be considered as a reason for making up exams. Examples of extraordinary circumstances are a funeral or surgery that cannot be delayed. Airline schedules, rides home, pre-existing airline reservations, etc. will not be considered as extraordinary circumstances.

Late Assignment Policy: Late assignments (with the exception of pre-lab assignments) will only be accepted within 24 hours of the due date but will receive a 50% reduction in points. Pre-lab assignments will not be accepted if turned in late.

Marking Dispute Policy: Students can request the regrade of an assignments and exams. However, grade appeals must follow the instructions below. If students do not adhere to these rules, their grade appeals will be not considered.

- On a cover page that includes your name and the date, briefly describe the injustice or complaint.
- Also on the cover page, state the exact number of points that you feel that should be added back to your score.
- Resubmit the entire original work along with the cover page within two (2) days of the return date of the original work. Since the grader will keep this, please make a photocopy for your records and for your use later in studying.

Course Materials and Class Communications: The instructor will use **Canvas** for all course materials and class communications. Students are responsible for checking their e-mails and Canvas for important announcements, handouts, homework assignments, and other course materials. Course handouts will be posted on Canvas prior to each lecture. Students are also responsible for bringing handouts and course materials.

Comments: I suggest printing out the notes and placing them in a loose-leaf binder. Also, bring blank sheets of paper to class so that you can write additional notes that I may put on the board. The notes will follow the text very closely. Please read the textbook. Working lots of problems is a good way to learn this material.

Academic Integrity: Academic Integrity is at the heart of the mission and values of Miami University and is an expectation of all students. Maintaining academic integrity is a reflection of your character and underpins your learning and understanding of the course material.

It is therefore expected that all members of CEC (faculty, staff, and students) will adhere to the highest ethical standards in all matters. Both departments endorse the Code of Ethics for Engineers proposed by the National Society of Professional Engineers (NSPE) and strongly defend the rights and responsibilities that accompany academic freedom which is at the heart of the intellectual integrity of Miami University. It is expected that students will actively conduct themselves in an ethical fashion, for example, by (i) only possessing and using materials authorized by the instructor during examinations, (ii) submitting assignments that are the student's own original work (carefully referencing sources of information), (iii) protecting the integrity of assignments by adhering to prescribed procedures, and (iv) carefully utilizing the University's educational resources of materials and equipment. Any activity that tends to compromise the academic integrity of the institution or subvert the educational process is defined as academic misconduct.

Cheating will result in not learning what you need to learn in this class. Cheating now may lead to a future of cheating and other unethical behaviors to cover up the fact that you didn't learn what you were supposed to learn. Try your best, manage your time well, ask questions, and be ethical.

Academic integrity is a partnership between me, as the instructor, and you, as the student. My role, as instructor of this course, is to facilitate learning and to provide you with clear guidelines and feedback to help you maintain your academic integrity. Your role in this course is to take responsibility for your learning and to complete all assignments in an honest manner and ask for clarification from me if you are unsure of how to do so.

Here is how the university defines acts of academic dishonesty.

- *Cheating:* using or attempting to use or possessing any aid, information, resources, or means in the completion of an academic assignment that is not explicitly permitted by the instructor or providing such assistance to another student.
- *Plagiarism:* presenting as one's own the work, the ideas, the representations, or the words of another person/source without proper attribution.
- *Fabrication:* falsification, invention, or manipulation of any information, citation, data, or method.
- *Unauthorized collaboration:* working with another individual or individuals in any phase of or in the completion of an individual academic assignment without explicit permission from the instructor to complete the work in such a manner.
- *Misrepresentation:* falsely representing oneself or one's efforts or abilities in an academic assignment
- *Gaining an unfair advantage:* completing an academic assignment through the use of information or means not available to other students or engaging in any activity that interferes with another student's ability to complete his or her academic work.

Policy on individual effort: In some instances, discussing a problem on an assignment with your classmates can be quite beneficial. However, all assignments need to reflect your (or your team's) individual effort put into their completion. If you have questions and/or difficulty with a homework problem, project assignment, etc., do not submit work that has been copied or plagiarized. Start assignments early and contact us if you have questions so we can ensure you've understood the material before we move on to new topics.

Maintaining academic integrity means being serious about your learning, being responsible for your own learning, and making good choices about what kind of student you will be. I promise to uphold my end of our academic partnership in this class, and I hope you choose to do the same.

Student Guide to Academic Integrity

Suspected Dishonesty: Any suspected instances of academic dishonesty will be handled under Miami University's Academic Integrity policy found in Part 1, Chapter 5 of the Student Handbook (http://miamioh.edu/policy-library/students/undergraduate/academic-regulations/academic-integrity.html). It is a student's responsibility to read this policy. Please note that lack of knowledge or understanding of the appropriate academic conduct is not an excuse for committing academic dishonesty.

Students who are found responsible for committing academic dishonesty will receive a sanction that ranges from a zero on the assignment to an F in the course, which could contain the AD transcript notation. **Students who are found responsible for committing two acts of dishonesty (academic or Code of Student Conduct section 102 (Dishonesty)) automatically will be suspended from Miami University.**

University Drop/Withdrawal Policy: A student may ***drop*** from a full-term course without a grade through Thursday, February 10, 2022. A student may ***withdraw*** from a full-term course through Monday, April 4, 2022. A grade of "W" will appear on the student's official record; a "W" is not calculated in the student's grade point average.

Special Accommodations: If you are a student with a disability and feel that you may need a reasonable accommodation to fulfill the essential functions of the course that are listed in this syllabus, students with physical, medical and/or psychiatric disabilities or students with AD(H)D and/or specific learning disabilities are encouraged to contact Student Disability Services at 529-1541 (V/TTY). Students who need special accommodations are encouraged to meet with the instructor early in the semester to make any necessary arrangements to enable the student to fully participate in the class.

Attendance: No student, faculty, staff member who is ill or has been in close contact with an individual who has tested positive for COVID-19 should attend class or come to campus. Instructors will, without prejudice, provide students with reasonable opportunities for completing missed work. However, students are ultimately responsible for material covered in class, regardless of whether the student is absent or present. If your absence is of significant duration or severity, as your instructor, I will advise you about other options that might be available including assigning an incomplete grade or requesting a medical withdrawal.

Facial Coverings: Facial coverings are required during all class meetings to promote the health and safety of all university members. There may be university approved exceptions to this requirement.

Students who cannot wear a facial covering due to medical or disability-related reasons should contact the Miller Center for Student Disability Services at sds@miamioh.edu or Regional Student Disability Services at regionalsds@miamioh.edu.

If a student comes to the lab without a face covering or refuses to maintain physical distancing, I will first ask the student to comply (e.g. put on a face covering). If the student refuses, I will ask the student to leave the lab and inform the student that the lab will not proceed until the student either complies or leaves. If the student continues to refuse, I will dismiss the lab and immediately report the student to the Office of Community Standards.

Physical Distancing: All employees, students, and visitors are expected to maintain physical distancing of at least six feet in all directions. The classroom has been set up to support this distancing and should be maintained. As you enter and leave the room, please be patient and give others the space they need to move safely.

Caveat: The instructor reserves the right to make appropriate changes in the course policies, schedule, content, assignments, and syllabus during the semester when circumstances dictate and as the course progresses and matures. If changes are made, you will be given due notice.

WEEK		DATE	LECTURE TOPIC	READING
1	M	01-24	Course overview, introductions, and nonlinear phenomenon-overview	
	W	01-26	Review of mathematical concepts and nomenclature	Ch. 1
	F	01-28	Review of linear systems	Ch. 5
2	M	01-31	Flows on line: fixed points and stability, perturbation method	Ch. 2
	W	02-02	Flows on line: fixed points and stability, perturbation method	
	F	02-04	Flows on line: fixed points and stability, perturbation method	
3	M	02-07	Bifurcations: Saddle node, transcritical, pitchfork	Ch. 3
	W	02-09	Bifurcations: Saddle node, transcritical, pitchfork	
	F	02-11	Bifurcations: Saddle node, transcritical, pitchfork	
4	M	02-14	Flows on a circle: uniform and non-uniform oscillators	Ch. 4
	W	02-16	Flows on a circle: uniform and non-uniform oscillators	
	F	02-18	Flows on a circle: uniform and non-uniform oscillators	
5	M	02-21	Phase plane: fixed points, linearization, Poincare maps	Ch. 6
	W	02-23	Phase plane: fixed points, linearization, Poincare maps	
	F	02-25	Midterm Exam 1: In-class	
6	M	02-28	Limit cycles, relaxation oscillations	Ch. 7
	W	03-02	Limit cycles, relaxation oscillations	
	F	03-04	No Class: Out-of-town	
7	M	03-07	Hopf bifurcations, quasi-periodicity	Ch. 8
	W	03-09	Hopf bifurcations, quasi-periodicity	
	F	03-11	Hopf bifurcations, quasi-periodicity	
8	M	03-14	Maps: Lyapunov exponents, fixed points	Ch. 10
	W	03-16	Maps: Lyapunov exponents, fixed points	
	F	03-18	Maps: Lyapunov exponents, fixed points	
9	M	03-21	No Class: Spring Break	
	W	03-23	No Class: Spring Break	
	F	03-25	No Class: Spring Break	
10	M	03-28	Applications	Ch. 9
	W	03-30	Midterm Exam 2: In-class	
	F	04-01	Applications	
11	M	04-04	Applications	
	W	04-06	Applications	
	F	04-08	Applications	
12	M	04-11	Applications	
	W	04-13	Applications	
	F	04-15	Applications	
13	M	04-18	Exploring parameter space: nonlinear dynamics	Ch. 9
	W	04-20	Exploring parameter space: nonlinear dynamics	
	F	04-22	Exploring parameter space: nonlinear dynamics	
14	M	04-25	Chaos	Ch. 11
	W	04-27	Chaos	
	F	04-29	Chaos	
15	M	05-02	Project Presentation	
	W	05-04	Project Presentation	
	F	05-06	Project Presentation	
16	W	05-11	Final Exam*Covers material from all lectures*	

Course Syllabus

STA 401/501 B (Probability), Spring 2024

Days, Time, & Location: TR, 2:50-4:10, DSB 302

Instructor: Dr. Bob Davis **Email:** davisrb@MiamiOH.edu

Office: DSB 262-B **Office hours:** TR, 1:00-2:30

Course Description

Development of probability theory with emphasis on how probability relates to statistical inference. Topics include probability basics, counting rules, probability modeling, distribution functions, expectation and variance, common discrete and continuous distributions, moment- generating functions, joint distributions, distributions of functions of random variables, sampling distributions of sample mean and variance, and maximum likelihood estimation.

Course Goals

- To gain expertise in probability concepts that underpin statistical theory and practice.
- To develop familiarity with the principal distributions used in statistical inference.
- To sharpen mathematical problem-solving skills needed for statistics.
- To provide some exposure to probabilistic modeling.

Textbook

Mathematical Statistics with Applications, 7th ed., by Wackerley, Mendenhall, and Scheaffer.

Coverage: most of Ch. 2-5 and 7, with some additional topics from Ch. 6 and 8-9. Text versions:

- Miami University loose-leaf for STA 4/501 and STA 4/562, ISBN 978-337-93219-6
- Hard-bound or e-book, ISBN 978-0-495-11081-1

How to access your eBook for STA 401/501/462/562 after purchasing Cengage Unlimited eTextbooks:

- Login to your Cengage account via login.cengage.comLinks to an external site.

- Locate your Cengage Unlimited eTextbooks subscription ($69.99) and search for ISBN 9780357435137 – this will bring up the **Custom eBook: Mathematical Statistics with Applications: STA 401/462**
-
    - For step-by-step video instructions, please visit: https://startstrong.cengage.com/etextbooks-resources/Links to an external site.
    - Reach out to our Cengage Representative, Emily Eckes at Emily.eckes@cengage.com for any questions as well.

Prerequisites

Calculus 2, Introductory Statistics (STA 261 or STA 301)

Coursework & Graded Components

Graded Homework (20%): Homework will be collected throughout the semester and graded for correctness; unless otherwise announced, assignments should be uploaded via Canvas. *Late homework will not be accepted*.

Tests (50%): Two 100-point tests will be given during the semester; tentative dates are on the course calendar below. Each of these tests will be worth 25% of your grade. Note: STA 501 students will also have an out-of-class project that will count as an additional 40-point test.

Final Exam (30%): The final exam will comprise 30% of your course average; it will be given on the date and time prescribed by the university (currently TBD).

Grading Policy: Letter grades for the course use the standard 90/80/70/60 cutoffs and possible +/- qualifiers depending on how the data falls.

University Policy & Deadlines for Course Withdrawals Courses dropped. . .

- on or before February 15th will be removed from the student's record;
- after February 15th, and on or before April 8th, will be recorded as 'W';
- after April 8th will require a petition to the Interdivisional Committee of Advisers.

Main Resources for the Course

- *Course materials*. You may use and adapt any ideas provided by the course textbook, the course lectures, or the course website.
- You are encouraged to seek my assistance regarding course concepts, ungraded exercises and graded homework. I usually respond to email within a few hours (or just minutes) between 8am and 5pm most weekdays; I only check it sporadically on weekends.

Course Policy on Assistance, Collaboration and Other Sources

- *How are cheating and plagiarism defined?*
    - Requesting or giving assistance in a manner not explicitly allowed under this policy constitutes cheating.
    - Submitting the work of others as your own, in full or in part, constitutes plagiarism.
    - Attempted acts of academic dishonesty are considered the same as completed acts, even if you do not turn in such work.
    - Additional examples and definitions are given in the University policy on Academic Integrity; this information can be found hereLinks to an external site..
- *What kind of help is allowed on the **graded homework problems**?*
    - You may rely on the course materials and your communications with the instructor.
    - You may discuss problems with other current STA 401/501 students; this can be done in person, virtually, or by posting questions and having peers or Dr. Davis answer them in the thread I have initiated in "Discussions." Peers can often help one another learn so I encourage this activity. However, you should prepare your solutions independently. I will pursue academic integrity cases where one student appears to have copied from another. In this case, note that both students involved are considered equally culpable.
- *What are examples of activities specifically prohibited for the **graded homework problems**?*
    - You may not discuss graded homework problems with anyone except the instructor or other current STA 401/501 students unless you have the express permission of the instructor.
    - You may not request or obtain partial or complete solutions to graded coursework from any source (classmates, friends, tutors, family, faculty, Internet groups or sites, etc.).
    - You may not share solutions for graded homework problems with another student.
- *What kind of help is allowed and prohibited on **tests and the final exam**?*
    - All assistance and communication are prohibited on tests and the final exam. You will not be allowed to have your phone out during tests and the final.
- *Ignorance and uncertainty about expectations are no excuse.* Please ask before you act.
- *Violations of policies on academic integrity have serious consequences.* These may include reduced course grades, failed courses, or suspension.

Additional Policies

Contacting Your Instructor: Email is the best way to reach me. However, if you would prefer to have a conversation, you can speak to me during office hours or send an email to set up a time to meet. Given today's ease of communication, it is your responsibility

to contact your instructor in a timely fashion should problems of any nature arise. I will attempt to answer emails quickly, but please understand that I try to protect my time on weekends and will be slower to respond then. I also go to bed early; if you send me an email at night, there is a good chance you won't hear back from me until the following day.

Communication Guidelines: Email is the official mode of communication for the University. You are responsible for any communication that is sent to your Miami email account, so please be sure to check your account frequently. If you have your email forwarded to your preferred account, please be sure you have enough server space for your Miami emails and please check to see that your server will accept Miami emails. Emails should be written in a professional fashion.

ADA & Students with Disabilities

Miami University is committed to ensuring equal access to students with disabilities. Miami's Office of Student Disability Services (SDS) assists students with determining eligibility for services and accommodation planning. Miami's AccessMU provides resources and guidance toward equal opportunity for all individuals. Refer to Miami University's Accessible Technology PolicyLinks to an external site. for definitions and additional information.

Students who are entitled to disability-related academic adjustments, auxiliary aids, etc., must register with SDS to receive accommodations in university courses. Please understand that formal communication from SDS must be presented prior to the coordination of accommodations for this course. For more information, see Student Disability ServicesLinks to an external site. and/or the Rinella Learning CenterLinks to an external site.. Students may also contact SDS at (513) 529-1541 or via email at sds@miamioh.edu.

If you have a disability, please contact me, and I will be glad to make any necessary accommodations.

Diversity & Discrimination

All Miami University policies concerning diversity and equal opportunity will be upheld in this class.

Miami University is a community dedicated to intellectual engagement. Our campuses consist of students, faculty, and staff from a variety of backgrounds and cultures. By living, working, studying, and teaching, we bring our unique viewpoints and life experiences together for the benefit of all. This inclusive learning environment, based upon an atmosphere of mutual respect and positive engagement, invites all campus citizens to explore how they think about knowledge, about themselves, and about how they see themselves in relation to others. Our intellectual and social development and daily educational interactions, whether co-curricular or classroom related, are greatly

enriched by our acceptance of one another as members of the Miami University community. Through valuing our own diversity, and the diversity of others, we seek to learn from one another, foster a sense of shared experience, and commit to making the university the intellectual home for us all.

Please see the General BulletinLinks to an external site. for more information.

Miami University is committed to providing equal opportunity and an educational and work environment free from discrimination on the basis of sex, race, color, religion, national origin, disability, age, sexual orientation, gender identity, military status, or veteran status. Miami shall adhere to all applicable state and federal equal opportunity/affirmative action statutes and regulations.

Please see the Miami University policies regarding discrimination and harassmentLinks to an external site. for more information.

Duty to Report

As an instructor, I have a duty to reportLinks to an external site.. This means I am required to promptly report to the Deputy Title IX Coordinator (titleix@miamioh.edu or 513-529-1870) any information a student shares with me regarding harassment, discrimination, sexual misconduct and interpersonal violence, or retaliation. **A report does not initiate an investigation. It engages a discussion of your resources, supportive measures, and options available.** If students want to speak with someone confidentially, they can speak with Student Counseling Services, Student Health Services, and an advocate with Women Helping Women.

Speaking with a confidential resource person does not preclude students from making a formal report to the University if and when they are ready.

https://miamioh.edu/diversity-inclusion/programs-resources/report-incident/index.htmlLinks to an external site.

For more information, please visit https://miamioh.edu/campus-safety/sexual-assault/Links to an external site. and https://www.miamioh.edu/diversity-inclusion/oeeo/index.htmlLinks to an external site..

Course Calendar

We will not cover all sections in several of these chapters. Below is the tentative course calendar; below that is a list of which sections we will cover in each chapter.

Tuesday	Thursday	Tuesday	Thursday
1/30: Ch. 2	2/1: Ch. 2	2/6: Ch. 2	2/8: Ch. 2

2/13: Ch. 2	2/15: Ch. 3	2/20: Ch. 3	2/22: Ch. 3
2/27: Ch. 3	2/29: Ch. 3	3/5: Test on Ch. 2, 3	3/7: Ch. 4
3/12: Ch. 4	3/14: Ch. 4	3/19: Ch. 4	3/21: Ch. 4
3/26: Spring Break	3/28: Spring Break	4/2: Ch. 5	4/4: Ch. 5
4/9: Ch. 5	4/11: Ch. 5	4/16: Ch. 5	4/18: Test on Ch. 4, 5
4/23: Ch. 6	4/25: Ch. 7	4/30: Ch. 7	5/2: Ch. 7
5/7: Ch. 8	5/9: Ch. 9		

Coverage:

Chapter 2 = all sections
Chapter 3 = 3.1-3.9 and 3.11
Chapter 4 = 4.1-4.10
Chapter 5 = 5.1-5.8
Ch. 6 = 6.1-6.3
Chapter 7 = 7.1-7.3
Chapter 8 = 8.1-8.3
Chapter 9 = 9.6, 9.7

MIAMI UNIVERSITY
OXFORD, OH • EST. 1809

BOARD OF TRUSTEES
ROUDEBUSH HALL ROOM 212
OXFORD, OHIO 45056
(513) 529-6225 MAIN
(513) 529-3911 FAX
WWW.MIAMIOH.EDU

May 17, 2024
Academic Affairs

RESOLUTION R2024-37

WHEREAS, University Senate on April 1, 2024 passed SR 24-12, endorsing a proposed program, WST - Individual Studies, Bachelor of Philosophy.

NOW THEREFORE BE IT RESOLVED, that the Board of Trustees hereby approves the establishment of a WST - Individual Studies, Bachelor of Philosophy.

Approved by the Board of Trustees
May 17, 2024

T. O. Pickerill II
Secretary to the Board of Trustees

EXECUTIVE COMMITTEE of UNIVERSITY SENATE
Tracy Haynes, Chair, Senate Executive Committee
Rosemary Pennington, Chair Elect, Senate Executive Committee
Tom Poetter, Past Chair, Senate Executive Committee
University Senate Website: https://www.miamioh.edu/academic-affairs/university-senate

May 15, 2024

To: Gregory P. Crawford, President
From: Brooke Flinder, Secretary of the University Senate
Re: Curriculum Approval
SR 24-12 WST - Individual Studies, Bachelor of Philosophy

On April 01, 2024, University Senate adopted SR 24-12:

> **BE IT HEREBY RESOLVED** that University Senate endorses the proposed program, WST - Individual Studies, Bachelor of Philosophy.
>
> **AND FURTHERMORE**, that the endorsement by University Senate of the proposed degree will be forwarded to the Miami University Board of Trustees for consideration.

Approval of the President

I, Gregory P. Crawford, President of Miami University, approve/do not approve: WST - Individual Studies, Bachelor of Philosophy

✓	Approve Forward to the Board of Trustees for action (copy to Secretary of University Senate)
	Do Not Approve

Gregory P. Crawford, President

5/8/2024
Date

cc: Tracy Haynes, Chair, Executive Committee of University Senate
Elizabeth R. Mullenix, Provost, Chair University Senate
Ted Pickerill, Secretary to the Board of Trustees and Executive Assistant to the President

EXECUTIVE COMMITTEE of UNIVERSITY SENATE
Tracy Haynes, Chair, Senate Executive Committee
Rosemary Pennington, Chair Elect, Senate Executive Committee
Tom Poetter, Past Chair, Senate Executive Committee
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Approval of the President

I, Gregory P. Crawford, President of Miami University, approve/do not approve: WST - Individual Studies, Bachelor of Philosophy

	Approve Forward to the Board of Trustees for action (copy to Secretary of University Senate)
	Do Not Approve

_____ _____

Gregory P. Crawford, President Date

cc: Tracy Haynes, Chair, Executive Committee of University Senate
Elizabeth R. Mullenix, Provost, Chair University Senate
Ted Pickerill, Secretary to the Board of Trustees and Executive Assistant to the President

OhioHigherEd
Department of Higher Education

Mike DeWine, Governor
Randy Gardner, Chancellor

REQUEST FOR APPROVAL

SUBMITTED BY
MIAMI UNIVERSITY

ESTABLISHMENT OF A BACHELOR OF PHILOSOPHY IN INDIVIDUALIZED STUDIES

MAY 2024

MIAMI UNIVERSITY
OXFORD, OH • EST. 1809

TABLE OF CONTENTS

REQUEST

Date of submission: 20 May 2024

Name of institution: Miami University

Degree/degree program title: Bachelor of Philosophy in Individualized Studies

Primary institutional contact for the request
- **Name:** Carolyn Haynes
- **Title:** Senior Associate Provost
- **Phone number:** 513 529 6717
- **E-mail:** haynesca@miamioh.edu

Department chair/program director
- **Name:** Nik Money
- **E-mail:** moneynp@miamioh.edu

Delivery sites: Oxford Campus

Date that the request was approved by the institution's governing board: Approved by the Miami University Senate on 29 April 2024, and the Board of Trustees on 17 May 2024

Proposed start date: January 2025

Date Institution established: 1809

Institution's programs: associate, bachelor's, master's, educational specialist, doctoral degrees (total 200 degree/majors as of March 2023)

Educator Preparation Programs:
Indicate the program request leads to educator preparation licenses or endorsements.

Licensure	☐ Yes	X No
Endorsement	☐ Yes	X No

SECTION 1: INTRODUCTION

1.1 Brief summary of the request

Miami University's Western Program provides undergraduates with the Individualized Studies Bachelor of Arts degree. Currently, this is the only self-designed degree on the Oxford campus of Miami University. Interest in the major has shown significant growth in recent semesters, with more than 80 majors at the time of writing, which reflects national trends in higher education. To broaden the appeal of the self-designed plan of study for students at Miami we are proposing a new degree program: the Bachelor of Philosophy in Individualized Studies. This degree provides additional flexibility for students by eliminating the College of Arts & Science divisional requirement, but maintains a commitment to academic rigor by increasing the hours of individualized coursework with advanced and 400-level hours. This proposal honors the Western College for Women's spirit of self-

designed inquiry and is also in keeping with the legacy of the School of Interdisciplinary Studies at Miami which was administered as an independent college.

SECTION 2: ACCREDITATION

2.1 Regional accreditation

Original date of accreditation:	1913
Date of last review:	2015
Date of next review:	September, 2025

2.2 Results of the last accreditation review

Miami University is accredited by the Higher Learning Commission (HLC) of the North Central Association of Colleges and Schools. HLC accredits degree-granting post-secondary educational institutions in the North Central region of the United States. Miami's most recent comprehensive accreditation review was in 2015 with a mid-cycle review in 2019, and the next reaccreditation review will occur in 2025-2026. Miami was granted full accreditation with no concerns or monitoring at its last review.

2.3 Notification of appropriate agencies

Provide a statement indicating that the appropriate agencies (e.g., regional accreditors, specialized accreditors, state agencies, etc.) have been notified of the institution's request for authorization of the new program. **Provide documentation of the notification as an appendix item.**

HLC has authorized Miami to offer this degree program, and it is not subject to any specialized accreditation process.

SECTION 3: LEADERSHIP—INSTITUTION

3.1 Mission statement

Miami University, a student-centered public university founded in 1809, has built its success through an unwavering commitment to liberal arts undergraduate education and the active engagement of its students in both curricular and co-curricular life. It is deeply committed to student success, builds great student and alumni loyalty, and empowers its students, faculty, and staff to become engaged citizens who use their knowledge and skills with integrity and compassion to improve the future of our global society.

Miami provides the opportunities of a major university while offering the personalized attention found in the best small colleges. It values teaching and intense engagement of faculty with students through its teacher-scholar model, by inviting students into the excitement of research and discovery. Miami's faculty are nationally prominent scholars and

artists who contribute to Miami, their own disciplines and to society by the creation of new knowledge and art. The University supports students in a highly involving residential experience on the Oxford campus and provides access to students, including those who are time and place bound, on its regional campuses. Miami provides a strong foundation in the traditional liberal arts for all students, and it offers nationally recognized majors in arts and sciences, business, education, engineering, and fine arts, as well as select graduate programs of excellence. As an inclusive community, Miami strives to cultivate an environment where diversity and difference are appreciated and respected.

Miami instills in its students intellectual depth and curiosity, the importance of personal values as a measure of character, and a commitment to life-long learning. Miami emphasizes critical thinking and independent thought, an appreciation of diverse views, and a sense of responsibility to our global future.

-- June 20, 2008

See: https://miamioh.edu/policy-library/mission-values/

3.2 Organizational structure

Miami University is governed by a Board of Trustees which has 11 members appointed by the Governor with the consent of the Ohio Senate. The Board of Trustees delegates responsibility for administration of the university to the President. The President is advised by an Executive Committee that includes the Provost and Executive Vice President for Academic Affairs, Vice President for Finance and Business Services, Vice President for Student Life, Vice President for Enrollment Management & Student Success, Vice President for University Advancement, Vice President for Information Technology, Vice President for Diversity & Inclusion, Vice President of ASPIRE, General Counsel, Secretary to the Board of Trustees, Vice President of University Communications & Marketing, and Director of Intercollegiate Athletics.

The Division of Academic Affairs includes six academic divisions (College of Arts & Science, College of Creative Arts; College of Education, Health and Society; College of Engineering and Computing, Farmer School of Business; College of Liberal Arts & Applied Sciences), the Graduate School, University Libraries, and the Miami University Dolibois European Center (MUDEC).

The administrative leadership of Miami University can be found at: https://miamioh.edu/about-miami/leadership/

SECTION 4: ACADEMIC LEADERSHIP—PROGRAM

4.1 Organizational structure

Describe the organizational structure of the proposed program. In your response, indicate the unit that the program will be housed within and how that unit fits within the context of the overall institutional structure. Further, describe the reporting hierarchy of the administration, faculty, and staff for the proposed program.

The degree program is housed within the Western Program in the College of Arts & Science on the Oxford campus of Miami University. Western Program Director will be responsible for administering this new degree.

Provide the title of the lead administrator for the proposed program and a brief description of the individual's duties and responsibilities.

Dr. Nik Money (CV in attachments), who is a professor of botany, is the director of the program. As described in the governance document, the program director is an appropriately qualified member of the Miami faculty who is appointed by the Dean of the College of Arts and Science for a five-year renewable term of service. The Director's responsibilities may include, but are not limited to:

- Administrative leadership as required by the needs of the Program, the College, and the University
- Representing, promoting, and advocating for the Program to internal and external audiences, including alumni
- Program liaison to other College and University offices and constituencies
- Agenda-setting for all faculty meetings with the advice and participation of faculty
- Classroom teaching and student project supervision in the Program
- Budget management and supervision
- Curricular development and supervision, including teaching assignments and course scheduling
- Faculty recruitment, supervision and evaluation
- Oversight of academic dishonesty cases
- Attendance and participation in Provost's breakfasts and College of Arts and Science Council of Chairs

The Program Director is formally reviewed at year three and year five of her or his term. These reviews include surveys sent to all program faculty and other Program Directors. The Program Director provides a list of other University faculty and staff with whom he or she works closely to the Committee for the Review of Chairs and Program Directors to include in the survey. The Dean completes a formal evaluation.

Describe any councils, committees, or other organizations that support the development and maintenance of the proposed program. In your response, describe the individuals (by position) that comprise these entities, the terms of their appointment, and the frequency of their meetings.

The Western Program has a Curriculum Committee which includes all instructional staff. Meetings are held during the fall and spring semesters. The program director serves as the meeting facilitator.

Once the proposal is approved at the program level, it moves to the College Undergraduate Curriculum Committee.

The proposal was also approved by a university level curriculum committee, Council of Undergraduate Curriculum. This body is a University Senate committee and includes faculty representation from all academic divisions. It

was also approved by the Council of Academic Deans, University Senate, and the Board of Trustees.

4.2 Program development

Describe how the proposed program aligns with the institution's mission.

Because it advances interdisciplinary inquiry, college completion, and student-directed initiative, it aligns well with Miami's mission to advance liberal arts outcomes, student success, and student engagement and efficacy. It is situated in the historic buildings of the Western College for Women which was a pioneering educational institution for women in the nineteenth century that advanced a strong community, international study and the belief that women deserved to lead. This program seeks to advance collegiate success of diverse students through global and liberal arts learning.

Indicate whether the institution performed a needs assessment/market analysis to determine a need for the program. If so, briefly describe the results of those findings. If completed, submit the full analysis as an appendix item.

Miami requires ideas for new programs and majors be reviewed by the Miami Academic Program Incubator which conducts a needs assessment on each program idea. See the Gray Scorecard in the appendices which demonstrates that the degree is in demand by employers in the state.

Indicate whether the institution consulted with advisory groups, business and industry, or other experts in the development of the proposed program. If so, briefly describe the involvement of these groups in the development of the program.

The Western Program has an active alumni board that supports the creation of this new program as it revives and updates the degree program that was offered through the Western College Program (School of Interdisciplinary Studies) in the 1970s through the 1990s.

Indicate whether the proposed program was developed to align with the standards of a specialized or programmatic accreditation agency. If so, indicate whether the institution plans to pursue programmatic/specialized accreditation for the proposed program and provide a timeline for achieving such accreditation. If the program is already accredited, indicate the date that accreditation was achieved and provide information on the next required review.

The Western Program is not seeking accreditation for this program.

4.3 Collaboration with other Ohio institutions

Indicate whether any institution within a 30-mile radius of your institution offers the proposed program. If so, list the institutions that offer the proposed program, and provide a rationale for offering an additional program at this site.

Many colleges and universities have programs that allow students the flexibility to create their own paths of study, there is nothing comparable to the Western Program in the state of Ohio on the undergraduate level. Whereas most of these programs (e.g., OU's Specialized Studies Major and OSU's Personalized Studies Program)

incorporate a range of coursework from different disciplines in the creation of a major, the Individualized Studies B.Phil. at Miami is focused on the integration of coursework culminating in a year-long senior project. Unlike other programs, this is facilitated by required core coursework and dedicated faculty and staff that allows not just for a greater depth of individual interdisciplinary study but also an emphasis on community and the opportunity for students to share and learn from one another.

Indicate whether the proposed program was developed in collaboration with another institution in Ohio. If so, briefly describe the involvement of each institution in the development of this request and the delivery of the program.

The proposed program was not developed in collaboration with another institution in Ohio.

SECTION 5: STUDENT SERVICES

5.1 Admissions policies and procedures

Describe the admissions requirements for the program. In your response, highlight any differences between the admission requirements for the program and for the institution as a whole.

There will be no change in the admissions requirements for this program compared to the current admission requirements. Admission to the program will follow Miami University admissions standards. There is a direct admit to the major once the student is admitted to Miami University.

Admission to Miami University is based on academic performance (strength of curriculum, class rank, and grade point average), secondary school experience and community activities, personal essay, and recommendations of the high school. In making admission decisions, Miami also considers the diversity of the student body and applicants' special abilities, talents, and achievements. Miami believes that the diversity of the student body enhances the quality of the education students receive. Therefore, diversity may include socioeconomic factors, under-enrolled minority group membership, career interest, artistic ability, geographical background, and other special characteristics of the population.

The program being proposed will abide by all applicable transfer credit policies. Policies governing the transcription of credit are authorized by the Academic Policy Committee and University Senate and aligned with the ODHE transfer and articulation policies. Described in the General Bulletin, these policies articulate the standards for AP and CLEP credit, minimum length of study requirements, credit-hour equivalency, the process of evaluating credit and applying transfer courses to the general education requirements, and clear parameters for graduation requirements, including the number of credits that must be completed at Miami. The Bulletin also explains the specific course credit students receive for completion of the OT36 (which is a set of core courses equivalent to 36-40 semester hours that all Ohio public colleges and universities have agreed count for credit at any Ohio school) as well as Transfer Assurance Guides, Military Transfer Assurance Guides and Career-Technical Assurance Guides. All Miami courses that count for TAG, MTAG, CTAG or OT36 credit must advance specific

outcomes and be approved by a statewide panel of faculty in the discipline. Miami also has a procedure for students to propose other courses taken at other universities to count for degree and major program requirements.

5.2 Student administrative services

Indicate whether the student administrative services (e.g., admissions, financial aid, registrar, etc.) currently available at the institution are adequate to support the program. If new or expanded services will be needed, describe the need and provide a timeline for acquiring/implementing such services.

The student administrative services (e.g., admissions, financial aid, registrar, etc.) currently available at the institution are adequate to support the program.

5.3 Student academic services

Indicate whether the student academic services (e.g., career services, counseling, tutoring, ADA, etc.) currently available at the institution are adequate to support the program. If new or expanded services will be needed, describe the need and provide a timeline for acquiring/implementing such services.

The student academic services (e.g., career services, counseling, tutoring, ADA, etc.) currently available at the institution are adequate to support the program.

SECTION 6: CURRICULUM

6.1 Introduction

Provide a brief description of the proposed program as it would appear in the institution's catalog (*General Bulletin*). The description should be no more than 150 words.

The BPhil in Individualized Studies is a degree that allows students with multiple interests to develop their own plan of study by integrating a set of core classes with courses chosen by the student from almost any area of study. Western courses explore diverse subjects but share a strong interdisciplinary theme. By emphasizing the importance of studying complex issues from multiple perspectives, these courses equip students with skills in critical thinking, problem solving, and objective analysis. The individualized portion of the major is designed by students in close consultation with faculty and staff advisors, and draws from courses across the university, including study abroad, independent studies, and/or credit-bearing internships. The degree culminates in a student-designed project that positions students for entry into graduate school or the workplace. Although students are encouraged to have multiple majors and minors connected to their Individualized Studies major, they are restricted to pursuing a single degree (BA or BPhil) and will not be allowed to declare both.

6.2 Program goals and learning objectives

Describe the goals and objectives of the proposed program. In your response, indicate how these are operationalized in the curriculum.

See Assessment Plan in the Appendices for how they are integrated and assessed in the curriculum. Below is a summary:

Below are the program's student learning outcomes

1. Students will address complex questions through self-directed creative inquiry.
2. Students will conduct interdisciplinary research.
3. Students will show excellence in writing.

Assessment of the Student Learning Outcomes is carried out during the completion of the capstone experience when students submit a written thesis in WST 444: Senior Workshop. We have a rubric for this assessment.

The Western Capstone involves an independent research project that is planned and completed within the senior year of study. The required core courses at the 200- and 300-level within Western are designed to assist students in preparing for their senior project experience. Students select their own topic for investigation and their work is assisted through two 3-cr 400-level courses: WST 421 Proposal Workshop (fall semester) and WST 444 Senior Seminar (spring semester). All majors are also supported by a research advisor within Western. Some students also work with faculty mentors outside Western. This is essential for students working on STEM projects requiring lab-based experimentation. Students submit a senior thesis at the end of the spring semester and have the option of presenting their work in a Senior Project Symposium in Leonard Theater. The Western Capstone serves as a part of the student's professional portfolio that they use in their applications to graduate school or for career placement.

All capstone projects are evaluated via a rubric The data will be shared with faculty at the end of the spring semester each year and will be discussed during a faculty retreat held before the beginning of each academic year in which the Western faculty and affiliates determine (i) the need to improve student performance in one or more of the three learning outcomes, and (ii) the most logical approach to addressing the measured deficit.

The program submits annual assessment reports to the Office of the Provost for review and feedback. See appendices for full assessment plan.

6.3 Course offerings/descriptions

Complete the following table to indicate the courses that comprise the program. Please list courses in groups by type (e.g., major, general education, elective) and indicate if they are new or existing courses.

Course (number/name)	Cr hrs	Major	General Education (Miami Plan)	Elective	OTM TAG CTAG	New/Existing Course

MAJOR REQUIREMENTS						
WST 231, Interdisciplinary Inquiry	3	X	X			Existing
WST 251, Individualized Studies Seminar	1	X				Existing
WST 301, Interdisciplinary Problems and Questions	3	X				Existing
WST 321 or 322, Developing Interdisciplinary Projects	3	X				Existing
WST 341, Interdisciplinary Synthesis and Action	3	X	X			Existing
WST 421, Senior Project Proposal Workshop	3	X				Existing
WST 444, Senior Workshop and Project	3	X	X			Existing
Individualized Coursework Requirement (200-level and above; 15 credits must be at 400 level)	36	X		X		Existing

Total Number of Credits for the Program: 124

Provide a brief description of each course in the proposed program as it would appear in the course catalog. In your response, include the name and number of the course. **Submit course syllabi as appendix items.**

WST 231. Interdisciplinary Inquiry. (3)
Introduction to the relevance of interdisciplinary approaches to learning in the arts, humanities, social sciences, and sciences. Explores the process of inquiry-based discovery through instructor-generated inquiries, student-generated inquiries, and discipline-specific methods and techniques. Particular theme or topic will differ each semester.

WST 251. Individualized Studies Seminar. (1)
Provides students with the tools to chart their personal plan of study.

WST 301. Interdisciplinary Problems and Questions. (3)
Considers a complex topic from multiple perspectives. Identifies the distinct vantage points offered by different fields of inquiry, including philosophical, aesthetic, scientific and historical discourse, with an emphasis on achieving an integrative understanding of the topic. Team-taught by two or more faculty members with different disciplinary and/or interdisciplinary expertise. CAS-B-Other or CAS-C Other.

WST 321. Developing Interdisciplinary Projects: Exploring Ways of Knowing. (3)
Investigates a complex topic with attention to methods and theoretical approaches from the sciences, social sciences, humanities, and the arts, emphasizing the tensions that emerge from the interplay of different sources of information. Students identify and critique distinctive approaches to integrate multiple perspectives on the course topic. CAS-B-Other or CAS-C Other.

WST 322. Developing Interdisciplinary Projects: Art and Politics of Representation. (3)
Investigates a complex topic with specific attention to developing competence in the analytical and rhetorical tools for interdisciplinary inquiry in the arts, humanities, sciences, and/or social sciences. Based on course topic, students identify and analyze representational practices (e.g., written texts, performances, new media, statistical surveys, scientific studies) to promote the development of creative

strategies for representing and addressing complex problems and questions. CAS-B-Other or CAS-C Other.

WST 341. Interdisciplinary Synthesis and Action. (3)
Integrates diverse methods of inquiry to assist the development of student outreach projects that synthesize learning about a complex topic. Working on their own or in teams, students develop action-based approaches with a strong aspect of public performance and/or engagement. EL. CAS-B-Other or CAS-C Other.

WST 421. Senior Project Proposal Workshop. (3)
Supports student planning of senior project by focusing on proposal formulation, action plan, literature analysis, methodology, and project evaluation/assessment; culminates in public defense of full proposal with program faculty and students.

WST 444. Senior Workshop and Project. (3)
Provides a forum in which students share with peers the process of writing, revising, researching, or otherwise executing the planned project. Work with direction of a faculty adviser. Students work individually or in teams to develop means of senior project delivery, e.g., by submission of research paper suitable for conference presentation or journal publication; theatrical or multimedia performance; gallery showing. Students present their research in a public form at the end of the spring semester. SC.
Prerequisite: WST 421.

6.4 **Program sequence:** Provide the intended/ideal sequence to complete the program in the table below. Add additional time period as needed.

Time Period	Curriculum component	Time period	Curriculum component
Freshman Year			
Year 1 Fall Semester	Courses/Activities (hrs.)	Year 1 Spring Semester	Courses/Activities (hrs.)
	ENG 111 Composition and Rhetoric (3)		WST 251 Individualized Studies Seminar (1)
	Miami Plan Humanities/Signature Inquiry (3)		Miami Plan Math/Formal Reasoning (3)
	Miami Plan Creative Arts/Signature Inquiry (3)		Miami Plan Natural Science (3-4)
	Miami Plan Natural Science (3-4)		Miami Plan Social Science/Signature Inquiry (3)
	Miami Plan Social Science (3)		Miami Plan Global or Intercultural (3)
			Individualized Coursework (3)
Time period	Curriculum component	Time period	Curriculum component
Sophomore Year			
Year 2 Fall Semester	Courses/Activities (hrs.)	Year 2 Spring Semester	Courses/Activities (hrs.)
	WST 231 Interdisciplinary		WST301 Interdisciplinary

	Inquiry (3)		Problems and Questions (3)
	Miami Plan DEI (3)		Miami Plan Global or Intercultural (3)
	Miami Plan Advanced Writing (3)		Individualized Coursework 9-10)
	Individualized Coursework (6)		
Time period	Curriculum component	Time period	Curriculum component
Junior Year			
Year 3 Fall Semester	Courses/Activities (hrs.)	Year 3 Spring Semester	Courses/Activities (hrs.)
	WST341 Interdisciplinary Synthesis and Action (MP Experiential Learning - 3)		WST322 Developing Interdisciplinary Projects: Art and Politics of Representation (3) or WST 321 Developing Interdisciplinary Projects: Exploring Ways of Knowing (3
	Individualized Coursework (9-12)		Individualized Coursework (9-12)
	Free Electives (0-3)		Free Electives (3)
Time period	Curriculum component	Time period	Curriculum component
Senior Year			
Year 4 Fall Semester	Courses/Activities (hrs.)	Year 4 Spring Semester	Courses/Activities (hrs.)
	WST421 Senior Project Proposal Workshop (3)		WST444 Senior Workshop and Project (MP Senior Capstone - 3)
	Individualized Coursework (9-12)		Individualized Coursework (9-12)
	Free Electives (3)		

6.5 Alternative delivery options (please check all that apply):

☐ More than 50% of the program will be offered using a fully online delivery model
☐ More than 50% of the program will be offered using a hybrid/blended delivery model
☐ More than 50% of the program will be offered using a flexible or accelerated delivery model

For the purposes of this document, the following definitions are used:

- an **online course** is one in which most (80+%) of the content is delivered online, typically without face-to-face meetings;
- a **hybrid/blended course** is one that blends online and face-to-face delivery, with substantial content delivered online;

- a **flexible or accelerated program** includes courses that do not meet during the institution's regular academic semester (fall or spring) as well as courses that meet during the regular academic term but are offered in a substantially different manner than a fixed number of meeting times per week for all the weeks of the term.

6.6 Off-site program components (please check all that apply):

Co-op/Internship/Externship
☐ Field Placement
☐ Student Teaching
☐ Clinical Practicum
☐ Other

If one or more of the items is checked, please provide a brief description of the off-site component(s).

N/A. Students are encouraged to complete an internship but it is not a requirement.

SECTION 7: ASSESSMENT AND EVALUATION

7.1 Program assessment

Assessment efforts are directed by the Office of the Provost. Because of the accreditation standards of the Higher Learning Commission, each academic department, academic support unit and Student Life unit at Miami University is required to implement a full cycle assessment program for each undergraduate major, general education, free-standing certificate, and graduate program.

Each major or degree program specifies at least three learning outcomes to assess, and other units specify at least three major goals or objectives to assess. Each year, data related to the outcomes or goals are collected and analyzed and used for program improvement. When beginning the process of assessment for the first time, departments and units create an assessment plan. Annually or biennially, the assessment data for the three or more learning outcomes or goals are analyzed and discussed and plans for improving teaching and learning based upon those findings are articulated. The summary of the data collected, the analysis and the steps for improvement are recorded in an assessment report which is submitted each year. Plans and reports are reviewed regularly by a university-level assessment committee.

7.2 Other means of measuring student success

In addition to program assessment, describe the other ways that individual student success in the proposed program will be measured (e.g., graduation rates, exit interviews, job placement, alumni surveys). Describe the measurements to be used, frequency of data collection and how the results will be shared and used for program improvement.

The Miami University Student Success Committee with the support of the Office of Institutional Research and Effectiveness guides and implements the university's student success evaluation and assessment. Student success is measures through national surveys and projects (e.g., the National Survey of Student Engagement, CIRP Freshman survey, Collegiate Learning Assessment, College Senior Survey, Your First College Year,

HERI Faculty Survey, Faculty Survey of Student Engagement) as well as in-house graduate survey and alumni survey.

SECTION 8: FACULTY

8.1 Faculty appointment policies

Describe the faculty designations available (e.g., professor, associate professor, adjunct, instructor, clinical, etc.) for the proposed program's faculty. In your response, define/describe the differences between the designations.

Faculty designations include:

1. Tenured/tenure-track faculty (with responsibilities including teaching, scholarship and service) in the ranks of Professor, Associate Professor, Assistant Professor;

2. Continuing faculty (with responsibilities including teaching and service) in the non-tenurable ranks of Teaching Professor, Associate Teaching Professor, Assistant Teaching Professor, Clinical Professor, Associate Clinical Professor, Assistant Clinical Professor, Senior Lecturer, Associate Lecturer, Assistant Lecturer, Senior Clinical Lecturer, Associate Clinical Lecturer, Assistant Clinical Lecturer;

3. Faculty in 1-semester and 1-year appointments (with responsibilities only for teaching) holding the titles of Visiting Assistant Professor or Instructor.

Describe the credentialing requirements for faculty who will be teaching in the program (e.g., degree requirements, special certifications or licenses, experience, etc.).

Faculty holding the title of Professor, Associate Professor, Assistant Professor, Clinical Professor, and Visiting Assistant Professor must have a doctoral degree and prior teaching experience at the collegiate level. Faculty whose titles include the word Lecturer or Instructor must hold a Master's degree in sport leadership or sport management or related field.

Indicate whether the department will need to identify additional faculty to begin the proposed program. Also indicate the workload implications of the proposed program for existing faculty in the department. In particular, for existing faculty, explain how their workload will be adjusted to teach courses within the new program.

Describe the institution's load/overload policy for faculty teaching in the proposed program.

See policy: https://miamioh.edu/policy-library/employees/faculty/employment-of-faculty/overload-teaching.html

8.2 Program faculty

Provide the number of existing faculty members available to teach in the proposed program.

Full-time: 3
Less than full-time: 0

Provide an estimate of the number of faculty members to be added during the first two years of program operation.

Full-time: 0
Less than full-time: 0

8.3 Expectations for professional development/scholarship

Describe the institution's general expectations for professional development/scholarship activities by the proposed program's faculty. In your response, describe any differences in the expectations for tenure-track vs. non tenure-track faculty and for full-time vs. part-time faculty. Indicate the financial support provided for such activities. **Include a faculty handbook outlining the expectations and documenting support as an appendix item.**

Miami's teaching, scholarly and service expectations for promotion of tenure-track faculty can be found here: https://www.miamioh.edu/policy-library/employees/faculty/evaluation-promotion-tenure-faculty/index.html

The expectations for teaching faculty can be found here: https://miamioh.edu/policy-library/employees/faculty/evaluation-promotion-tenure-faculty/tcpl.html

The key difference is that teaching faculty are not expected to engage in research or scholarship. Part-time faculty are not generally expected to engage in research, scholarship or service.

8.4 Faculty matrix

Complete a faculty matrix for the proposed program. A faculty member must be identified for each course that is a required component of the curriculum. If a faculty member has not yet been identified for a course, indicate that as an "open position" and describe the necessary qualifications in the matrix (as shown in the example below). **A copy of each faculty member's CV must be included as an appendix item.**

See attached appendices for faculty matrix and CVs of faculty in the program.

SECTION 9: LIBRARY RESOURCES

9.1 Library resources

Describe the involvement of a professional librarian in the planning for the program (e.g., determining adequacy of current resources, working with faculty to determine the need for additional resources, setting the budget for additional library resources/services needed for the program).

No additional library resources are needed at this time.

Describe the library resources in place to support the proposed program (e.g., print, digital, collections, consortia, memberships, etc.).

Katie Gibson is Western's professional librarian who works with the BA in Individualized Studies majors in the WST421 and WST444 classes. Her work with BPhil in Individualized Studies majors in these classes is identical.

No additional library resources are needed at this time.

Describe any additional library resources that will be needed to support the request and provide a timeline for acquiring/implementing such services. Where possible, provide a list of the specific resources that the institution intends to acquire, the collaborative arrangements it intends to pursue, and monetary amounts the institution will dedicate to the library budget to support and maintain the proposed program.

No additional library resources are needed at this time.

SECTION 10: BUDGET, RESOURCES, AND FACILITIES

10.1 Resources and facilities

List the facilities/equipment currently available for the program. Where possible, provide a list of the specific resources that the institution intends to acquire, the collaborative arrangements it intends to pursue, and monetary amounts the institution will dedicate th the library budget to support and maintain the proposed program.

The program is housed in the historic building, Peabody Hall, which include residence hall spaces, classrooms spaces and offices. There are no new facilities or equipment needed to support this program.

10.2 Budget/financial planning:

Complete the table on the following page to describe the financial plan/budget for the first three years of program operation.

See Appendix.

APPENDICES

Please note that the institution is required, at a minimum, to submit the following the items as part of the review:

Course Catalog: https://bulletin.miamioh.edu/
Student Code of Conduct: Link
Undergraduate Student Policies Link
Accreditation Status: https://miamioh.edu/academic-affairs/accreditation/

Appendix	Description
A	CVs of Faculty
B	CV Department Chair
D	Fiscal Impact Statement
E	Assessment Plan for Program
F	Syllabi

Miami University is committed to continual support of the delivery of the BACHELOR OF PHILOSOPHY in INDIVIDUALIZED STUDIES. If Miami University decides in the future to close the program, the university will provide the necessary resources and means for matriculated students in the program to complete their degree.

Miami University verifies that the information in the application is truthful and accurate.

Respectfully,

Dr. Elizabeth R. Mullenix
Provost & Executive Vice President
Miami University

Fiscal Impact Statement for Bachelor of Philosophy in Individualized Studies

	Year 1	Year 2	Year 3	Year 4
I. Projected Enrollment				
Headcount full time	10	20	30	40
Full-time equivalent (FTE) enrollment	10	20	30	40
II. Projected Program Income				
Tuition (paid by student or sponsor)	220,000	440,000	660,000	880,000
Expected state subsidy	50,000	100,000	150,000	200,000
Total Projected Program Income	270,000	540,000	810,000	1,080,000
III. Program Expenses				
New Personnel • Instruction (technical, professional and general education) Full ____ Part Time ____ • Non-instruction (indicate roles in narrative section below) Full ____ Part time ____	0	0	0	0
New facilities/building/space renovation (if applicable, describe in narrative section below)	0	0	0	0
Scholarship/stipend support (if applicable, describe in narrative section below)	0	0	0	0
Additional library resources (if applicable, describe in narrative section below)	0	0	0	0
Additional technology or equipment needs (if applicable, describe in narrative section below)	0	0	0	0
Other expenses (if applicable, describe in narrative section below)	0	0	0	0
Total Projected Expense	0	0	0	0

Budget Narrative:

The Bachelor of Philosophy in Individualized Studies can be delivered using existing university resources and faculty, so no expenses are included on the fiscal impact statement.

Name of Instructor	Rank or Title	Full-Time or Part-Time	Degree Titles, Institution, Year Include the Discipline/Field as Listed on the Diploma	Years of Teaching Experience In the Discipline/ Field	Additional Expertise in the Discipline/ Field (e.g., licenses, certifications, if applicable)	Title of the Course(s) This Individual Will Teach <u>in the Proposed Program</u> Include the course prefix and number	Number of Courses this Individual will Teach Per Year at <u>All</u> Campus Locations
Nicholas P. Money	*Professor*	*FT*	*PhD, University of Exeter, United Kingdom, 1986, biological sciences*	*30*		*WCP 421: Senior Project Proposal Workshop* *WCP 444: Senior Workshop and Project*	*2*
Xiuwu Liu	*Assistant Professor with Tenure*	*FT*	*PhD, University of Minnesota, 1994, Comparative Studies in Discourse and Society*	*29*		*WCP 301: Interdisciplinary Problems and Questions*	*1*
Jacque Daugherty	*Associate Teaching Professor*	*FT*	*PhD, University of Cincinnati, 20012, Educational Studies*	*10*		*WST 231: Interdisciplinary Inquiry* *WCP 301: Interdisciplinary Problems and Questions* *WCP 322: Developing Interdisciplinary Projects*	*5*

						WCP 341: Interdisciplinary Synthesis and Action	

1. Name

Jacqueline Daugherty
Associate Teaching Professor of Individualized Studies and Affiliate in the Institute for Environmental Sustainability
Miami University

2. Education

Marietta College	Leadership in International Development	BA	2001
University of Cincinnati	Educational Studies	MA	2009
University of Cincinnati	Educational Studies—Cultural Foundations	PhD	2012

3. Recent Publications and Presentations

A. Publications

Daugherty, Jacqueline. Frabotta, R. 2018. "Comprehensive Sexuality Education." *Agenda for Social Justice: Global Solutions.* Policy Press: University of Bristol, UK.

Daugherty, Jacqueline. September 2017. Entry on "Identity Politics." *International Encyclopedia of Intercultural Communication*, edited by Kelly McKay-Semmler. Wiley-Blackwell/USA.

B. Presentations

October, 2023	"Advanced Interviewing and Ethical Considerations." Oral History Association, Baltimore, MD.
August, 2020	"Oral History and Project-based Learning." Society for the Study of Social Problems, Virtual Annual Meeting due to Covid.
August, 2019	"Teaching to Empower: Race in the Classroom." Society for the Study of Social Problems, New York, NY.
August, 2018	"Teaching Research Methods through the Flint Michigan Water Crisis." Society for the Study of Social Problems, Philadelphia, PA.
August 2017	"*I was having sex 2 years before somebody told me not to*: An Oral History of Abstinence-Only Sexuality Education in Ohio from 2001-2015." Society for the Study of Social Problems, Montreal, Quebec Canada.

4. Courses Taught:

Individualized Studies Program: I teach these courses on a rotating basis

WST 201: Self and Place
WST 231: Interdisciplinary Inquiry (research methods course)
WST 251: Individualized Studies Seminar
WST 301: Interdisciplinary Problems and Questions:
2018: Sex in the 21st Century
2020-2021: Water is Life
2022-2023: Reparations as Reparative Justice
2024-2025: Democracy and Transformation

WST 322: Art and Politics of Representation (theory course)
WST 341: Synthesis and Action (service-learning course)
WST 421: Senior Project Proposal Workshop
WST 444: Senior Workshop and Project

5. Externally funded activities:

Submitted: $25,000: Cincinnati Foundation. Expansion and DEI in a Nature Preschool. 2024.

Awarded: $25,000: Adam's Legacy Foundation. Expanding DEI in a Nature Preschool. 2023.

Awarded: $20,000: Hawk Tank Grant, 3 C's Sexuality Education Program, Co-Partners: Western Center, Dean of Students, Sexuality Education Studies Center. Miami University, August 2020: July 2021.

Unfunded: $250,000: Spencer Foundation, Invested in Being Me—Sexuality Education Developed & Delivered by Disabled Adult Self Advocates. Co-PI Joel Malin, Miami University Educational Psychology. July 2021.

6. Advising and advisees
Major Advisor in Individualized Studies: 15-20 advisees per year.

7. Service to the profession:
Individualized Studies: Alumni Relations (2018-present); Scholarship & Awards Committee (2017-present); Recruitment Committee (2019-2022);

University: Director, Western Center for Social Impact and Innovation (2019-present); Chair, Robert E. Strippel Memorial Fund for Human Rights and Dialogue (2018-present); Altman Scholar, MU Humanities Center (2024).

External: Session Organizer and Discussant, Sexualities Section, Society for the Study of Social Problems (2018-present); Chair, Board of Trustees, Little Schoolhouse in the Woods (2023-present).

NAME
Zackary D. Hill
Coordinator and Advisor
Western Program, Miami University

EDUCATION

B.A., Miami University, Oxford, OH, 2002	Major Areas: Psychology, Literature, Creative Writing
M.A., Miami University, Oxford, OH, 2005	Major Area: English

COURSES TAUGHT (since 2019)
WST 251 Individualized Studies Seminar
WST 201 Self and Place
WST 301 Interdisciplinary Problems: Happiness
WST 277, 377, 477 Independent Study
ENG / MAC 422 Screenwriting Workshop

ADVISING (since 2019)
Primary Academic Advisor
- Individualized Studies majors, 60-85 (depending on semester)
- University Studies / CAS undeclared, 20-40 (depending on semester)

Individualized Studies minor advisor, 10-20 (depending on semester)
Faculty advisor, Western Majors, 3-6 (depending on semester)

RECENT RECOGNITION, TEACHING (since 2019)
2022, Outstanding Professor Award, nominated
2023, Outstanding Professor Award, nominated

RECENT RECOGNITION, SCREENWRITING (since 2019)
2020, Quarterfinalist, HEART STRING THEORY, TSL Free Screenplay Contest
2021, Official Selection, EFFICIENCY, Cindependent Film Festival
2021, Official Selection, UNFINISHED MURDER BALLADS, Adapted Screenplay Competition
2022, Finalist, THE PINEWOOD MAN, Astrophobia Film Festival
2022, Official Selection, EFFICIENCY, PopCon International Film Festival
2022, Official Selection, THE PINEWOOD MAN, PopCon International Film Festival
2022, Official Selection, JOHNNY, True Story Showcase
2022, Second Rounder, (in) FUSE (an) ECHO, Austin Film Festival
2022, Quarterfinalist, EFFICIENCY, Search for New Blood
2022, Semifinalist, THE SEVENTH RULE, Austin Film Festival
2023, Second Rounder, UNFINISHED MURDER BALLADS, Austin Film Festival
2023, Second Rounder, EFFICIENCY, Austin Film Festival
2023, Second Rounder, THE MUTE MAN, Austin Film Festival
2023, Second Rounder, BROKEN C//ORDS, Austin Film Festival
2023, Second Rounder, JOHNNY, Austin Film Festival
2023, Second Rounder, THE SHADOW FACTORY, Austin Film Festival
2023, Second Rounder, ILLICIUM, Austin Film Festival
2023, Second Rounder, WHISPERING PINES, Austin Film Festival
2023, Finalist, HEART STRING THEORY, Cindependent Film Festival
2023, Winner, ILLICIUM, PopCon International Film Festival

Xiuwu R. Liu
The Western Program
Miami University
Oxford, Ohio 45056
513-529-5661
liux@miamioh.edu

Degrees

Ph.D. (Comparative Studies in Discourse and Society with supporting program in modern China) 1994, University of Minnesota, **Focus**: philosophical and methodological issues in cross-cultural studies
LL.M. (American Studies) 1985, Chinese Academy of Social Sciences, Beijing, China, **Focus**: contemporary American society B.A. (English) 1981, Hunan University, China

Additional Education

Doctoral student in American Studies, 1987–89, University of Iowa
Visiting scholar, 1986–87, University of Missouri-Rolla, Computer Science Department

Teaching Position

Assistant Professor of Interdisciplinary Studies, 1994–, Miami University, tenured in 2000

Courses Taught (t=team-taught)

Interdisciplinary Problems: Science and Faith: (thrice) (t)
Self and Place: From the Universe to Oxford (twenty-eight times)
Chinese Satire (eleven times)
Interdisciplinary Problems: Crime (twice) (t)
Art Across the Disciplines (twice) (t)
Interdisciplinary Problems: Human Folly
Interdisciplinary Problems: Humor
Interdisciplinary Problems: Imagining Utopia
Interdisciplinary Problems: Deflating Human Beings
Interdisciplinary Problems: Happiness (t)

Advising

Two to five senior advisees a year, variable numbers of lower-level advisees

Grants

Publication Costs Program, $500, 2023, Miami University
Campbell Teaching Award, $3,000, 2005, SIS, Miami University
Publication Costs Program, $450, 2001, Miami University
Philip and Elaina Hampton Fund for Faculty International Initiatives, $4,000, 1994, Miami University

Publications

Wandering from China to America: A Life Straddling Different Worlds, ***ibidem*** Press, 2nd edition, pb, 2024 (in press)
Chinese Satire: Sources and Quotations, Oxford: Hermit Studio, ebook and hb, 2022
Deflating Human Beings: Sources and Quotations from Around the World, 4 vols., Oxford: Hermit Studio, ebook and pb, 2020–21, hb, 2021; corrected version: ebook and hb, 2022
Wandering from China to America: An Autobiography, Columbus: Zip Publishing, pb, 2007

Jumping into the Sea: From Academics to Entrepreneurs in South China, Lanham: Rowman & Littlefield, hb and pb, 2001
Western Perspectives on Chinese Higher Education: A Model for Cross-Cultural Inquiry, Madison: Fairleigh Dickinson University Press, hb, 1996

Presentations None since 2019

University Service
Hampton Fund Reading Committee (6 terms)
Faculty Conference Committee
Academic Policy Committee
Academic Program Review Committee
Evaluation of Administrators Committee (2 terms)

Membership American Philosophical Association

Curriculum Vitae

Name and Title: Nicholas P. Money, Western Program Director and Professor of Biology

Addresses: Western Program, Peabody Hall, Miami University, Oxford, OH 45056
Department of Biology, Miami University, Oxford, OH 45056

Phone and E-mail: Miami (513) 529-5044 & Cell (513) 280-1160
moneynp@miamioh.edu; website: https://www.themycologist.com

Education/Training:

1986-1988	Postdoctoral training	Yale University, New Haven, CT
1983-1986	Ph.D. Biological Sciences	University of Exeter, United Kingdom
1980-1983	B.Sc. (1st) Botany/Microbiology	University of Bristol, United Kingdom

Professional Experience:

2010-present: Director, Western Program/Individualized Studies, Miami University, Oxford, OH
http://www.cas.miamioh.edu/western/
2003-present: Full Professor, Department of Botany (Biology), Miami University, Oxford, OH
1999-2003: Associate Professor, Department of Botany, Miami University, Oxford, OH
1995-1999: Assistant Professor, Department of Botany, Miami University, Oxford, OH
1995: Assistant Professor, Biology, Western Kentucky University, Bowling Green, KY
1994: Visiting Scientist, Du Pont Company, Wilmington, DE
1989-1994: Research Assistant Professor, Department of Biochemistry and Molecular Biology, Colorado State University, Fort Collins, CO
1988-1989: Research Associate, National Jewish Hospital, Denver, CO.

Administrative Accomplishments 2010-2024:

- Directed a small team of faculty and staff during the resurrection of the Western Program and developed the curriculum for the new Individualized Studies major
- Built major with annual enrollments rising to 80+ students
- Successfully mentored mid-career faculty, allowing them to make significant contributions to the mission of Miami University
- Worked with diverse constituents, including alumni, with strong opinions about the required direction of the Western Program
- Survived as Program Director despite many challenges, including the COVID pandemic

Career Research Accomplishments:

- Solved mechanism of spore release in aquatic fungi that had been an enigma since the nineteenth century (doctoral dissertation, 1986)
- Developed techniques for measuring the hydrostatic pressure of microscopic filamentous cells that advanced the study of fungal growth (1990s)
- Derived fresh concept of tip growth and elucidated the biomechanics of solid tissue invasion by pathogenic fungi (1990-2000)
- Conducted experiments using ultra-high-speed video microscopy that elucidated spore discharge mechanisms (2005-2010)
- Published contrarian and highly influential essays (2005-2024) on mushroom harvesting (its unsustainability), fungal taxonomy (its scientific and philosophical shortcomings), the medicinal properties of mushrooms (their absence), fungal consciousness (its existence), and fungal infections and climate change (problems with prevailing theory).

Academic Honors/Professional Service:

2019-2020	Altman Scholar, Miami University Humanities Center
2012	Sigma Xi (Miami University Chapter) Annual Researcher of the Year
2010	Miami University Distinguished Scholar Award
2008-Present	Senior Editor of *Fungal Biology*
2008-2018	Editorial reviewer for *Fungi Magazine*
2006-2011	Co-editor of *Lloydiana*
2005-2011	Member of Executive Board of *Fungal Biology Reviews*
2001-2006	Associate Editor of *Mycologia*
1998-Present	Associate Editor (and Review Editor 2002-2004) of *Fungal Genetics and Biology*
1995-2008	Associate Editor of *Mycological Research*
1986-1987	James Hudson Brown - Alexander B. Coxe Research Fellowship, Yale University

Portfolio of Course Offerings: General Botany; Plants, Humanity, and Environment; Mycology (introductory, advanced, diverse seminars); Plant Pathology; Introduction to Graduate Studies; Plant and Fungal Biodiversity; Germs, Genes, and Evolution (seminar); Science and the Kentucky Creation Museum (seminar); Science and Religion; Mushroom: Nature's Masterpiece (seminar); Cell Biology (introductory and advanced classes); Introductory Biochemistry; General Microbiology; Reading Darwin's Origin (graduate seminar); Rethinking Biodiversity (seminar); Western Senior Seminar (to support senior research projects); Climate Change; Sexual Biology; The Science and Art of Time; Biology and Society (large freshman class); The Origin of Life (graduate seminar).

Graduate Students: Mohammed Hasan (MA); Chris Burlak (MS); Chris Davis (MS); Levi Yafetto (PhD); Jessica Stolze (PhD); Yunluan Cui (MS & PhD); Maribeth Hassett (MS & PhD); Yama Vitor Chiodi (PhD).

Books:

Non-fiction

Money, N. P. 2024. *Molds, Mushrooms, and Medicines: Our Lifelong Relationship with Fungi.* Princeton University Press, in press (publication in March).

Money, N. P. 2021. *Nature Fast and Nature Slow: How Life Works from Fractions of a Second to Billions of Years.* Reaktion Books, London & University of Chicago Press.

Money, N. P. 2019. *The Selfish Ape: Human Nature and Our Path to Extinction.* Reaktion Books, London & University of Chicago Press.

Money, N. P. 2018. *The Rise of Yeast: How the Sugar Fungus Shaped Civilization.* Oxford University Press, Oxford & New York.

Money, N. P. 2017. *Mushrooms: A Natural and Cultural History.* Reaktion Books, London.

Money, N. P. 2016. *Fungi: A Very Short Introduction.* Oxford University Press, Oxford.

Watkinson, S. C., Boddy, L. and Money, N. P. 2016. *The Fungi,* 3rd edition. Academic Press, Amsterdam.

Money, N. P. 2014. *Microbiology: A Very Short Introduction.* Oxford University Press, Oxford.

Money, N. P. 2014. *The Amoeba in the Room: Lives of the Microbes.* Oxford University Press, Oxford & New York.

Money, N. P. 2011. *Mushroom.* Oxford University Press, New York.

Money, N. P. 2007. *The Triumph of the Fungi: A Rotten History.* Oxford University Press, New York.

Money, N. P. 2004. *Carpet Monsters and Killer Spores: A Natural History of Toxic Mold.* Oxford University Press, New York.

Money, N. P. 2002. *Mr. Bloomfield's Orchard. The Mysterious World of Mushrooms, Molds, and Mycologists.* Oxford University Press, New York.

Fiction

Money, N. P. 2017. *The Mycologist: The Diary of Bartholomew Leach, Professor of Natural Philosophy.* Wooster Book Company, Wooster, Ohio.

Peer-reviewed publications: primary research, reviews, & commentaries (89 total)

h-index 41 (scholar.google.com)

Money, N. P. 2024. Microballistics in fungi and plants. *Current Biology*, in press.

Money, N. P., Stolze-Rybczynski, J., Fischer, M. W. F. 2024. Mechanics of the artillery fungus. *Fungal Biology*, in press.

Money, N. P. 2024. Fungal thermotolerance revisited and why climate change is unlikely to be supercharging pathogenic fungi (yet). *Fungal Biology* 128: 1638-1641.

Money, N. P., Stolze-Rybczynski, J., Davis, D. J., Smith, B. E., Trninic, D., Fischer, M. W. F. 2023. Ascus function: From squirt guns to ooze tubes. *Fungal Biology* 127: 1491-1504.

Money, N. P. 2023. Goldilocks mushrooms: How ballistospory has shaped basidiomycete evolution. *Fungal Biology* 127: 975-984.

Money, N. P. 2023. The fastest short jump in nature: Progress in understanding the mechanism of ballistospore discharge. *Fungal Biology* 127: 835-844.

Money, N. P. 2022. Action and inertia in the study of hyphal growth. *Fungal Biology Reviews* 41: 24-30.

Money, N. P. 2021. Fungal ecology: Truffle-guzzling birds. *Current Biology* 31: R1591-R1593.

Money, N. P. and Fischer, M. W. F. 2021. Weighing amoebas. *The American Biology Teacher* 83: 571-574.

Money, N. P. 2021. Hyphal and mycelial consciousness: The concept of the fungal mind. *Fungal Biology* 125: 257-259. (Most downloaded article from this journal in the last 3 years)

Money, N. P. 2016. Review: Are mushrooms medicinal? *Fungal Biology* 120: 449-453. (Highest number of downloads from this journal over 5-year period)

Hassett, M. O., Fischer, M. W. F., and Money, N. P. 2015. Mushrooms as rainmakers: How spores act as nuclei for raindrops. *PLoS ONE* 10(10): e0140407. doi: 10.1371/journal.pone.0140407 (34,000 views since publication)

Money, N. P. 2015. Professor John Webster (1925-2014). *Fungal Ecology* 15: 90-91.

Hassett, M. O., Fischer, M. W. F., and Money, N. P. 2015. Short-range splash discharge of peridioles in *Nidularia*. *Fungal Biology*, 119: 471-475.

Money, N. P. 2014. Circus Fungorum: The aesthetics of the invisible and their movements. *PAN: Philosophy, Activism, Nature* (www.panjournal.net) 10: 98-102.

Hassett, M. O., Sugawara, Z. T., Stolze-Rybczynski, J., Fischer, M. W. F., Money, N. P. 2013. Splash and grab: Biomechanics of peridiole ejection and function of the funicular cord in bird's nest fungi. *Fungal Biology* 117: 708-714.

Money, N. P. 2013. Against the naming of fungi. *Fungal Biology* 117: 463-465. (Most downloaded article in the [online] history of the journal)

Suryanarayanan T. S., Govindarajulu, M. B., Thirumalai, E., Reddy, S. M., and Money, N. P. 2011. Agni's fungi: Heat-resistant spores from the Western Ghats, southern India. *Fungal Biology* 115: 833-838.

Money, N. P. 2011. The 200th anniversary of the hypha. *Fungal Biology* 115: 443-445.

Fischer, M. W. F., Stolze-Rybczynski, J. L., Davis, D. J., Cui, Y., and Money, N. P. 2010. Solving the aerodynamics of fungal flight: How air viscosity slows spore motion. *Fungal Biology* 114: 943-948.

Money, N. P. 2010. Cecil Terence Ingold (1905-2010). *Nature* 465: 1025.

Fischer, M. W. F., Stolze-Rybczynski, J. L., Cui, Y., and Money, N. P. 2010. How far and how fast can mushroom spores fly? Physical limits on ballistospore size and discharge distance in the Basidiomycota. *Fungal Biology* 114: 669-675.

Fischer, M. W. F., and Money, N. P. 2010. Why mushrooms form gills: efficiency of the lamellate morphology. *Fungal Biology* 114: 57-63.

Yafetto, L., Davis, D. J., and Money, N. P. 2009. Biomechanics of invasive growth by *Armillaria* rhizomorphs. *Fungal Genetics and Biology* 46: 688-694. doi:10.1016/j.fgb.2009.04.005

Money, N. P., and Fischer, M. W. F. 2009. Biomechanics of spore discharge in phytopathogens. In: Deising, H. ed. *The Mycota*, Volume 5, *Plant Relationships*, 2nd edition. Springer Verlag, New York, pp. 115-133.

Stolze-Rybczynski, J. L., Cui, Y., Stevens, M. H. H., Davis, D. J., Fischer, M. W. F., and Money, N. P. 2009. Adaptation of the spore discharge mechanism in the Basidiomycota. *PLoS ONE* 4(1): e4163 doi:10.1371/journal.pone.0004163 (8,000 views since publication)

Yafetto, L., Carroll, L., Cui, Y., Davis, D. J., Fischer, M. W. F., Henterly, A. C., Kessler, J. D., Kilroy, H., Shidler, J. B., Stolze-Rybczynski, J. L., Sugawara, Z., and Money, N. P. 2008. The fastest flights in nature: high-speed spore discharge mechanisms among fungi. *PLoS ONE* 3(9): e3237. doi:10.1371/journal.pone.0003237 (50,000 views since publication)

Money, N. P. 2008. Insights on the mechanics of hyphal growth. *Fungal Biology Reviews* 22: 71-76.

Tucker, K., Stolze, J. L., Kennedy, A. H., and Money, N. P. 2007. Biomechanics of conidial dispersal in the toxic mold *Stachybotrys chartarum*. *Fungal Genetics and Biology* 44: 641-647.

Money, N. P. 2007. Biomechanics of invasive hyphal growth. In: Howard, R. J., and Gow, N. A. R., eds. *The Mycota*, Volume 8, *Biology of the Fungal Cell*, 2nd edition. Springer Verlag, New York, pp. 237-249.

Money, N. P. 2006. Plagues upon houses and cars: The unnatural history of *Meruliporia incrassata*, *Serpula lacrymans*, and *Sphaerobolus stellatus*. In Gadd, G. M., Watkinson, S. C., Dyer, P., eds., *Fungi in the Environment*. Cambridge University Press, Cambridge, pp. 289-309.

Moore, D., Pöder, R., Molitoris, H. P., Money, N. P., Figlas, D., and Lebel, T. 2006. Crisis in teaching future generations about fungi. *Mycological Research* 110: 626-627.

Davis, D. J., Lanter, K., Makselan, S., Bonati, C., Asbrock, P., Ravishankar, J. P., and Money, N. P. 2006. Relationship between temperature optima and secreted protease activities of three *Pythium* species and pathogenicity toward plant and animal hosts. *Mycological Research* 110: 96-103.

Pringle, A., Patek, S. N., Fischer, M., Stolze, J., and Money, N. P. 2005. The captured launch of a ballistospore. *Mycologia* 97: 866-871.

Money, N. P., and Ravishankar, J. P. 2005. Biomechanics of stipe elongation in the basidiomycete *Coprinopsis cinerea*. *Mycological Research* 109: 628-635.

Money, N. P. 2005. Why picking wild mushrooms may be bad behavior. *Mycological Research* 109: 131-135.

Money, N. P. 2005. Fungal irritability and survival mechanisms. *Mycological Research* 109: 129.

Money, N. P. 2004. Mushrooms in cyberspace. *Nature* 431: 32.

Money, N. P., Davis, C. M., and Ravishankar, J. P. 2004. Biomechanical evidence for convergent evolution of the invasive growth process among fungi and oomycete water molds. *Fungal Genetics and Biology* 41: 872-876.

Money, N. P. 2004. The fungal dining habit: a biomechanical perspective. *Mycologist* 18: 71-76.

Fischer, M., Cox, J., Davis, D. J., Wagner, A., Taylor, R., Huerta, A. J., and Money, N. P. 2004. New information on the mechanism of forcible ascospore discharge from *Ascobolus immersus*. *Fungal Genetics and Biology* 41: 698-707.

Money, N. P. 2003. Suicidal mushroom cells. *Nature* 423: 26.

Money, N. P. 2002. Mushroom stem cells. *BioEssays* 24: 949-952.

MacDonald, E., Millward, L., Ravishankar, J. P., and Money, N. P. 2002. Biomechanical interaction between hyphae of two *Pythium* species (Oomycota) and host tissues. *Fungal Genetics and Biology* 37: 245-249.

Ravishankar, J. P., Davis, C. M., Davis, D. J., MacDonald, E., Makselan, S. D., Millward, L., and Money, N. P. 2001. Mechanics of solid tissue invasion by the mammalian pathogen *Pythium insidiosum. Fungal Genetics and Biology* 34: 167-175.

Money, N. P. 2001. Biomechanics of invasive hyphal growth. In: Howard, R. J., and Gow, N. A. R., eds. *The Mycota*, Volume 8, *Biology of the Fungal Cell.* Springer Verlag, New York, pp. 3-17.

Money, N. P. 2001. The pulse of the machine—reevaluating tip-growth methodology. *New Phytologist* 151: 553-555.

Deering, R., Dong, F., Rambo, D., and Money, N. P. 2001. Airflow patterns around mushrooms and their relationship to spore dispersal. *Mycologia* 93: 732-736.

Money, N. P. 2001. Reverend Berkeley's Devil. *Nature* 411: 644-645.

Money, N. P. 2001. Functions and evolutionary origin of hyphal turgor pressure. In: Geitmann, A., Cresti, M., and Heath, I. B., eds., *Cell Biology of Plant and Fungal Tip Growth, NATO Science Series.* Kluwer Academic Publishers, Dordrecht, The Netherlands, pp. 161-170.

Butler, M. J., Day, A. W., Henson, J. M., and Money, N. P. 2001. Pathogenic properties of fungal melanins. *Mycologia* 93: 1-8.

Money, N. P. 2000. Fungal get-together. *Nature* 405: 751.

Money, N. P. 2000. Group sex in New England. *Mycological Research* 104: 898-899.

Davis, D. J., Burlak, C., and Money, N. P. 2000. Osmotic pressure of fungal compatible osmolytes. *Mycological Research* 104: 800-804.

Davis, D. J., Burlak, C., and Money, N. P. 2000. Biochemical and biomechanical aspects of appressorial development in *Magnaporthe grisea.* In: Tharreau, D., Lebrun, M. H., Talbot, N. J., and Notteghem, J. L., eds., *Advances in Rice Blast Research.* Kluwer Academic Publishers, Dordrecht, The Netherlands, pp. 248-256.

Brush, L., and Money, N. P. 1999. Invasive hyphal growth in *Wangiella dermatitidis* is induced by stab inoculation and shows dependence upon melanin biosynthesis. *Fungal Genetics and Biology* 28: 190-200.

Money, N. P. 1999. To perforate a leaf of grass. *Fungal Genetics and Biology* 28: 146-147.

Johns, S., Davis, C. M., and Money, N. P. 1999. Pulses in turgor pressure and water potential: resolving the mechanics of hyphal growth. *Microbiological Research* 154: 225-231.

Money, N. P. 1999. On the origin and functions of hyphal walls and turgor pressure. *Mycological Research* 103: 1360.

Money, N. P. 1999. Fungus punches its way in. *Nature* 401: 332-333.

Husher, J., Cesarov, S., Davis, C., Fletcher, T., Mbuthia, K., Richey, L., Sparks, R., Turpin, L. A., and Money, N. P. 1999. Evaporative cooling of mushrooms. *Mycologia* 91: 351-352.

Daugherty, J., Evans, T. M., Skillom, T., Watson, L. E., and Money, N. P. 1998. Evolution of spore release mechanisms in the Saprolegniaceae (Oomycetes): Evidence from ITS sequences. *Fungal Genetics and Biology* 24: 354-363.

Money, N. P., Caesar-TonThat, T.-C., Frederick, B., and Henson, J. M. 1998. Melanin synthesis is associated with changes in hyphopodial turgor, permeability, and wall rigidity in *Gaeumannomyces graminis* var. *graminis*. *Fungal Genetics and Biology* 24: 240-251.

Money, N. P. 1998. More g's than the Space Shuttle: The mechanism of ballistospore discharge. *Mycologia* 90: 547-558.

Money, N. P. 1998. Why oomycetes have not stopped being fungi. *Mycological Research* 102: 767-768.

Money, N. P. 1998. Mechanics of invasive fungal growth and the significance of turgor in plant infection. In: Kohmoto, K., and Yoder, O. C., eds., *Molecular Genetics of Host Specific Toxins in Plant Disease.* Kluwer Academic Publishers, Dordrecht, The Netherlands, pp. 261-271.

Money, N. P. 1997. Mechanism linking cellular pigmentation and pathogenicity in rice blast disease: a commentary. *Fungal Genetics and Biology* 22: 151-152.

Money, N. P. 1997. Wishful thinking of turgor revisited: The mechanics of fungal growth. *Fungal Genetics and Biology* 21: 173-187.

Money, N. P., and Hill, T. 1997. Correlation between endoglucanase secretion and cell wall strength in oomycete fungi: Implications for growth and morphogenesis. *Mycologia* 89: 777-785.

Money, N. P., and Howard, R. J. 1996. Confirmation of a link between fungal pigmentation, turgor pressure, and pathogenicity using a new method of turgor measurement. *Fungal Genetics and Biology* 20: 217-227.

Harold, R. L., Money, N. P., and Harold, F. M. 1996. Growth and morphogenesis in *Saprolegnia ferax*: Is turgor required? *Protoplasma* 191: 105-114.

Money, N. P. 1995. Turgor pressure and the mechanics of fungal penetration. *Canadian Journal of Botany* 73 (Suppl. 1): S96-S102.

Harold, F. M., Harold, R. L., and Money, N. P. 1995. What forces drive cell wall expansion? *Canadian Journal of Botany* 73 (Suppl. 1): S379-S383.

Kropf, D. L., Money, N. P., and Gibbon, B. C. 1995. Role of cytosolic pH in tip growth. *Canadian Journal of Botany* 73 (Suppl. 1): S126-S130.

Money, N. P. 1994. Osmotic adjustment and the role of turgor in mycelial fungi. In: Wessels, J. G. H., and Meinhardt, F., eds. *The Mycota*, Volume 1, *Growth, Differentiation and Sexuality.* Springer Verlag, New York, pp. 67-88.

Money, N. P., and Harold, F. M. 1993. Two water molds can grow in the absence of measurable turgor pressure. *Planta* 190: 426-430.

Money, N. P., and Harold, F. M. 1992. Extension growth in the water mold *Achlya*: Interplay of turgor and wall strength. *Proceedings of the National Academy of Sciences U.S.A.* 89: 4245-4249.

Howard, R. J., Ferrari, M. A., Roach, D. H., and Money, N. P. 1991. Penetration of hard substrates by a fungus employing enormous turgor pressures. *Proceedings of the National Academy of Sciences U.S.A.* 88: 11281-11284.

Bray, D., Money, N. P., Harold, F. M., and Bamburg, J. R. 1991. Responses of growth cones to changes in osmolality of the surrounding medium. *Journal of Cell Science* 98: 507-515.

Money, N. P. 1990. Measurement of hyphal turgor. *Experimental Mycology* 14: 416-425.

Money, N. P. 1990. Measurement of pore size in the hyphal cell wall of *Achlya bisexualis*. *Experimental Mycology* 14: 234-242.

Money, N. P. 1989. Osmotic pressure of aqueous polyethylene glycols: The relationship between molecular weight and vapor pressure deficit. *Plant Physiology* 91: 766-769.

Money, N. P., and Webster, J. 1989. The mechanism of sporangial emptying in *Saprolegnia*. *Mycological Research* 92: 45-49.

Money, N. P., and Webster, J. 1988. Cell wall permeability and its relationship to spore release in *Achlya intricata*. *Experimental Mycology* 12: 169-179.

Money, N. P., Webster, J., and Ennos, R. 1988. Dynamics of sporangial emptying in *Achlya intricata*. *Experimental Mycology* 12: 13-27.

Money, N. P., and Webster, J. 1987. Aspects of spore ball formation in *Achlya*. *Transactions of the British Mycological Society* 88: 341-346.

Money, N. P., and Brownlee, C. 1987. Structural and physiological changes during sporangial development in *Achlya intricata* Beneke. *Protoplasma* 136: 199-204.

Money, N. P., Beakes, G. W., Webster, J., and Wakeley, G. 1987. Rudimentary flagella in sporangiospores of *Achlya*. *Transactions of the British Mycological Society* 89: 108-114.

Money, N. P., and Webster, J. 1985. Water stress and sporangial emptying in *Achlya* (Saprolegniaceae). *Botanical Journal of the Linnean Society* 91: 319-327.

Selected non peer-reviewed publications:

Money, N. P. 2023. Mushrooms are more like us than we think. *IAI News* /articles/mushrooms-are-more-like-us-than-we-think-nicholas-p-money-auid-2677

Money, N. P. 2023. Exploring the artistic beauty of fungi. *NatureVolve* 13: 30-24. https://issuu.com/naturevolve/docs/issue_13_naturevolve

Money, N. P. 2022. On "Nature Fast and Nature Slow." *Interalia Magazine*, July 2022. https://www.interaliamag.org/interviews/nik-money-on-nature-fast-and-nature-slow

Money, N. P. 2022. The blessing of extinction. *The Stranger*, June 2022. https://www.thestranger.com/guest-editorial/2022/06/15/75098383/the-blessing-of-extinction

Money, N. P. 2021. A vast, thrilling world of nature unfolds outside of human time. Aeon / Psyche Magazine. https://psyche.co/ideas/a-vast-thrilling-world-of-nature-unfolds-outside-of-human-time

Money, N. P. 2021. The fungal mind: on the evidence for fungal intelligence. Aeon / Psyche Magazine. https://psyche.co/ideas/the-fungal-mind-on-the-evidence-for-mushroom-intelligence

Money, N. P. 2021. This selfish ape. In, C. Mounsey, S. Booth, editors, *Uncontrollable Extinction: Reconsidering Extinction in Terms of Global Bioethics* (Routledge, Milton Park, UK), pp. 37-49.

Money, N. P. 2018. The fungus that's worth $900 billion a year. https://blog.oup.com/2018/02/fungusworth-900-billion/

Money, N. P. 2017. I am a mushroom. Online publication by Reaktion Books: http://www.reaktionbooks.co.uk/browse/article_detail/i_am_a_mushroom

Money, N. P. 2016. Women mycologists. Online publication by Oxford University Press: http://blog.oup.com/2016/03/women-mycologists/

Money, N. P. 2014. A simple tool to spark student passion for science. Op-Ed in *The Seattle Times*, May 20, 2014.

Money, N. P., Hassett, M. O., Fischer, M. W. F. 2014. Circus Fungorum: The aesthetics of fungal movement. *Fungi* 6(5): 36-39.

Money, N. P., Hassett, M. O., Fischer, M. W. F. 2013. Circus Fungorum: The aesthetics of the invisible and their movements. *Philosophy, Activism, Nature* 10: 98-102.

Money, N. P. 2013. Developing a New Individualized and Interdisciplinary Curriculum for the 21st Century: Miami University's Western Program Reimagined. In, J. L. Devitis, editor, *The College Curriculum: A Reader*. Peter Lang, New York.

Money, N. P. 2011. What mushrooms have taught me about the meaning of life. *Fungi* 4(3): 49-50.

Money, N. P. 2010. Mushrooms go to the movies. *Fungi* 3(3): 27-29.

Money, N. P. 2010. Beatrix Potter: Victorian mycologist. *Lloydiana* 14(1-2): 8-9.

Money, N. P. 2009. The mycological connection between Mr. Darwin and Mr. Lloyd. *Fungi* 3(1).

Money, N. P. 2009. The mycological connection between Mr. Darwin and Mr. Lloyd. *Lloydiana* 13(4): 2-3.

Money, N. P. 2009. Beatrix Potter: Victorian mycologist. *Fungi* 2(4): 63-64.

Money, N. P. 2007. The first book of mycology: *Theatrum Fungorum* by Franciscus van Sterbeeck (1675). *Lloydiana* 11(1-4): 2-4.

Money, N. P. 2007. The first book of mycology: *Theatrum Fungorum* by Franciscus van Sterbeeck (1675). *Inoculum* 58(5): 1-2.

Money, N. P. 2007. Ms. Potter's first love. *Inoculum* 58(2): 1-2.

Money, N. P. 2004. Uninvited guests: Part 1. *HarrisMartin Columns Mold* 3(8): 2-3, 62-63. (HarrisMartin Publishing, Berwyn, PA).

Money, N. P. 2004. Uninvited guests: Part 2. *HarrisMartin Columns Mold* 3(9): 2-3, 57-59. (HarrisMartin Publishing, Berwyn, PA).

Grants (sole P.I. unless stated otherwise, no applications submitted, by design, since 2011); Federal funding total $1.5 million:

2008-2012. National Institutes of Health/NIEHS 1R15 ES016425, *Spore release mechanisms in indoor fungi*; award amount $213,000 (+ $15,000 institutional match).

2009-2010. National Institutes of Health/NIEHS, Administrative Supplement; award amount $69,580.

2008-2011. National Science Foundation grant 0743074, *Ballistospore discharge: Adaptations among mushroom forming fungi*; P.I. Money, N. P., Co-P.I. Davis, D. J.; award amount $223,706.

2007. National Institutes of Health/NIEHS supplement to 1 R15 ES012907-01A1, *Spore dispersal and germination in Stachybotrys*; award amount $35,000 (+ $35,000 institutional match).

2005-2008. National Institutes of Health/NIEHS 1 R15 ES012907-01A1, *Spore dispersal and germination in Stachybotrys*; award amount $213,000.

2000-2003. National Science Foundation grant 9985546, *Hyphal biomechanics in pathogenic oomycetes*; award amount $287,103.

2001. National Science Foundation grant 0111855, *Hyphal biomechanics in pathogenic oomycetes*; supplemental award to grant 9985546, amount $14,332.

2001. Ohio Plant Biotechnology Consortium, Multi-channel capillary sequencer: equipment request. P.I., Watson, L.; Co-P.I.s: Wood, P. C., Money, N. P., Morris, P. F., amount: $65,000 (plus $65,000 institutional match).

2000. Co-Principal Investigator with Paul Morris on Ohio Plant Biotechnology Consortium, Ohio Board of Regents, grant *Quantifying the role of the physical barrier in the resistant response of soybean hypocotyls to infection by Phytophthora sojae: Do isoflavones play a role?*; award amount $20,000.

2000. Procter and Gamble Company, Cincinnati, Ohio, *Water soluble polymers as broad-spectrum fungistatic agents*; award amount $5,000.

1999-2001. Faculty Research Grants Proposal, Miami University Committee on Faculty Research. *A new approach to controlling fungal growth*; award amount $18,641.

1997-2000. National Institutes of Health grant 1-R15-AI/OD41198-01, *Fungal pigmentation and turgor pressure in human mycoses*; award amount $102,726.

1998. Research Challenge Proposal, Ohio Board of Regents. *A micromechanical study of force generation by fungal hyphae*; award amount $10,000.

1996. Shoupp Award from the Miami University Research Advisory Council. *Fungal pigmentation and disease: Collaborative research between Miami University and the DuPont Company*; award amount $4,962.

1996. Research Challenge Proposal, Ohio Board of Regents. *Unraveling the link between fungal pigmentation and plant diseases in Ohio*; award amount $10,000.

1996. Faculty Research Grants Proposal, Miami University Committee on Faculty Research. *Measuring fungal turgor pressure*; award amount $17,549.

1991-1994. Co-Principal Investigator with Dr. Franklin Harold on National Science Foundation Grant *Apical growth of fungal hyphae*; award amount $270,000.

Board Memberships:

2006-2015. Elected Member of the Board of Trustees of the Lloyd Library and Museum, Cincinnati, Ohio.

Service to Government Agencies:

2010. EPA Mold Specific Quantitative PCR Peer Review Panel.

2009. NSF (Integrative Organismal Systems) Proposal Review Panel.

Consulting:

2001-present. Diverse consultations as expert witness on indoor mold problems, fungal spoilage of manufactured goods, and tree damage, including courtroom testimony.

2000-2010. Procter and Gamble Company, Cincinnati, Ohio.

1998-1999. VLT Technologies Company, Ltd., Ohio.

Workshops:

2007. The Hidden Kingdom: Fungi at Rowe Woods. Cincinnati Nature Center, Milford, Ohio.

2005. Magical Mushrooms Workshop at Aullwood Audubon Center, Dayton, Ohio.

2003. Mycological Masterclass for employees at Procter and Gamble Co., Cincinnati, Ohio.

Exhibitions:

2023. *A Foray into Fungi.* Lloyd Library and Museum, Cincinnati. Consultant on exhibits and opening lecturer.

2012. *What Makes the Reindeer Fly?* An exhibition on psychoactive mushrooms. Lloyd Library and Museum, Cincinnati. Co-developer of exhibition and opening lecturer.

2006. *Treasures on Paper from the Lloyd,* Miami University Art Museum. Co-developer of exhibition and opening lecturer.

2005. *Plates of Fungi,* Lloyd Library and Museum, Cincinnati. Co-developer of exhibition and opening lecturer.

Book Reviews:

Money, N. P. 2015. Gardening with a microscope, review of *The Hidden Half of Nature* by D. R. Montgomery and A. Biklé. *The Wall Street Journal,* December 11, 2015.

Money, N. P. 2010. Review of *The Kingdom Fungi,* by S. Stevenson. *Inoculum,* 61 (3): 13.

Money, N. P. 2008. Review of *Fungi in the Ancient World,* by F. M. Dugan. *Mycological Research* 112: 1129.

Money, N. P. 2006. Review of *Essays on William Chambers Coker, Passionate Botanist,* by M. C. Joslin. *Inoculum* 57 (6): 9.

Money, N. P. 2006. Review of *Essays on William Chambers Coker, Passionate Botanist,* by M. C. Joslin. *Lloydiana* 10 (4): 9-10.

Money, N. P. 2006. Review of *Fungi: Experimental Methods in Biology,* by R. Maheshwari. *Mycological Research* 110: 1000.

Money, N. P. 2004. Review of *Medical Mycology in the United States: A Historical Analysis (1894-1996),* by A. V. Espinel-Ingroff, 2003. *Lloydiana* 8: 5-6.

Money, N. P. 2001. Review of *Fungal Biology. Understanding the Fungal Lifestyle.* Second Edition (D. H. Jennings and G. Lysek, 1999). *Mycopathologia* 153: 163.

Money, N. P. 2001. Review of *The Fungi.* Second Edition (ed. M. J. Carlile, S. C. Watkinson and G. W. Gooday, 2001). *American Society of Microbiology News* 68: 41.

Money, N. P. 2001. Lifting the veil. Review of *Slayers, Saviors, Servants, and Sex. An Exposé of Kingdom Fungi* (D. Moore, 2001). *Mycological Research* 105: 768.

Money, N. P. 1999. Review of *Fungal Morphogenesis* (D. Moore, 1998). *American Society of Microbiology News* 65: 711-712.

Money, N. P. 1997. In search of rules in fungal development. Review of *Patterns in Fungal Development* (ed. S-W. Chiu and D. Moore, 1996). *BioScience* 47: 628-629.

Money, N. P. 1995. Review of *Plant Allometry. The Scaling of Form and Process* (Karl J. Niklas, 1994). *Bulletin of the Torrey Botanical Club* 122: 321.

Money, N. P. 1994. Review of *Stress Tolerance of Fungi* (ed. D. H. Jennings, 1993). *Mycopathologia* 126: 193-194.

Invited Presentations:

International 1997-2023

2021 University of Agricultural Sciences, GKVK, Bengaluru, India (online)
2021 University of Campinas (Unicamp), Brazil (online)
2021 Kiraathane Istanbul Literature House Winter Season Lecture (online)
2019 Alberta Mycological Society, Edmonton, Canada
2018 British Library, London
2017 National Museum of Science and Nature, Tokyo, Japan
2016 New Zealand Microbiological Society, Christchurch, New Zealand (Plenary Lecturer)
2015 The Invasive Fungus Conference, Society for General Microbiology, Manchester, United Kingdom
2013 University of British Columbia, Vancouver, BC, Canada (Annual Beaty Biodiversity Lecturer)
2010 Royal Botanic Garden, Edinburgh, Scotland
2010 9th International Mycological Congress, Edinburgh, Scotland
2010 Department of Plant Sciences, Oxford University, United Kingdom
2009 Frontiers in Fungal Biology Meeting, Ensenada, Mexico
2007 Institute of Molecular Plant Sciences, University of Edinburgh, Scotland
2005 Department of Biology, University of Western Ontario, London, Ontario, Canada
2004 British Mycological Society Annual Meeting, Nottingham, United Kingdom (President's Invited Address)
2004 Canadian Botanical Society Meeting, University of Manitoba, Winnipeg, Manitoba, Canada (Luella Weresub Memorial Lecturer)
2002 7th International Mycological Congress, Oslo, Norway.
2001 Department of Biological Sciences, University of Saskatchewan, Canada
2000 Department of Plant Sciences, Oxford University, United Kingdom
2000 Department of Biological Sciences, Department of Microbiology, University of Manitoba
2000 NATO Advanced Research Workshop *Cell Biology of Plant and Fungal Tip Growth*, Siena, Italy
1999 3rd Latin American Mycological Congress, Caracas, Venezuela
1998 2nd International Rice Blast Conference, Montpellier, France
1997 Department of Biology, University of Windsor, Ontario
1997 3rd Tottori University International Symposium on *Host-Specific Toxins in Plant Disease*, Mount Daisen, Japan

Domestic 1998-2023

2023 Lloyd Library and Museum, Cincinnati, OH
2022 The Ohio State University, Columbus, OH
2020 Museum of the Moving Image, Astoria, NY, web presentation/discussion: https://www.youtube.com/watch?v=x8VXPKFn9Z8
2020 Mycological Association of Washington, DC, web presentation: https://www.youtube.com/watch?v=9sZTIhgS7yw
2018 Ohio Mushroom Society, Dick Grimm Memorial Banquet Annual Lecture, Wooster, OH

2018 FOCO Science Book Festival, Fort Collins, CO
2018 History Book Festival, Lewes, DE
2017 NAMA Northwoods Foray, Cable, WI (Keynote Presentation)
2017 Telluride Mushroom Festival, Telluride, CO (Keynote Presentation)
2017 New York Mycological Society Lecture Series, New York City
2017 Big Muddy Speaker Series, Kansas City, MO
2016 Annual Gary Lincoff Mushroom Foray, Western Pennsylvania Mushroom Society, Pittsburgh, Pennsylvania
2016 Gordon Conference, Cellular and Molecular Fungal Biology, Holderness, New Hampshire
2015 Ohio Academy of Medical History Annual Meeting, Lloyd Library and Museum, Cincinnati, Ohio
2014 Promotional talks for *The Amoeba in the Room*: San Francisco Public Library, Seattle Town Hall (sponsored by Microsoft), & Boston Athenaeum.
2013 The New York Public Library, Mid-Manhattan Library
2013 Oklahoma State University, Annual Library-Botany lecture Series Speaker
2012 Ohio Wesleyan University, Delaware, Ohio
2012 The New York Public Library, Mid-Manhattan Library
2012 Science FooCamp, Googleplex, California
2011 Indiana Wesleyan University, workshop on *The Pedagogy of Faith in the Science Classroom* (Invited Atheist Presenter)
2011 Biological Sciences, University of Pittsburgh, Pittsburgh, Pennsylvania
2011 School of Engineering and Applied Science, Harvard University
2011 Boston Mycological Club, Boston, Massachusetts
2011 Miami University, Oxford, Ohio, *10th Race, Gender, Class, Sexuality Symposium*
2010 The Bone Room (Natural History Salon), Berkeley, California
2010 Plant & Microbial Biology, University of California, Berkeley (Tsujimoto Lecturer)
2009 Miami University, series of invited lectures in commemoration of the 200th anniversary of Charles Darwin's birth and 200th anniversary of the foundation of Miami University
2009 Youngstown State University, Youngstown, Ohio
2009 Messiah College, Grantham, Pennsylvania
2009 Eastern Ohio Mushroomers, Lancaster, Pennsylvania
2009 Miami University, Oxford, Ohio, *9th Race, Gender, Class, Sexuality Symposium*
2008 Cincinnati Wild Flower Preservation Society, Cincinnati, Ohio
2008 Fungi and the Encyclopedia of Life Workshop, State College, Pennsylvania
2008 Mycological Society of America Annual Meeting, State College, Pennsylvania
2008 Balticon 42 (Science Fiction Conference), Baltimore, Maryland
2008 USDA-ARS Laboratories, Beltsville, Maryland
2007 ASM Fungal Kingdom Colloquium, Tucson, Arizona
2007 Minnesota Interlaboratory Microbiology Association, Bloomington, Minnesota
2007 OBOR State Teacher's Workshop, Middletown, Ohio
2007 Department of Mathematical Sciences, University of Delaware, Newark, Delaware
2007 Dept. of Ecology and Evolutionary Biology, University of Kansas, Lawrence, Kansas
2007 Holy Trinity Episcopal Church, Science and Religion Symposium, Oxford, Ohio
2006 Department of Biology, Kenyon College, Gambier, Ohio
2006 Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas
2006 Engel Entertainment, New York City
2006 Miami University Museum Association, Oxford, Ohio
2006 Home Builders Association, Toledo, Ohio
2006 Bricker & Eckler LLP Construction Group, West Chester, Ohio
2006 Ohio Valley Section of the American Industrial Hygiene Association, Cincinnati, Ohio
2006 Midwest Veterinary Conference, Columbus, Ohio

2005 Department of Organismic and Evolutionary Biology, Harvard University, Cambridge
2005 Ohio Mushroom Society, Buckeye Lake, Ohio
2005 Department of Biochemistry & Cell Biology, Rice University, Houston, Texas
2005 The Mycological Association of Washington D.C., Washington D.C.
2005 Illinois Mycological Association, Chicago
2005 Department of Integrative Biology, University of California, Berkeley
2005 Ohio Branch of the American Society for Microbiology Annual Meeting, Delaware, Ohio
2005 Lloyd Library and Museum, Cincinnati
2004 Columbus Natural History Society, Columbus, Ohio (second presentation in 2004)
2004 Department of Botany and Microbiology, Ohio Wesleyan University, Delaware, Ohio
2004 Department of Biology, Rhodes College, Memphis, Tennessee
2004 Department of Biology, Oberlin College, Oberlin, Ohio
2004 American Phytopathological Society Meeting, Anaheim, California
2004 Columbus Natural History Society, Columbus, Ohio
2004 Department of Biology, College of Mount St. Joseph, Cincinnati, Ohio
2004 Dept. of Biological Sciences, Bowling Green State University, Bowling Green, Ohio
2003 Department of Plant Sciences, Michigan State University, East Lansing, Michigan
2003 HarrisMartin Publishing *Mold Litigation* Conference, New Orleans, Louisiana
2003 Miami University, Oxford, Ohio, *Race, Gender, Class, Sexuality* Symposium,
2002 Bureau of Workers' Compensation, State of Ohio, Mason, Ohio
2002 College of Medicine, University of Cincinnati, Cincinnati, Ohio
2002 U.S. EPA, Cincinnati, Ohio
2002 Mycological Society of America Annual Meeting, Portland, Oregon
2000 Department of Biological Sciences, Northern Illinois University
2000 Mycological Society of America Annual Meeting, Burlington, Vermont.
2000 Annual Meeting of the Ohio Branch of the American Society for Microbiology, Hueston Woods Resort and Conference Center, Oxford, Ohio
2000 Procter and Gamble Company, Cincinnati, Ohio
2000 Harvard University, Cambridge, Massachusetts
2000 Minnesota Inter-laboratory Microbiology Association, Minneapolis-St. Paul
1999 Department of Plant Pathology, University of Kentucky
1999 Department of Plant Pathology, Ohio State University
1999 Department of Biology, Hope College, Holland, Michigan
1999 Ohio Mushroomers Society, Hueston Woods State Park, Oxford, Ohio
1999 20th Fungal Genetics Conference, Asilomar Conference Center, Pacific Grove, California
1998 Department of Biology, Kenyon College, Gambier, Ohio

Abstracted Presentations at Professional Meetings 1998-2015:

*undergraduate author/**graduate student author/Nicholas Money podium presenter unless specified otherwise

Money, N. P. 2015. Mushrooms as rainmakers: A novel dispersal mechanism of global significance. IMIF Conference Abstracts, p. 8.

Hassett, M. O.**, Fischer, M. W. F., Money, N. P. 2014. Horizontal versus vertical splash discharge of peridioles in bird's nest fungi. Mycological Society of America Annual Meeting, Michigan State University, *Inoculum* 65(3): 29. Poster presentation by Maribeth Hassett.

Suryanarayanan, T. S., Doble, M., El Gueddari, N. E., Gopalan, V., Govindarajulu, M. B., Moerschbacher, B. M., Money, N. P., Murali, T. S., Sahal, D., Sasse, F., Sukumar, R., Thirunavukkarasu, N., Vidal, S. 2012. Fungal endophytes: an ecological group with high

technological potential. COST Action FA1103, Endophytes in Biotechnology and Agriculture, Trento, Italy. Podium presentation by T. S. Suryanarayanan.

Cui, Y.**, Money, N. P. 2012. Expression and dynamics of actin in constricting ring forming fungi. Mycological Society of America Annual Meeting, Yale University, *Inoculum* 63(3): 14-15. Poster presentation by Yunluan Cui.

Hassett, M. O.**, Sugawara, Z. T.*, Fischer, M. W. F., Money, N. P. 2011. Biomechanics of peridiole ejection and function of the funicular cord in bird's nest fungi. Mycological Society of America Annual Meeting, University of Alaska, AK, *Inoculum* 62(2): 22. Podium presentation by Maribeth Hassett.

Money, N. P. 2010. The fastest flights (and rotations) in nature: Fungal spore discharge at one million frames per second. IMC9, Edinburgh, Scotland. Abstract A9.6.

Fischer, M. W. F., Stolze-Rybczynski, J. L., Davis, D. J., Cui, Y.**, Money, N. P. 2010. How fungal spores manage to fly through air over much greater distances than (most) physicists believe. IMC9, Edinburgh, Scotland. Abstract A9.7.

Davis, D. J., Shrestha, S**, Money, N. P. 2010. Are mushroom extracts a useful component of anti-ageing cosmetics? IMC9, Edinburgh, Scotland. Abstract P4.11. Poster presentation by Diana Davis.

Cui, Y.**, Money, N. P. 2010. Dynamics of trap function in nematophagous fungi. IMC9, Edinburgh, Scotland. Abstract P1.18. Poster presentation by Yunluan Cui.

Money, N. P. 2009. The fastest flights (and rotations) in nature: Fungal spore discharge at one million frames per second. Frontiers in Fungal Biology Meeting, Ensenada, Mexico. Abstract 45, *Conference Program* p. 79.

Yafetto, L.**, Money, N. P., Davis, D. J., Dumais, J. 2009. New information on the mechanics of rhizomorph extension in *Armillaria gallica*. Botany and Mycology 2009 Meeting, Snowbird, UT, *Meeting Abstracts* #700 http://2009.botanyconference.org. Podium presentation by Levi Yafetto.

Cui, Y.**, Money, N. P. 2009. Membrane and cytoskeletal dynamics during trap closure in the nematophagous fungus *Arthrobotrys dactyloides*. Botany and Mycology 2009 Meeting, Snowbird, UT, *Meeting Abstracts* #382 http://2009.botanyconference.org. Poster presentation by Yunluan Cui.

Stolze-Rybczynski, J. L.**, Cui, Y.**, Fischer, M. W. F., Money, N. P. 2009. Adaptation of the spore discharge mechanism in the Basidiomycota. Botany and Mycology 2009 Meeting, Snowbird, UT, *Meeting Abstracts* #256 http://2009.botanyconference.org. Podium presentation by Jessica Stolze-Rybczynski.

Money, N. P. 2008. Capturing the mechanism (and beauty) of fast movements in fungi: New work with ultra high speed video. Mycological Society of America Annual Meeting, State College, PA, *Meeting Abstracts* http://www.msafungi.org.

Money, N. P. 2008. The long overdue "discovery" of the basidium. Mycological Society of America Annual Meeting, State College, PA, *Meeting Abstracts* http://www.msafungi.org.

Fischer, M. W. F., Davis, D. J., Money, N. P. 2008. Solving the aerodynamics of fungal flight. Mycological Society of America Annual Meeting, State College, PA, *Meeting Abstracts* http://www.msafungi.org. Podium presentation by Mark Fischer.

Yafetto, L.**, Davis, D. J., Money, N. P. 2008. Biomechanics of invasive growth by *Armillaria* rhizomorphs. Mycological Society of America Annual Meeting, State College, PA, *Meeting Abstracts* http://www.msafungi.org. Podium presentation by Levi Yafetto.

Stolze-Rybczynski, J. L.**, Fischer, M. W. F., Money, N. P. 2008. Biomechanics of spore discharge in *Armillaria tabescens*. Mycological Society of America Annual Meeting, State College, PA, *Meeting Abstracts* http://www.msafungi.org. Poster P8.

Trninic, D.*, Stolze-Rybczynski, J. L.**, Money, N. P. 2008. Spore launch by drying: The cavitation-based mechanism of conidial discharge in the banana pathogen *Deightoniella torulosa*. Mycological Society of America Annual Meeting, State College, PA, *Meeting Abstracts* http://www.msafungi.org. Poster P9.

Cui, Y.**, Stevens, M. H. H., Fischer, M. W. F., Money, N. P. 2008. Adaptations to the ballistospore discharge mechanism among Agaricomycetes. Mycological Society of America Annual Meeting, State College, PA, *Meeting Abstracts* http://www.msafungi.org. Poster P10.

Carroll, L.*, Cui, Y.**, Davis, D. J., Fischer, M. W. F., Henterly, A. C.*, Kessler, J. D.*, Kilroy, H.*, Shidler, J. B.*, Yafetto, L.**, Money, N. P. 2008. How the *Pilobolus* "squirt gun" works. Mycological Society of America Annual Meeting, State College, PA, *Meeting Abstracts* http://www.msafungi.org. Poster P11.

Carroll, L.*, Cui, Y.**, Davis, D. J., Fischer, M. W. F., Henterly, A. C.*, Kessler, J. D.*, Kilroy, H.*, Shidler, J. B.*, Yafetto, L.**, Money, N. P. 2008. How the *Pilobolus* "squirt gun" works. Poster presentation at the Annual Celebration of Teaching and Learning, College of Mount St. Joseph, Cincinnati, OH.

Yafetto, L.**, Davis, D. J., Money, N. P. 2007. Mechanics of rhizomorph development in *Armillaria mellea*. Mycological Society of America Annual Meeting, Baton Rouge, LA, *Meeting Abstracts* http://www.msafungi.org. Poster P58.

Stolze, J.**, Money, N. P. 2007. Ballistospore discharge in *Tilletia caries*. Mycological Society of America Annual Meeting, Baton Rouge, LA, *Meeting Abstracts* http://www.msafungi.org. Podium presentation by Jessica Stolze.

Money, N. P., Pringle, A., Patek, S. N., Stolze, J.**, Fischer, M. 2006. The launch of the ballistospore. Mycological Society of America & American Phytopathological Society Joint Annual Meeting, Québec City, *Meeting Abstracts* http://www.msafungi.org.

Stolze, J.**, Fischer, M., Yafetto, L.**, Davis, D. J., Money, N. P. 2006. The launch of ascospores: Observations and mathematical analysis. Mycological Society of America & American Phytopathological Society Joint Annual Meeting, Québec City, *Meeting Abstracts* http://www.msafungi.org. Podium presentation by Mark Fischer.

Yafetto, L.**, Money, N. P., Davis, D. J. 2006. Solving the chemical composition of ascus sap. Mycological Society of America & American Phytopathological Society Joint Annual Meeting, Québec City, *Meeting Abstracts* http://www.msafungi.org. Poster MP 108.

Money, N. P., Pringle, A., Patek, S. N., Fischer, M., Stolze, J.** 2006. Rapid discharge of mushroom spores. SCIB Annual Meeting, Orlando, Florida, *Meeting Abstracts* 56.3.

Fischer, M., Cox, J.*, Davis, D. J., Wagner, A.*, Taylor, R., Huerta, A. J., Money, N. P. 2005. New information on the mechanism of forcible ascospore discharge from *Ascobolus immersus*. Ohio Branch of the American Society for Microbiology Annual Meeting, Delaware, Ohio, *Meeting Abstracts*.

Money, N. P. 2005. The natural history of toxic mold. Ohio Branch of the American Society for Microbiology Annual Meeting, Delaware, Ohio, *Meeting Abstracts*.

Money, N. P. 2004. The mechanical value of fungal melanin. *Phytopathology* 94: S132.

Money, N. P. 2004. The odd couple: A mycological romance in three acts. Canadian Botanical Association Annual Meeting, Winnipeg, Manitoba, *Meeting Abstracts*.

Money, N. P. 2002. The golden rule of invasive growth: How almost every fungus feeds. Mycological Society Annual Meeting, Corvallis, Oregon, *Meeting Abstracts* http://www.erin.utoronto.ca/~janderso/msa.

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Money, N. P. 1998. Recognizing complexity: The mechanics of invasive hyphal growth. Mycological Society Annual Meeting in San Juan, Puerto Rico. *Inoculum* 49: 37.

Billy Simms
Western Center Coordinator
Miami University

Education:

Miami University	Two Dimensional Studio Art	MFA	2017
The Johns Hopkins University	Special Education	MS	1999
University of Maryland Baltimore County	Design Theatre	BA	1988

Presentations and Exhibitions:

May 2024	"Images Not Words." Presentation. The Arts in Society Annual Conference, Hanyang University, Seoul, Korea **Invited**
December 2023	"Share: photographs by Billy Simms." Solo exhibition. The Oxford Community Arts Center, Oxford, OH
July 2023	"Craftowne: the 7th Hole." The Arts in Society Annual Conference, Jagiellonian University, Krakow, Poland
May 2023	"Hamilton Current Regional Art Exhibition." Group exhibition. Fitton Center, Hamilton, OH
September 2022	"Black and White Invitational Exhibition." Group exhibition. Artscape, Lebanon, OH
September 2022	"Eyewitness: The Impact of Deindustrialization on our World. Part of the 2022 FotoFocus Biennial. Group exhibition. Dayton Society of the Arts, Dayton, OH
September 2022	"Craftowne: the 7th Hole." Presentation. The Image 13th Annual Conference, The University of Texas at Austin, Austin TX
August 2022	"HxWxD Sculpture Exhibition." Group exhibition. The Rosewood Art Center, Kettering, OH
August 2021:	"Miami University Faculty and Alumni Exhibition." Group exhibition. Miami University, Oxford, OH
June 2021:	"Craftowne: the 7th hole." Solo exhibition. Pyramid Hill Sculpture Park and Museum, Hamilton, OH
September 2020	"Images Not Words." Virtual presentation. The Image 11th Annual Conference, The University of New South Wales, Sydney Australia
November 2019	"Always Crashing The Same Car Artist Talk." Artist's talk. Miami University, Oxford, OH
September 2019	"Craftowne: a case study of installation art as comics." The Image 10th Annual Conference, Manchester University, Manchester, England

April 2019	"Craftowne: a case study of installation art as comics." International Comics Arts Forum, St Ambrose University, Davenport, IA
January 2018	"The Giver" Lighting Designer. The Town Hall Theatre, Centerville OH
April 2017	"The Clown Genocide." Artist's talk. Miami University's Comics Scholars Group Oxford, OH
April 2017	"Craftowne: a visual novel." Solo exhibition. Miami University Master Thesis Show, Hiestand Gallery, Miami University, Oxford, OH
March 2017	"Figures, Forms, and Stories selected works by Miami University Thesis Candidates." Group exhibition. Cincinnati Contemporary Arts Center, Cincinnati, OH
September 2017	"The Lion King, Jr." Lighting Designer. The Town Hall Theatre, Centerville OH
January 2017	"Dayton Area Works on Paper Show." group exhibition. The Rosewood Art Center, Kettering, OH
October 2016	"Audience as Performer in Printmaking." Presentation. Mid-America Print Council Conference, University of Louisvilles, Louisville, KY
April 2016	"Truth and Identity." Two person show with Gabi Roach. The Pop Revolution Gallery, Hamilton, OH

Courses Taught:
Western 301: Special Topics (Time)
Western 251: Individualized Studies Seminar
Western 201: Self and Place
ART 104: Creative Problem Solving
ART 105: Technical Drawing
ART 125: Beginning Printmaking
ART 155: Beginning Drawing
ART 241: Printmaking I
ART 599: Drypoint Printmaking
UNV 101: I Am Miami

Externally Funded Activities: None

Advising and Advisees:
The Western Program: 18 senior project advisees since 2019

Service to the Profession:
University: Miami University Press Novella Contest reader (2017-present), Curator for the Art Building Lobby Art Gallery (2017-present)

External: Online instructor for the Veterans Administration Cincinnati (2022-present), Cincinnati Arts Association Overtures Awards: Judge for Creating Writing (2020- present) and Visual Arts Chair (2021-present)

WST 251:
Individualized Studies Seminar

INSTRUCTOR(s)
Zackary Hill hillzd@miamioh.edu; Billy Simms simmsws@miamioh.edu; Jacque Daugherty daughejd@miamioh.edu

Course Description
This course is designed to guide you through the process of better understanding yourself so that you might create a more informed and intentional individualized plan of study. This structured journey asks you to reflect upon your life story, your intellectual interests, strengths/weaknesses, and goals/hopes/dreams/fears/etc.

Throughout this semester, you will examine the concepts of interdisciplinary studies and integrative learning to mindfully build an educational (and potentially life-long) plan that captures your academic as well as personal interests and prepares you for the future.

Because Western incorporates interdisciplinary study both inside and outside the classroom, you have a unique opportunity to create a powerful learning environment where the academic, extracurricular, and residential aspects of your education complement and reinforce one another.

Building upon these experiences, this course asks you to confront complex issues from multiple perspectives to integrate what you learn through active, student-driven inquiry, which for some will culminate in an individualized major.

Course Learning Outcomes
- Students will understand the value of interdisciplinary thinking;
- Students will appreciate how knowledge is constructed;
- Students will demonstrate excellence in written and oral communication;
- Students will recognize the beauty of lifelong learning.

Canvas
To help keep costs down, all readings and course materials will be on Canvas. To access them, simply log onto our course site and look under "Files."

Technology
Since a large part of this class will be dedicated to providing a space for you to ask questions about, learn about, and rediscover things about yourself, we will be requiring you to create such a space. So, as to be able to: 1.) unplug to recharge, 2.) give silence and space to ask yourself questions, and 3.) to begin a dialogue with yourself – this will be a technology-free zone. Cell phones and laptops will not be used in the classroom. As such, students are not permitted to record (audio or video) any parts of class without permission. NOTE: If expecting a call or receive a call you must take, just go into the hallway; no worries.

Consider this an opportunity to not feel pressure to constantly be connected to social media or your email or something else. Consider it an exercise in patience. Think of it as investing time in yourself. Think of it as 55 minutes of freedom from the rest of the world.

We want to create a foundation of knowing, trusting, and accepting yourself that we can then build off of to further think about and explore what you can do at Miami (and beyond) that most resonates/connects to who you are. And this cannot be done in an environment full of distractions.

Evaluation
All assignments are required to pass the class. Your grade will be determined as follows:

- Participation / Attendance 20%
- SIX discussion posts 30%
- FIVE informal essays 25%
- Integrated rationale Paper / Plan 25%

Participation / Attendance
Attendance is mandatory. The course is a student-driven seminar; attendance and participation are necessary for the benefit of all involved. Therefore, regular attendance and active participation are vital to your success in this course. Missing more than 2 classes will result in the lowering of your FINAL grade, not just the 20% attendance/participation portion. Missing more than 4 classes could result in an Incomplete or Failing grade.

Discussions Posts
If you would prefer to keep what you write private, you may email them to the instructors rather than post on Canvas. Otherwise – these consist of the following (brief, see discussions tab in Canvas for more information) prompts:

1.) an introduction post telling us about you;
2.) a deeper dive into who you are / why you are who you are;
3.) likes/dislikes, hopes/dreams/fears, etc.;
4.) big picture – what's important, what do you actually care about and why;
5.) defining success, fulfillment, failure, happiness;
6.) putting it all together to figure out what to do (at Miami and in the future)

NOTE: There is no word limit or other restrictions -- beyond trying to follow the prompt. We just want you to share thoughts/information/etc. and build a bit of a community as you get to know one another. These are completely informal – do not concern yourself with grammar, punctuation, spelling, etc… Depending on the nature of the information you are sharing, it is up to you if you either want to email it instead or provide some form of content warning. Trust your judgment.

Informal Essays (IE)
Truly informal… five of them… how are you doing? What is happening in your life that you need/want to talk about? Feel free to vent if you think that will help. Each should be two pages MAX. handwritten, typed, emailed or submitted in class, whatever. For you to just get things out there.

Integrated Rationale Paper / Plan
Taking into consideration all that you have thought, written, and talked about this semester in class, in your informal essays, and in your discussion posts – people that have influenced and inspired you, your strengths/weaknesses, likes/dislikes, hopes/fear, what you care about, what you want to do, etc. – consider your remaining time at Miami as well as the time you have already spent.

What have you done that connects? What can you do to forge a new path or stay on your current one if you feel it is appropriate? Majors, comajors, minors? Specific classes/coursework? Instructors you want to work with? Labs you could work in? Independent studies you could explore? Clubs/organizations you could join? Study abroad or internship opportunities?

Look at the course list and bulletin. Visit the office of education abroad and the center for career exploration and success. Talk to advisors, instructors, other students. Search the hub.

Make a plan. And explain how that plan helps you be/become the best you you can be.

Student Disability Studies
If you are a student with a disability and feel you may need a reasonable accommodation to fulfill the essential functions of this course, you are encouraged to contact Student Disability Services (SDS). SDS provides accommodations and services for students with a variety of disabilities, including physical, medical and psychiatric disabilities. You are encouraged to contact SDS to learn more about registration and procedures for requesting accommodations. Oxford Campus: SDS@miamioh.edu

Current SDS registered students should request accommodations according to SDS procedure. You are strongly encouraged to request and discuss your accommodations needs during the first 1-2 weeks of the semester.

If there is something in this syllabus which you feel your accommodation should override (such as the use of technology), you will need to discuss this with the instructors so that we all understand and agree on a compromise.

Academic Integrity
You are encouraged to share drafts of your papers with fellow students for critical review. However, you must write your own papers in your own words—so please do it with joy and integrity. For an explanation of academic misconduct, see Chapter 5 of the *Student Handbook* (you can download a pdf of this online). You may also consult the University's new integrity website at www.muohio.edu/integrity

Duty to Report, **Resources and Support for Students**
As an instructor, I have a duty to report. This means I am required to promptly report to the Deputy Title IX Coordinator (titleix@miamioh.edu) any information a student shares with me regarding harassment, discrimination, sexual misconduct and interpersonal violence, or retaliation. A report does not initiate an investigation. It engages a discussion of your resources, supportive measures, and options available. If students want to speak with someone confidentially, the following resources are available on and off campus:

- Student Health Services, (513) 529-3000
- Student Counseling Services, (513) 529-4634
- Women Helping Women (WHW) Sexual and Interpersonal Violence Support Specialists are available to support all students and can be contacted by emailing mu@womenhelpingwomen.org. As well as calling/texting 513-846-8402 between 9AM-5PM. The 24-hour hotline is 513-381-5610. WHW supports ALL survivors of dating/domestic violence, sexual assault, and stalking, regardless of gender identity or sexual orientation.

Speaking with a confidential resource person does not preclude students from making a formal report to the University if and when they are ready.
https://miamioh.edu/diversity-inclusion/programs-resources/report-incident/index.html

For more information, please visit https://miamioh.edu/campus-safety/sexual-assault/ and https://www.miamioh.edu/diversity-inclusion/oeeo/index.html.

SCHEDULE

Week 1 – quick intros and general layout of class structure. HW — introduction discussion post (#1)

Week 2 – intros, the road not taken. HW — informal essay (IE) #1

week 3 – intros, discipline/interdisciplinarity talk. HW — IE #2

Week 4 – Who are you? Why? People, experiences, etc., strengths/weaknesses? HW – post #2, who are you, etc.

Weeks 4, 5 – small group activities, rotate. HW – IE #3

Week 6 – What do you like/dislike? Why? Relation to being good/bad at? what are your hopes/dreams/goals? Fears/anxieties/worries? HW – post #3, what do you like, etc.

Week 7 – WST faculty or student visit. HW – IE #4

Week 8 – WST faculty or student visit. HW – IE #5

Spring Break -- be safe!

Weeks 9, 10 – small group activities, rotate

Week 11 – What do you care about – big picture? Why? What would you do, what's important to you? Relation to who you are and what you like? What's the best thing that could happen? The worst? HW – post #4, what do you care about, etc.

Week 12 – What does it mean to be successful? Fulfilled? What does failure look like? What does happiness look like? HW – post #5, what is success, etc.

Week 13 – Now – What do you want to do – here at Miami and later and over time of life? why? Relate to all of the previous things… HW – post #6, put it all together

Week 14 – let's connect the dots more specifically for here/now – your journey thus far, your ideas for the future, etc., so, what can you do with the rest of your time at Miami to either put you on that path or keep you on that path? HW – rationale paper / plan (due finals week)

Course Syllabus
WST 231: Explorations in Engaged Inquiry: The Flint, MI Lead Water Crisis
T/Th, 1:15 - 2:35 meeting in person in Peabody Hall 407

Instructor

Dr. Jacqueline Daugherty, Western Program for Individualized Studies
Virtual Zoom Office Hours, Tuesdays 3:00-4:30:
1. You must **visit here (https://calendar.google.com/calendar/u/0/selfsched?sstoken=UUhmaldQb2d0WTc3fGRlZmF1bHR8MGZjNmIzZTg3MThmMGRjM2RjNjA2NGM2ZjZjMjAzMzk)** to make your 20-minute appointment
2. Then always come to my zoom room for your appointment (it will not be listed on the calendar): **https://miamioh.zoom.us/j/3548735839 (https://miamioh.zoom.us/j/3548735839)**

How we think about research, as quoted by some very cool people:
"Research is formalized curiosity. It is poking and prying with a purpose."
-- *Zora Neale Hurston*
"Writing is thinking. To write well is to think clearly. That's why it's so hard.'
-- *David McCullough*
"This atmosphere of excitement, arising from imaginative consideration, transforms knowledge. A fact is no longer a bare fact: it is invested with all its possibilities. It is no longer a burden on the memory: it is energizing as the poet of our dreams, and as the architect of our purposes. ***Imagination is not to be divorced from the facts: it is a way of illuminating the facts.***"
-- *AlfredNorth Whitehead*

Textbook

--Coursepack Reader, purchase from Oxford Copy Shop. app. $25
--Bring a laptop or tablet device to each class, as you will often need to submit team research work electronically via Canvas while in-class.
Must Install the ZOOM App onto your computer/device, in the case of a movement to online synchronous courses or one partner's absence during a work day. See here to sign up for your free account through Miami: **https://miamioh.zoom.us/ (https://miamioh.zoom.us/)**

Introduction

The primary purpose of this class is to teach students how to pose good questions and to find reliable ways to generate data that help answer them. It is thus a class about inquiry: what inquiry is, and how to engage in it. We believe in learning by doing, so the class will have a major research project based on student interest AND one major interdisciplinary topic of investigation--the lead water crisis in Flint, MI--through which we will better understand the real-world importance of interdisciplinary and community-based research.
The heart of WST231 is the idea that research is best learned by engaging in the process of inquiry, as well as by critical reflection on the work of other thinkers and scholars.
Most scholars agree that intellectual excitement and stimulation come not from the passive acceptance of information transmitted from the teacher to the student in the classroom, but rather through the active involvement of the individual in the learning and research process. Quite simply, we learn by doing. Many of the course activities will encourage discovery-

oriented participation in the learning process-- this includes formulating researchable questions, defining the problem, collecting data, interpreting data obtained in the field, writing reports,and presenting findings in class.

Moreover, we believe that engaging in inquiry is a better way to live—that being actively engaged with the world is superior to passive acceptance of it. Inquiry is good for the mind, for civic engagement, the economy, the environment, and for the spirit.

WST 231 lays the foundation for inquiry by providing an overview of the process, techniques and methods used in inquiry, the differences among inquiry techniques among disciplines, peer review of inquiry methods, and participation in self-directed inquiry. Students will engage in multiple instructor-generated inquiries and student-generated inquiries and will produce research reports on their findings. For Western majors--and others planning on creating an undergraduate thesis project--231 lays the groundwork for HOW to do that.

Class Activities

WELCOME TO PROJECT-BASED LEARNING!

Project-Based Learning requires students to work on a project over an extended period of time – from a week up to a semester – that engages them in solving a real-world problem or answering a complex question. They demonstrate their knowledge and skills by developing a public product or presentation for a real audience.

As a result, students develop deep content knowledge as well as critical thinking, creativity, and communication skills in the context of doing an authentic, meaningful project. Project Based Learning unleashes a contagious, creative energy among students and teachers (See Buck Institute, PBL Works).

Readings and discussions will provide an overview of inquiry methods and the problems of Flint, MI.

Students will develop their own small team inquiry projects (working with one or possibly two other classmates), starting with an initial question, drafting a full proposal, and producing a final research report. Peer review is a key component in the development of these projects. Collaboration, communication and conflict resolution are key in teamwork —it doesn't come "naturally" to any of us.

Students will write extensively working on the craft of writing as they produce original research.

Students will lead class discussion twice: first to teach their classmates about the research articles we read and second when they present their research findings to the class.

Student Learning Outcomes

1) Students develop interdisciplinary, self-created small group inquiry projects with the support of their peers, reading and critiquing proposals; reflecting in writing about the strengths and weaknesses of their ideas; and conducting a peer review of project ideas, project proposals, and final projects.

2) Students review and assess the literature pertinent to their interdisciplinary research questions, using print and web resources , and identifying distinctions between qualitative and

quantitative scholarly research practices.
3) Students locate their interdisciplinary research questions and projects within social, historical, or cultural contexts to explore and explain their broader relevance. 4) Students understand how to write and edit their own work and the work of their peers.

Considerations

The central focus of the course is to equip students with the necessary tools for conducting their own inquiries. This means reading and writing extensively. By first sampling the range of approaches that scholars may take to a research question, students build their familiarity with the methods deployed across the disciplines to pursue inquiry, then work in teams to initiate, develop, and complete projects in which they situate their particular findings on a given topic within a broader context.

One goal is to have every inquiry research team invested in the success of everyone else's project and to demonstrate the necessity of teamwork to high-quality interdisciplinary research by building an inquiry community. Each team chooses an interdisciplinary research question; generates an initial research idea; and then develops a research proposal and a final inquiry report and presentation.

Academic Honesty

Miami University defines academic dishonesty "as any activity that compromises the academic integrity of the institution or subverts the educational process." Students are expected to behave honestly in their learning and in their behavior outside the classroom. Cheating, plagiarism, and other forms of academic dishonesty undermine the value of a Miami education for everyone, and especially for the person who cheats." Students who engage in academic misconduct will at minimum fail the assignment and may fail the entire course with a permanent record of their dishonesty added to their student file.

Student Disability Services

If you are a student with a disability and feel you may need a reasonable accommodation to fulfill the essential functions of this course, you are encouraged to contact Student Disability Services (SDS). SDS provides accommodations and services for students with a variety of disabilities, including physical, medical, and psychiatric disabilities. You are encouraged to contact SDS (**SDS@miamioh.edu (mailto:SDS@miamioh.edu)**) to learn more about registration and procedures for requesting accommodations.
Current SDS registered students should request accommodations according to **SDS procedure (https://miamioh.edu/student-life/sds/student-tools/accommodation procedures/how-to-request-accommodations/index.html)** . You are strongly encouraged to request and discuss your accommodations needs during the first 1-2 weeks of the semester.
NOTE: In an effort to provide access and follow universal design principles, all media shown in-class by the instructor or students MUST include captioning.

Attendance

Points are associated with attendance. Plan to attend each class. However, if you feel sick, PLEASE DO NOT ATTEND. Get the notes from a colleague and check in with your research team via email and zoom to see what you missed and need to do. Note that 25 points out of 500

total points are reserved for attendance...so inconsistent attendance alone will not fail you. That said, we understand that we are all in the midst of a global pandemic, so we are committed to remaining flexible and accessible. In addition, this flexibility allows for a smoother transition in the case that we are given orders to move to an entirely online course delivery.

RISK REDUCTION: Covid-19

This classroom is obviously subject to university policy. The instructor will monitor county-level Covid-19 infections and discuss the level of risk with students.

Grading/Measurable Outcomes

See here (https://community.canvaslms.com/t5/Video-Guide/Feedback-Overview-Students/ta-p/383514#video-script) to learn how to view your assignment feedback in Canvas. Weekly Team Agenda (WTA): 25 pts total
Attendance: 25 points
Midterm: 50 pts
Group Course Reading Presentation: Video Assignment: 50 pt
Small-Team Inquiry Project:
Part One, The Proposal Paper: 100 pts
--CITI online training completion by due date --IRB in-class RCR training (see course schedule below for date)
--draft and in-class peer review
--Final IRB Proposal
Part Two: Inquiry Project: 250 points
--Research /Topic Question Draft (for instructor feedback)
--Individual Section Literature Review Draft (for instructor feedback)
--Full Paper Draft Submission
--Peer Review
--Research Presentation
Total: 500 points
Note: all assignments will be submitted via CANVAS

WST 231 Week to Week Plan / Course Schedule

Week 1: Semester Overview & Expectations

Be prepared to participate in-class discussions!!
Tuesday 1/30: Hello! Greetings, Salutations and Expectations
Short Video: Neil deGrasse Tyson on UFOs and the Argument from Ignorance (w/ support discussion of weight of qualitative v. quantitative data in the sexual harassment allegations against him).
Key Idea for the day: This class is about your research and improving your ability to ask questions!
TO DO: *Begin CITI Training on Research with Human Subjects*:
http://www.units.miamioh.edu/compliance/HS03_02_CITI.html (http://www.units.miamioh.edu/compliance/HS03_02_CITI.html)
--scroll down page and follow the INSTRUCTIONS on how to access the online
Human subjects training and the number of required modules (13) and elective modules (3) you need to complete

Thursday 2/1: Flint Water Crisis Context & Introduction
READ & WATCH before class:
1) *Detroit Metro Times*, "A deep dive into the source of Flint's water crisis"
https://www.metrotimes.com/detroit/a-deep-dive-into-the-source-of-flints-water-crisis/Content?oid=3399011 (https://www.metrotimes.com/detroit/a-deep-dive-into-the source-of-flints-water-crisis/Content?oid=3399011)
2) NOVA's Documentary on Flint: Poisoned Water: What Exactly WentWrong in Flint--and WhatDoes It Mean for the Rest of the Country?
http://www.pbs.org/wgbh/nova/body/poisoned-water.html (http://www.pbs.org/wgbh/nova/body/poisoned-water.html)
3) We will catch you up on the brief updates of Flint crisis during the next class.
DUE: Weekly Team Agenda (WTA), See Canvas Assignments Individuals' Initial Research Ideas
Week 2: Responsible Conduct of Research Training & Preparation (TBD)
Tuesday 2/6: REQUIRED ATTENDANCE: Jennifer Sutton from the university's Office for Research Ethics and Integrity will teach us Responsible Conduct of Research Training in Class (needed to submit IRB application this semester).
(if you miss this class, go here to sign up for another class and attend before next Monday:
http://www.units.miamioh.edu/compliance/RCR02_training.html (http://www.units.miamioh.edu/compliance/RCR02_training.html))
DO: Instructors will put people into small research teams.
DUE: CITI OnlineTraining (see Week 1 above or Canvas Modules, for website and directions)
Thursday 2/8: NO CLASS MEETING TODAY.
Week 3:Research Methods
Tuesday 2/13: **Research Team Assignment & Baloney Discussion**
READ before class: Packet: Carl Sagan's "Baloney Detection Kit"
DUE: Weekly Team Agenda (WTA): Identify Common Interests, by 11:59
Thursday 2/15: Research Methodology Overview & Philosophy
READ before class: Packet: Johnson, R. B. & Christensen, L. B. (2010). Chapter 2: Quantitative, Qualitative, & Mixed Research.
READ before class: Chapters on "*Language of Research"* & "*Conceptualizing"*, found here:
https://www.socialresearchmethods.net/kb/contents.php (https://www.socialresearchmethods.net/kb/contents.php)
--NOTE*: Always Start at Table of Contents link and follow all hyperlinks on your assigned chapters.
Week 4: Research and Drawing Conclusions
Tuesday 2/20: Research Measurement & Choosing a Problem - Developing a Question
READ: Relevant Subsections Chapter on *Measurement*, found here:
https://www.socialresearchmethods.net/kb/contents.php (https://www.socialresearchmethods.net/kb/contents.php)
--NOTE*: Always Start at Table of Contents link and follow all hyperlinks under your assigned

chapter. In-Classwork: refining that problem into a research question, and choosing the appropriate methodology

DUE: Weekly Team Agenda (WTA): Describe Common Research Topic & Rough Methodology

DUE: Canvas Quiz, Early Research Concepts

Thursday 2/22: Work on IRB Application

DUE: Weekly Team Agenda (WTA): DRAFT 1: Level 1 IRB Application

Week 5: Proposal Work

Tuesday 2/27: DRAFTING The Research Proposal in your research teams.

--We will meet in-person in Peabody today to complete our IRB proposal drafts for submission

Thursday 2/29: Online Peer Review of Research Proposals

DUE: Draft Research Proposal (IRB Application), submit as individual students (not a group), via Canvas by 8am today. Canvas will assign you a peer's draft to review. due at 8 am.

DUE: Via Canvas, your peer review with feedback by 2:35 pm at end of class today

DUE THIS FRIDAY AT 5PM: Final Research Proposal(IRB Application) submitted this FRIDAY at 5pm, via Canvas

Week 6: Wicked Problems

Tuesday 3/5: NO CLASS MEETING TODAY, but attend Craig Calhoun's talk on Democracy at 6pm tonight in 152 Shidler for extra credit (make sure you sign up) STILL READ Lead and Crime (or how to establish causation)...and we will review on Thursday in class

READ: Packet: Popular Overview: Lead and Crime. Drum, "America's Real Criminal Element"

DO: Assign Group Course Reading Presentation Video Readings/Assignments (presentations start next week)

Thursday 3/7: Thinking across and outside of disciplinary box

READ: *Tackling Wicked Problems: Through the Transdisciplinary Imagination*, edited by John Harris, et al., Routledge, 2010. (**Full text available (https://eds.a.ebscohost.com/eds/detail/detail?vid=1&sid=22266868-42ea-41e1-b797-0554618315ed%40sdc-vsessmgr03&bdata=JkF1dGhUeXBlPWNvb2tpZSxpcCx1cmwsdWlkLGNwaWQmY3VzdGlkPXM5MDAyOTM0JnNpdGU9ZWRzLWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#AN=339072&db=e000xna)** online through Miami University Library)

Chapter 1: pp 1-10

Chapter 2: pp 16-30

Week 7: Literature Review: *The Best Way to Learn Research is to Read Research*

(Group Reading Presentations start this week)

Tuesday 3/12: Work on Literature Review

READ: Literature Review Assignment Description on Canvas.

DO: We will work together in breakout groups to identify literature review subsections for each team, then each team member will post 3 academic journal article source citations that work for your subsection.

DUE: Weekly Team Agenda (WTA): 3 annotated sources for your individual literature review subsections

DUE: Weekly Team Agenda (WTA): Concept Wiki Participation, Via Google Docs (see Concept Wiki **here (https://docs.google.com/spreadsheets/d/1wyyIbTh2PJguxRw4k5zBN7C9gPpPYct5AsjOuc**

l7NhM/edit?usp=sharing))

Thursday 3/14: Social Sciences Research (Psych and Social Psychology)

READ in Packet:

1. **Amelia and Kaylene: PRESENTING:** Kruger,D., Franzen, S., Kodjebacheva, G., Kaufman, M., Cupal, S.,Bailey, E., & Key, K. (2017). Toxic trauma: Householdwater quality experiences predict posttraumatic stress disorder symptoms during the Flint, Michigan, water crisis. *Journal Of Community Psychology*.
2. **Jacob and Savian, PRESENTING:** Heard-Garris, N.,Roche, J., Carter, P., Cunningham, R., Abir, M., Walton,M., & Zimmerman, M. (2017). Voices from Flint: Community Perceptions of the Flint Water Crisis. *Journal Of Urban Health*, 1-4.

DO: Introduce and assign Concept Wiki concepts in prep for midterm.

Week 8: Social Sciences

Tuesday 3/19: Social Sciences (Sociology) Research

READ in Packet:

1. Lee, S., Rose, S., Dover, K., Ayoub, J.,Salman, F., & Krings, A. (2016). Racial inequality and the implementation of emergency management laws in economically distressed urban areas. *ChildrenAnd Youth Services Review*, 701-7.

--Ann C., will present on Lee et al. article

Ranganathan,M. (2016) Thinking with Flint: Racial Liberalism and theRoots of an American Water Tragedy. *Capitalism Nature Socialism,* 27:3, 17-33. ***--Dylan,*** will present on Ranganathan article

DUE: Reading presentation by this team in-class

DUE: Literature Review Draft_Individual Subsection

Thursday 3/21: Online Midterm: NO CLASS MEETING TODAY

DUE: Online Midterm: SEE Week 8 Module for Online Midterm Assignment, then complete the midterm (open-book, open-note, NO peer collaboration). Have 1hr and 20 mins to take it. Opens day before at 7:00 am and closes today at 2:35pm.

Week 9: NO CLASS MEETINGS: Spring Break

Tuesday 3/26

Thursday 3/28

Week 10: Humanities and Life Sciences

Tuesday 4/2: Humanities (Media Critique and Design)

--_____, presenting on Tichy only

--**Gordon and Hayden**, presenting on Jake May

--**Michael, Lizzie, and Anna W.,** presenting on LaToya Ruby Frazier (photographers) Ted TAlk about her work in Flint MI

READ & Explore:

1) TED TAlk: Latoya Ruby Frazier (2019), Flint is Family.
https://www.ted.com/talks/latoya_ruby_frazier_a_creative_solution_for_the_water_crisis_in_flint_michigan (https://www.ted.com/talks/latoya_ruby_frazier_a_creative_solution_for_the_water_crisis_in_flint_michigan)

2) Packet: Derrick Z. Jackson, "Environmental Justice? Unjust Coverage of the Flint Water Crisis"

3) Tichy, Jan.(2016). Beyond Streaming: A Sound Mural for Flint.
http://beyondstreaming.site/ (http://beyondstreaming.site/)

See the following pages:
--Home: for an intro to the project
--Installation: for a description of what it looked like in the museum
--Collaboration: choose 3 of the young artists' art to view and listen to
4) May, Jake. (2018). *MLive.* 100 Faces of Flint:
https://www.mlive.com/news/index.ssf/page/faces_of_flint.html
(https://www.mlive.com/news/index.ssf/page/faces_of_flint.html)
DUE: WTA--Data Collection Plan

Thursday 4/4: Life Sciences Research

--Sam F.: presenting on Wang & Welton article only

--Liv and Meet, presenting on Craft-Blacksheare article

READ in Packet

1. Craft-Blacksheare,MG. (2017). Lessons Learned From the Crisis in Flint,Michigan Regarding the Effects of Contaminated Water onMaternal and Child Health. *Journalof Obstetric, Gynecologic, and Neonatal Nursing*. 46(2):258-266.
2. Hanna-Attisha, M. LaChance, J., Casey Sadler,R., & Champney Schnepp, A. (2016). Elevated Blood LeadLevels in Children Associated With the Flint Drinking Water Crisis: A Spatial Analysis of Risk and Public HealthResponse. *American Journal Of Public Health,* 106(2), 283-290.
3. Wang, T., Kim, J., Whelton, A. (2019). Management of plastic bottle and filter waste during the large-scale Flint Michigan lead contaminated drinking water incident. *Resources, Conservation and Recycling*. 140: 115-124.

Week 11

Tuesday 4/9: Ethics & Public Scholarship

--Kennedy, Jackson, Kellen, presenting on all 3 pieces below (EACH IS VERY BRIEF).

READ in Packet:

1) Edwards, M. A.,& Pruden, A. (2016). The Flint Water Crisis: Overturning the Research Paradigm to Advance Science and Defend Public Welfare. *Environmental Science & Technology*,50(17), 8935-8936.

2) Lambrinidou, Y.(2016). On Listening, Science and Justice: A Call forExercising Care in What Lessons We Draw FromFlint. *Environmental Science and Technology*, 50: 12058-12059.

3) Edwards, M. A.,& Pruden, A. (2016). We Helped Flint Residents to Save Themselves--Staying in Our Ivory Tower Would Have Perpetuated Injustice. *EnvironmentalScience & Technology*, 50: 12057.

DO: SCHEDULE team conferences on projects with Jacque next week. SIGN UP for mandatory next week meeting slot. Sign Up Sheet here:
https://docs.google.com/spreadsheets/d/1v4OTsb3cRylmBL8KnfzbwJaMX0zXBV-Nr2zyvUMUpUE/edit?usp=sharing
(https://docs.google.com/spreadsheets/d/1v4OTsb3cRylmBL8KnfzbwJaMX0zXBV-Nr2zyvUMUpUE/edit?usp=sharing)
DUE: WTA--Data Collection Progress

Thursday 4/11: LITERATURE REVIEW Workshop

Pre-Class Prep: 1. Review and implement instructor feedback for the Literature Review Individual Subsection paper. 2. Put all revised individual subsection papers into one place where all team members can review and edit them (i.e. your team's google docs folder)

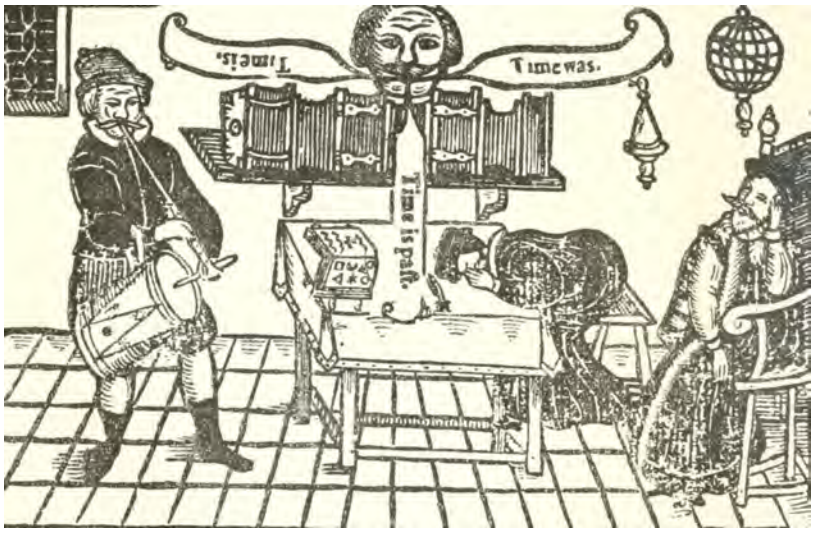
Week 12: DATA COLLECTION COMPLETED & Project Work: Everyone online in individual conferences with instructors.
Tuesday 4/16: Project work; Daugherty is available on Zoom for mandatory team consultation. **(NO IN-CLASS MEETING)**
DUE: Mandatory team meeting with professors (WTA), see Zoom Page of Canvas for meeting link...sign in with your Miami Account. Double check last week's Sign-up Sheet for your time slot (see google doc link on syllabus under Week 11).
--meet me in my zoom office: https://miamioh.zoom.us/j/3548735839
Thursday 4/18: Project work; Daugherty is available on Zoom for mandatory team consultation (NO IN-CLASS MEETING)
DUE: Mandatory team meeting with professors (WTA), see Zoom Page of Canvas for link...sign in with your Miami Account. Double check last week's Sign-up Sheet for your time slot (see google doc link on syllabus under Week 11).
DO: PLAN TO HAVE ALL YOUR DATA COLLECTED BY THE END OF THIS WEEK, at very latest.
--meet me in my zoom office: https://miamioh.zoom.us/j/3548735839
Week 13: Project Work and Small Team Subject Presentations
Tuesday 4/23: Sadistics and Statistics (or Basic Statistical Analysis in Qualtrics)
Bring your statistical data so we can practice with it.
DUE: Via Your Email, take our short Qualtrics survey so we can play with it in-class.
DUE: Weekly Team Assignment: Data Analysis--Initial Findings
Thursday 4/25: Qualitative Quips (or Qualitative Analysis 101)
Bring your qualitative data so we can practice with it.
DO: Schedule Week 14 Research Team Subject Presentations
DUE: Weekly Team Assignment: Data Analysis--Initial Findings
Week 14: Team Research Presentations: all presentations are in-person and in-class
Tuesday 4/30: Preparing for your Research Presentation
Workshopping your presentation in-class.
Thursday 5/2: DAY 1 Small Team Research Presentations
Research teams presenting today
Week 15: Team Research Presentations.
Tuesday 5/7: DAY 2 Small Team Research Presentations (in-person)
Research teams presenting today (in this order) (***today's presentations are only 7-10 minutes each***):
Thursday 5/9: Paper Draft &
Peer Review: No In-Class Meeting Today
DUE: Via Canvas, as an individual (not a team) submit Research Paper Draft to Canvas by 8 am today
DUE: Via Canvas, your peer review with feedback by 2:35 pm today
Week 16: Finals Week & Submission of Final Projects...No In-Class Meeting
Tuesday 5/14 at 11:59 pm: Final Project
DUE: Final Research Papers Due @ 11:59pm
DUE: WTA Assignment, Via Google Forms **Final Evaluation (https://docs.google.com/forms/d/e/1FAIpQLSfzqS0ii9bahoh1ab6nB7ARXdjkJCKDoA-PyMjsyW_Hhpx_PQ/viewform?usp=sf_link)** : Self, Peer Project @ 11:59 pm

INTERDISCIPLINARY PROBLEMS & QUESTIONS, WST 301 FALL 2021

THE ART AND SCIENCE OF TIME

INSTRUCTORS: PROFESSOR NIK MONEY, WESTERN PROGRAM & DEPT. OF BIOLOGY & BILLY SIMMS, WESTERN CENTER STUDENT COORDINATOR

Classroom: 121 Peabody Hall (Leonard Theater)
Class meetings: Monday and Wednesday 11:40-1:00



Summary of course and objectives WST 301 considers a complex topic from multiple perspectives. It identifies the distinct vantage points offered by different fields of inquiry, including philosophical, aesthetic, scientific and historical discourse, with an emphasis on achieving an integrative understanding of the topic. WST 301 is taught by faculty members with different disciplinary and/or interdisciplinary expertise from semester to semester. CAS-B-Humanities OR CAS-C Social Science.

Summary of Fall 2021 offering The theme for WST 301 is the nature and experience of time, which we will explore from multiple perspectives. These include the physical origin of time, natural processes that are accomplished at different timescales, the human perception of time, the philosophy of time, and artistic responses to time. The class meetings will be organized according to ten timeframes, beginning with fractions of a second and ending with billions of years. We will examine processes that operate according to each meter and also look at artistic representations of these slices of time. Readings will come from the assigned book and articles and videos posted on the Canvas site. Students will submit writing assignments via Canvas, including a term paper, and give one or more class presentations during the semester. Participation in class discussion is encouraged.

Required reading

Money, N. P. 2021. *Nature Fast and Nature Slow: How Life Works from Fractions of a Second to Billions of Years*. Reaktion Books, London, & University of Chicago Press:

https://www.youtube.com/watch?v=J-FQNaRUzN8

Grading

Weekly written reflections:	10 x 5 = 50 points (single page, 300 words maximum)
Term paper:	25 points (7-10 pages, 2,000-3,000 words)
Term presentation:	20 points
Engagement during class:	5 points
Total:	100 points

Schedule of classes

1 Aug 23/25	Introduction: What is time?
2 Aug 30/Sept 1	Fractions of a second
3 Sept 8	Seconds (no class on Sept 6, Labor Day)
4 Sept 13/15	Minutes and hours
5 Sept 20/22	Days, weeks, and months
6 Sept 27/29	Years
7 Oct 4/6	Half way through Time
8 Oct 11/13	Decades
9 Oct 18/20	Centuries
10 Oct 25/27	Millennia
11 Nov 1/3	Millions of years
12 Nov 8/10	Billions of years
13 Nov 15/17	Term projects presentations and discussion
14 Nov 22/24	Thanksgiving week
15 Nov 29/Dec 1	Term projects presentations and discussion / Term paper due Friday Dec 3

WST 321: Ways of Knowing

Sex in the US: Collecting Voices in Sexuality Education

M/W: 11:20-12:50 pm, 407 Peabody Hall
Instructor: Dr. Jacqueline Daugherty (Dr. D. or Jacque is fine)
Instructor's Office: 123 Peabody: Office Hours: Mondays 1-4pm and by appointment
daughejd@miamioh.edu

We must give our children a spirit of moral courage, because their character is our destiny. Our schools must support the ideals of parents, elevating character and abstinence from afterthoughts to urgent goals.
--former President of the US, George W. Bush: Speech to Republican National Convention, Aug 3, 2000

Course Description

The debate over school-based sexuality education in the US has been ongoing since the early twentieth century, and has complex political, cultural, social and economic dimensions. From 2001-2010, the federal government invested an unprecedented amount of money into abstinence-only sexuality education. The majority of this funding supported the teaching of abstinence-only sexuality education curriculum and programs in public schools.

This course will utilize project-based learning and experiential research to do an oral history of Ohioans who are connected to and can provide diverse perspectives on formal, school-based, abstinence-only sexuality education programs in the US from 2001-2010. The course is divided into three main learning modules: methodological education on oral history, content/research about sexuality education, and field work focusing on gathering archival data and collecting oral history interviews.

Required Texts & Materials:

DeBlasio, D., Ganzert, C., Mould, D., Paschen, S., Sacks, H. (2009). *Catching Stories: A Practical Guide to Oral History.* Swallow Press/Ohio University Press: Athens, Ohio.

Other Assigned Readings/Videos: Some are available through the library's website AND others through our course's Canvas site (see Syllabus course schedule & Modules).

Digital Audio Recorder for interviewing: This recorder will allow you to both transfer the digital audio files of interviews to a computer for replay and transcription and upload the audio file to Canvas for assignment submission. Most smart phones and tablets have audio recording functions that will work fine, and there are also inexpensive digital audio recorders available in the electronics section of most department stores.

A Few Words on Reading:

- ***Bring notes & questions about your reading to class:*** For most assigned readings/viewings, you will be expected to come to class with two questions or issues you wish to discuss from the readings. As the focus of this class is to learn the oral history methodology, you will want to consider how the information you glean from ANY reading, film or audio recording could be applied to your own oral history interviewing in the second half of the semester.
- ***Read the GUIDE document before assigned readings/films/recordings.*** The Guides will be available under Canvas Modules, by week and day topic. They will tell you what you are looking for under each reading. They will also provide some material for you to consider as you write your weekly discussion post.

STUDENT RESPONSIBILITIES:

I. Community Creation & Maintenance

We are creating and maintaining a **semester long learning community**. You have a voice and you are expected to use it. This community, myself included, will be working together for the common goal of having a fabulous and productive learning experience. **You are expected to support each other and take an active role in determining the flow of this learning process.** The standard is to be **fully present for the designated time in the classroom** so that you can learn the material and be prepared for your out-of-class and future life learning experiences.

"fully present" = active listening + no non-course related tech use during lecture + not working on other material.

Creating and maintaining a Safe Space. At its core, this course deals with the details of how we learn to function in our diverse society. Our views on family, school, religion and media are often based largely on our own personal experience, and include our core values concerning class, race, gender, ability, sexuality, etc.,—and we tend to be sensitive to challenges to those beliefs. As a result, we must all be committed to creating and maintaining a safe space to allow for scholarly growth and for inter/personal understanding. In safe spaces, we walk the journey together knowing that we will all start and end at different places, but that the journey is important to all of us. Some guidelines for a safe space:

- Conflict Resolution. Recognize that conflict is innate and healthy—if a conflict arises, please bring it to the attention of the group or instructor. Solutions should be democratically negotiated and we will all do our best to maintain a collegial

environment.

- Mutual Respect. Disagreement, challenge and discomfort are necessary for our learning and the enrichment of our life experiences. So is respect. Keep comments focused on what a person is saying and not who a person is.
- Confidentiality. Some people in this course may share deeply personal experiences. Learn from them and honor their sharing….even if it challenges you. Keep what is shared confined to the walls of this classroom.
- Self Honesty & Reflexivity: the content of this class is about a controversial issue: sex education. Just like the participants in our study, students in this course come from a diversity of experiences and have a range or values and positions that are works in progress. LIFE IS NOT OFTEN LIVED IN BLACK AND WHITE. Check in with yourself about how you feel on the subjects we address, understand the bidirectional relationship between cause and effect, develop your listening skills—even when it is challenging to hear. Ask for help in understanding when you need it…that is how we all learn anything.

II. Participation

Your participation is integral in this course, as interaction, activity and experiential learning are cornerstones of my teaching philosophy.

a. **READ THE SYLLABUS CAREFULLY AND PAY ATTENTION TO DUE DATES**.

b. **Preparation for Course Meetings.**

1. ***Complete all Assigned Reading*****,** in advance of class, for the day they are assigned. Students should make sure they understand the concepts and arguments offered by the authors they read and bring specific questions to class for clarification and discussion.
2. ***Bring your textbooks and other readings to class, for reference***
3. ***Arrive on time***
4. ***Contribute*** because your ideas and insights are an integral part of our classroom community and learning process

c. **Attendance.** Students are expected to be in class …. all of our perspectives & skills make our class interesting and unique.

Students who are absent for whatever reason are responsible for:

- getting the notes from a peer, seeing me during office hours for any handouts/notes/etc., they may have missed
- seeing me if they have any ***specific questions*** about the material covered
- acquiring any videos they may have missed in class

Excusable absences are typically serious personal and family illnesses and/or difficulties. In circumstances where it is practical, notice should be given ahead of time. Excused absences will result in an assignment due date extension, but you cannot make up participation-discussion points since you were not there.

Attendance is part of your Participation-Discussion grade and will be factored into your overall grade. Letting me know the reason for your absence is important, but does not necessarily constitute an "excuse." Except in cases of **serious** illness or personal difficulties (e.g., **serious** illness or death in a student's family), each class must be attended, and exam and assignment must be completed at the date and time scheduled. In case of serious illness or personal difficulties, students must notify their Dean, Academic Advisor, or Campus Counselor **BEFORE** the assignment is due. The Dean / Advisor / Counselor will send a note to their professors indicating that the student is ill or having personal difficulties and his/her assignments may be delayed.

d. **Assignments.** Assignments must be submitted by the deadline in the Course Schedule. Assignments will be accepted hard copy and in-class.

- Late assignments will not be accepted…unless in some circumstances where you have an excused absence. See Attendance section above for examples of excusable absences.

- **Emailed papers will never be accepted.** Submit it in advance or send it with a friend, if you know you will miss class on an assignment due date.

e. **Canvas:** A short guide to our course's most important Canvas pages.
- SYLLABUS page
- MODULES page will contain:
  - course reading/viewing, guide questions and assignments links, organized by week.
- ASSIGNMENTS page will contain:
  - Detailed assignment descriptions, posted as the assignment due date approaches.
- EMAIL COMMUNICATION:
  - all email sent through Canvas is automatically sent directly to your email
- GRADES page:
  - Your grades will be recorded on the grades page. Assignment grades will be posted here as soon as assignments are graded. Participation-discussion and Extra Credit grades will be tracked by Dr. D. throughout the semester, then tallied and posted here at the end of the semester.

f. **Personal Technology Policy**

Simple.
1. Mind Your Manners: Don't use personal technology EVER when we have a speaker, guest or are on a field trip somewhere.
2. You can bring your laptops or tablets to our classroom as we may use the internet for in-class learning (so long as we don't have a guest or a speaker). Phones need to be turned off at all times.

g. **Handle Your Business.**
Your grade in this class is the result of your effort and performance. Your effort and performance are ultimately under your control.
If you need more support or find that you are experiencing challenges, it is your job to communicate this to myself and/or your colleagues, as well as actively engage in problem-solving.
There are various support centers on campus that can help too. Here are a couple.
Howe Writing Center: http://miamioh.edu/howe/
Student Counseling Services: http://miamioh.edu/student-life/student-counseling-service/

INSTRUCTOR RESPONSIBILITIES:

Support students in Classroom Community Creation & Maintenance
(see above section on Safe Space)

Facilitate student learning in accurate and engaging ways.

Disabilities:
In order for a student to receive an accommodation for a disability, that disability must be on record.

Students with documented disabilities are required to notify the instructor no later than the first day on which they require an accommodation (the first day of class is recommended), in private, if accommodation is needed. The instructor will provide students with disabilities with all reasonable accommodations, but students are not exempted from fulfilling the normal requirements of the course.

Success:
I want you to succeed in this course and at Miami. I encourage you to come see me during office hours or to schedule an appointment to discuss course content or to answer questions you have. If I become concerned about your course performance, attendance, engagement, or well-being, I will speak with you first.

Academic Integrity:
Integrity of scholarship is essential for an intellectual community. This means that knowledge must be pursued honestly. The University expects that both faculty and students will honor this principle and in so doing protect the validity of intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned without unauthorized aid of any kind. If an assignment is plagiarized or otherwise completed in an unfair manner, the minimum penalty will be a failure on that assignment, and the likely penalty will be failure for the course.

FLEXIBILITY CLAUSE:
This syllabus is NOT a binding contract. This is a project-based learning course and, as such, requires that we interact with the community on a regular basis, which, in turn, ALWAYS

REQUIRES FLEXIBILITY. The dates of lectures, exams, projects, etc. may be revised as the term progresses. All modifications to the syllabus will be documented on the Syllabus page of our course site, and verbally communicated during class meetings and/or via email.

Students are responsible for keeping informed about any modifications announced during class sessions…ask a classmate first.

EVALUATION of STUDENT LEARNING

ASSIGNMENT** (read on to see brief descriptions of each)	**POINTS**	**% of grade**	**Group or Individual Assignment**
Class Participation-Discussion	20	10%	Individual
Online Weekly Reflective Discussion Posts	20	10%	Individual
Archival Research Write-Up & Presentation	30	15%	Group
Weekly Methods Knowledge and Skill Evaluations (first 10 weeks) *	40	20%	Individual
Field Work Prep	20	10%	Group
Interviews & Transcriptions *(Includes university human subjects training completion)*	60	30%	Individual
Final project	10	5%	Individual
TOTALS	**200 pts**	**100%**	

***NOTE:** Weekly Methods Knowledge & Skills Evaluations lay an integral role in assessing if a student is capable of doing research in the field. Given the ethical concerns involved in speaking about sexuality with participants, in the rare circumstance that a student consistently demonstrates poor mastery of content and skills on these assignments s/z/he will not be permitted to interview participants. Instead, an alternative assignment—most likely specialty archival or other relevant research—will be negotiated between the student and faculty member. This will also be the case for those students who voluntarily decide that they would prefer not to perform interviews.

Student Learning Outcomes for WST 321:

At the end of the semester, the successful student will:

1) Gain a comprehensive understanding of the Oral History methodology

2) Apply and analyze diverse and critical perspectives, concerning the ethics and politics of doing research on the topic of sexuality

3) Gain undergraduate research experience

ASSIGNMENTS

ASSIGNMENT STANDARDS and GUIDELINES:

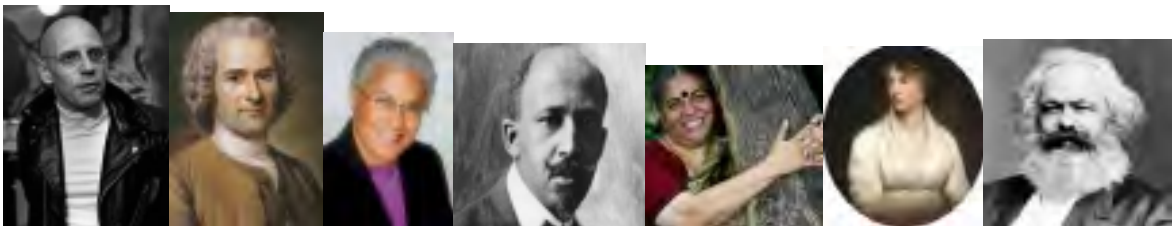
- 11-12 pt font, Calibri / Cambria / Times New Roman
- 1"margins on all sides
- Double-spaced body, single-spaced name/heading (even on transcripts)
    - Name/heading only includes your name and assignment title
- Meet minimum lengths
    - If a minimum length is 2 pages, you must have 2 full ages of text in order to be considered for full credit.
- College-level writing (clear presentation of ideas, free of spelling and grammatical mistakes, cite any ideas that are not your own, etc.,)
    - Writing is a tool just like any other, and practice of it yields improvement of it. Please visit the Howe Writing Center on campus to strengthen your paper: http://miamioh.edu/howe/
- **APA format:** see here for a brief, online summary of APA – for use in citing your sources https://owl.english.purdue.edu/owl/resource/560/01/
    - See sections on In-Text Citations & Reference Lists
    - See this site to plug in text information/type and it will spit out complete/correct citation: http://www.citationmachine.net/
- Documents must be submitted in Word or PDF format
- All assignment submissions will be hard copy, and in-class (as per student choice). Some will require submission to Canvas's Anti-plagiarism software as well, such as the Intellectual Autobiography.
    - Hard copies of ALL Assignments must be submitted in-class on the due date—assignment feedback will also be handed back hard copy and in-class..

Course Schedule

Please see Course Schedule document on Canvas, Syllabus Page.

WST 322: Art & Politics

Applying Social Theory to Your Worlds



He who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he may be cast.
Leonardo da Vinci, A Long Time Ago

The weapon of criticism cannot, of course, replace criticism of the weapon, material force must be overthrown by material force; but theory also becomes a material force as soon as it has gripped the masses.
Karl Marx, 1843

It is theory that decides what we can observe.
Albert Einstein, 1955

Knowledge rooted in experience shapes what we value, and as a consequence, how we know what we know as well as how we use what we know.
bell hooks, 2009

Course Description

This course is designed to give students an overview of major western social theories. Texts, lectures, discussions, and small group sessions will focus on the assumptions and concepts employed by major classical and contemporary theorists who have contributed to our understanding of individuals, groups and society. **We will keep one eye on our theory texts and the other on our interests in research and the popular culture world, as we constantly seek connections between the two.**

We will investigate complex topics with specific attention to developing competence in the analytical and rhetorical tools for interdisciplinary inquiry in the arts, humanities, sciences, and/or social sciences. Based on a student's area of interest, s/z/he will identify and analyze representational practices (e.g., written texts, performances, new media, statistical surveys, scientific studies) to promote the development of creative strategies for representing and addressing complex problems and questions. CAS-B-Humanities OR CAS-C Social Science. Because writing is a primary currency in this course, written expression, feedback and revision will be used to help clarify thinking and understanding, enhance and assess learning, and help

students develop informed opinions, and improve critical thinking skills. Critical thinking involves more than description, it involves the ability to evaluate, compare, contrast, link and innovate.

This is a required course for Individualized Studies (Western Program) majors and must be successfully completed prior to graduation.

Course Learning Objectives:
This course is designed to help you appreciate how knowledge is constructed within and around an intriguing interdisciplinary topic, so that you apply these insights in your own research and senior project. It will also help you with the following learning skills:

1. **Identify and analyze multiple perspectives on an issue or topic of study.** Throughout the semester, we will interact with complex social theories and consider their applications to both our research and popular culture interests. Your job will be to understand each theorist's key assumptions and concepts and the characteristics of each major theoretical movement and apply that understanding to your own interests.
2. Construct a self-designed path for learning within a complex area of study. Interactive lecture and discussion-based learning will characterize our interaction in this classroom. The progress, learning, and meaningfulness of this course will instead rely upon lively student participation in the classroom and the focused, individualized development of your own, rigorous, scholarly path.
3. Communicate a main idea in a logical way with supporting evidence. Throughout the semester, you will be engaged in a multi-step process of formulating, constructing, revising, presenting, and ultimately producing a final, 14-16 page research paper.
4. Gain insights into your skills as a scholar, thinker and writer.
By working through a sequenced process of writing, you will gain greater insights into your skills as a scholar, thinker and writer. Creating your own path through the materials will challenge and give you opportunities to test your abilities as a scholar, thinker and writer. **5. Interact with peers intensively to learn and share ideas.**
The lively in-class discussions in which you participate, your weekly online responses, your pop culture presentation, and a peer review process within the research paper sequence will each pro vide different kinds of opportunities for you to share and compare ideas with the class.

A WORD (OR TWO) ABOUT THEORY
Before beginning a theory course, it is important to keep in mind the following aspects of theories:
Source: Burr, Wesley R. 1995. "Using Theories in Family Science" in R.D. Day, K.R. Gilbert, B.H. Settles, and W.R. Burr (eds). Research and Theory in Family Science. Pacific Grove, CA: Brooks/Cole Publishing.

1) Theories Answer Questions about "What is Going On"
2) Theories Are in the Minds of the Scientists (they are intellectual maps to help us make sense of the social world)
3) Theories Give Us Power (to change things, solve problems, etc..)
4) The Search for Integrating One Theory is Futile.
5) Usefulness Rather Than Truth is How We Evaluate Theories
6) Theories Give Us Perspectives

THEORIES ENTAIL

1. Concepts (carefully defined words o terms which organize ideas and serve as building blocks)
2. Assumptions (what is taken for granted that serves as a starting point)
3. Generality (range of social phenomena to which a theory can apply, ranges from narrow or specific to general)
4. Explanations (build connections and answer how or why)
5. A History (as such are subject to change over time)

Read the GUIDE document before assigned readings. The Guides will be available under Canvas Modules, organized by theory movement (e.g., Early Modern Theory). They will keep you focused as you read. They will also provide some material for you to consider as you write your weekly discussion post.

STUDENT RESPONSIBILITIES:

I. Community Creation & Maintenance

We are creating and maintaining a **semester long learning community**. You have a voice and you are expected to use it. This community, myself included, will be working together for the common goal of having a fabulous and productive learning experience. **You are expected to support each other and take an active role in determining the flow of this learning process.** The standard is to be **fully present for the designated time in the classroom** so that you can learn the material and be prepared for your out-of-class and future life learning experiences.

"fully present" = active listening + no non-course related tech use during lecture + not working on other material.

Creating and maintaining a Safe Space. At its core, this course deals with the different lenses available through which to view the world. Views on family, school, religion and media are often based largely on our own personal experience, and include our core values concerning class, race, gender, ability, sexuality, etc.,—and we tend to be sensitive to challenges to those beliefs. As a result, we must all be committed to creating and maintaining a safe space to allow for scholarly growth and for inter/personal understanding. In safe spaces, we walk the journey together knowing that we will all start and end at different places, but that the journey is important to all of us. Some guidelines for a safe space:

- Conflict Resolution. Recognize that conflict is innate and healthy—if a conflict arises, please bring it to the attention of the group or instructor. Solutions should be democratically negotiated and we will all do our best to maintain a collegial environment.
- Mutual Respect. Disagreement, challenge and discomfort are necessary for our learning and the enrichment of our life experiences. So is respect. Keep comments focused on what a person is saying and not who a person is.

- Confidentiality. Some people in this course may share deeply personal experiences. Learn from them and honor their sharing….even if it challenges you. Keep what is shared confined to the walls of this classroom.

- Self Honesty & Reflexivity: the content of this class is about a controversial issue: sex education. Just like the participants in our study, students in this course come from a diversity of experiences and have a range or values and positions that are works in progress. LIFE IS NOT OFTEN LIVED IN BLACK AND WHITE. Check in with yourself about how you feel on the subjects we address, understand the bidirectional relationship between cause and effect, develop your listening skills—even when it is challenging to hear. Ask for help in understanding when you need it…that is how we all learn anything.

II. Participation

Your participation is integral in this course, as interaction, activity and experiential learning are cornerstones of my teaching philosophy.

a. **READ THE SYLLABUS CAREFULLY AND PAY ATTENTION TO DUE DATES**.

b. **Preparation for Course Meetings.**

1. ***Complete all Assigned Reading*****,** in advance of class, for the day they are assigned. Students should make sure they understand the concepts and arguments offered by the authors they read and bring specific questions to class for clarification and discussion.
2. ***Refer to your READERS in class every day***
3. ***Arrive on time***
4. ***Contribute*** because your ideas and insights are an integral part of our classroom community and learning process

b. **Attendance.** Students are expected to attend class …. all of our perspectives & skills make our class interesting and unique. Attendance is part of your Participation-Discussion grade and will be factored into your overall grade.

This class will meet in-person.

This is a small, lecture and discussion-based course about a topic that you have likely never studied in depth and with collaborative project components. YOUR ACTIVE PARTICIPATION serves to allow our learning from each other to play a prominent role.

You may miss class two times, after which you will be expected to provide documentation of the reason you need to miss to the instructor (notice in advance, if possible). Assignment extensions are possible, but will require documentation of an excused absence or other extenuating circumstance.
We will of course follow the university's guidance/policy concerning Covid-19. Jacque will keep you informed of county and zip code rates of new infections so we can collectively decide if we think face masks are a prudent risk reduction measure, if new

infection rates become high.

Students who are absent for whatever reason are responsible for:

- getting the notes from a peer
- schedule a meeting with me for any specific questions you have after talking to a peer

c. **Assignments.** Assignments must be submitted by the deadline in the Course Schedule. Assignments will be accepted online.

- Late assignments will not be accepted… where you have an excused absence or some other extenuating circumstance. See Attendance section above for examples of excusable absences.

- **Emailed assignments and papers will never be accepted…unless you want them to be lost in Jacque's black hole of an inbox.**

d. **Canvas:** A short guide to our course's most important Canvas pages.

- SYLLABUS page:
  - the syllabus and course schedule live there
- MODULES page will contain:
  - Some course reading/viewing, guide questions and assignments links, organized by week.
- ASSIGNMENTS page will contain:
  - Detailed assignment descriptions, posted as the assignment due date approaches.
- ANNOUNCEMENTS:
  - all email sent through Canvas is automatically sent directly to your email
- ZOOM page:
  - links for zooming, just in the case of the 1-2 class meetings that are listed as being online conference meetings with your instructor or in the case that your instructor may need to pivot to Zoom for a day during potential medical or other issues.
- GRADES page:
  - Your grades will be recorded on the grades page. Assignment grades will be posted here as soon as assignments are graded. Participation-discussion and Extra Credit grades will be tracked by Dr. D. throughout the semester, then tallied and posted here at the end of the semester.

e. **Personal Technology Policy**

Simple.

You can bring your laptops or tablets to our classroom as we may use the internet for in-class learning (so long as we don't have a guest or a speaker). Phones need to be turned off at all times.

f. **Handle Your Business.**

Your grade in this class is the result of your effort and performance. From time to time, we all need a little help.

If you need more support or find that you are experiencing challenges, please communicate this to myself and/or your colleagues, as well as to actively engage in problem-solving.

There are various support centers on campus that can help too. Here are a couple.

- Howe Writing Center: http://miamioh.edu/howe/
- Student Counseling Services: http://miamioh.edu/student-life/student counseling-service/

INSTRUCTOR RESPONSIBILITIES:

Support students in Classroom Community Creation & Maintenance
(see above section on Safer Space)

Facilitate student learning in accurate and engaging ways.

Disabilities:
In order for a student to receive an accommodation for a disability, that disability must be on record.

Students with documented disabilities are required to notify the instructor no later than the first day on which they require an accommodation (the first day of class is recommended), in private, if accommodation is needed. The instructor will provide students with disabilities with all reasonable accommodations, but students are not exempted from fulfilling the normal requirements of the course.

Success:
I want you to succeed in this course and at Miami. I encourage you to come see me during office hours or to schedule an appointment to discuss course content or to answer questions you have. If I become concerned about your course performance, attendance, engagement, or well-being, I will speak with you first.

Academic Integrity:
Integrity of scholarship is essential for an intellectual community. This means that knowledge must be pursued honestly. The University expects that both faculty and students will honor this principle and in so doing protect the validity of intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned without unauthorized aid of any kind. If an assignment is plagiarized or otherwise completed in an unfair manner, the

minimum penalty will be a failure on that assignment, and the likely penalty will be failure for the course.

FLEXIBILITY CLAUSE:

This syllabus is NOT a binding contract. The dates of lectures, exams, projects, etc. may be revised as the term progresses. All modifications to the syllabus will be documented on the Syllabus page of our course site, and verbally communicated during class meetings and/or via email.

Students are responsible for keeping informed about any modifications announced during class sessions…ask a classmate first.

EVALUATION of STUDENT LEARNING

ASSIGNMENT (read on to see brief descriptions of each)	**Points**	**% of grade**	**Group or Individual Assignment**
In-Class Participation	40	10%	Individual
Online Periodic Discussion Posts (7)	105	30%	Individual
Pop Culture Analysis Presentation	80	20%	Group
Research Paper ***Assignments*** Research Topic-Question 20 Annotated Bibliography w/2 Theory-Strong Sources 55 Peer Review Project 35 Final Paper 65	175	40%	Individual
TOTALS	**400**	**100 %**	

General meaning of ranks (adapted from "Rubric for Evaluating Writing That Requires Critical Reading and Analysis" developed by The University of Delaware Writing Center and distributed by WAC Clearinghouse)

> *Truly sophisticated.* The work is exceptional: Shows clearly that the student read and understood the source texts (original theorists' work) that inform the paper; Goes beyond summarizing key points or issues from source text to also critically analyze or synthesize those ideas with the students' own ideas, extending or building on the ideas of the source texts in interesting ways; Always clear whether information, opinions, or facts are from the source text or from the student; Develops specific ideas in depth with strong and appropriate supporting examples; Effectively balances abstract ideas and generalizations with concrete

examples. Writing is error free, strongly organized, coherent, logical and original.

Above average. The work is notably solid: Shows evidence that materials were read and that source texts have shaped the students' writing; Shows solid understanding and ability to engage the substance of the text(s); Goes beyond repetition or summary of source text(s) in some way; Generally clear when information comes from the source text(s) or from student; Achieves some depth and specificity of discussion with some supporting examples; Achieves some balance of abstract ideas with concrete examples. Writing is logical, relatively error free, organized, coherent, neat and properly prepared.
Competent. The work is acceptable: The student has fulfilled the rudimentary requirements of the assignment (rarely going beyond the limits of the assignment), but the work is lacking in some area - repeats or summarizes source text without analyzing, synthesizing or extending; lacks depth, development or support for arguments or claims; not always clear whether information comes from the text or from the student; omits some key aspect of the requirements; or the ideas are presented in a manner which is not always clear or is difficult to read (errors in coherence, logic and/or organization).

Unsatisfactory. Work requires extensive revisions: The work fails to meet many of the general requirements of the assignment and usually is also poorly written. Written work has serious mechanical and grammatical errors, is flawed in logic and / or organization, accomplishes less than required, or is not executed in a correct, complete, or timely manner.

Poor. Work is *fatally flawed*: Student does not meet any previous criteria - shows no basic knowledge of sociological theory or the ability to identify and discuss conceptual relationships; little or no indication that research articles inform their discussion; Little to no development of ideas; Little to no support for arguments and claims. Written work is vague, grossly incomplete or non-substantive.

ASSIGNMENTS

ASSIGNMENT STANDARDS and GUIDELINES:

- 11-12 pt font, Calibri / Cambria / Times New Roman
- 1"margins on all sides
- Double-spaced body, single-spaced name/heading (even on transcripts)
    - Name/heading only includes your name and assignment title
- Meet minimum lengths
    - If a minimum length is 2 pages, you must have 2 full pages of text in order to be considered for full credit.
- College-level writing (clear presentation of ideas, free of spelling and grammatical mistakes, cite any ideas that are not your own, etc.,)
    - Writing is a tool just like any other, and practice of it yields improvement of it. Please visit the Howe Writing Center on campus to strengthen your paper: http://miamioh.edu/howe/
- **APA** for a **format:** see here for a brief, online summary of APA – for use in citing your sources https://owl.english.purdue.edu/owl/resource/560/01/
    - See sections on In-Text Citations & Reference Lists
    - See this site to plug in text information/type and it will spit out complete/correct citation: http://www.citationmachine.net/

- Documents must be submitted in Word or PDF format
- Electronic copies of ALL Assignments must be submitted to Canvas on the due date. (as per student choice—unless students want to submit some assignments hardcopy). Some will require submission to Canvas's Anti-plagiarism software as well.

Course Schedule

Please see Course Schedule on Canvas, Syllabus Page.

WST 341_Synthesis and Action

Sustainability and Change

T/H 10:05 – 11:25 pm
Instructor: Jacqueline Daugherty, daughejd@miamioh.edu
Jacque's Office: 123 Peabody
Jacque's Virtual Office Hours: Wednesdays 12-2 (via Zoom):

1. You must visit here to make your 20-minute appointment
2. Then always come to my zoom room for your appointment (it will not be listed on the calendar): https://miamioh.zoom.us/j/3548735839

"*Pleasure activism is the work we do to reclaim our whole, happy, and satisfiable selves from the impacts, delusions, and limitations of oppression and/or supremacy*."
— Adrienne Maree Brown, from Pleasure Activism: The Politics of Feeling Good

"Shall I not have intelligence with the earth? Am I not partly leaves and vegetable mould myself."
-Henry David Thoreau

"*A tree has roots in the soil yet reaches to the sky. It tells us that in order to aspire we need to be grounded and that no matter how high we go it is from our roots that we draw sustenance. It is a reminder to all of us who have had success that we cannot forget where we came from. It signifies that no matter how powerful we become in government or how many awards we receive, our power and strength and our ability to reach our goals depend on the people, those whose work remain unseen, who are the soil out of which we grow, the shoulders on which we stand."*
— Wangari Maathai, Founder of Kenya's Greenbelt Movement & 2004 Nobel Peace Prize Laureate

Broad Course Overview

Integrates diverse methods of inquiry to assist the development of student outreach projects that synthesize learning about a complex topic. Working in teams, students develop action-based approaches with a strong aspect of public performance and/or engagement. Prerequisite: WST 321 or 322. CAS-B-Humanities OR CAS-C Social Science. This class builds upon other courses in the Western major, reiterating an inquiry-based pedagogy (WST 231) and offering an opportunity to revisit themes and particular methods of interdisciplinary research. WST 301 studied a particular theme ("Global Water Governance") from multiple disciplinary and

methodological perspectives, moving towards integration. WST 322 ("Art & Politics") explored hybrid methodologies and focused on your skills in representing and analyzing complex problems. WST 341 Synthesis and Action will encourage you to develop and revisit these same themes while focusing on your skill of integration. ***How can you create a "common ground" between various perspectives and disciplines and integrate innovative solutions to complex problems?***

Narrow Course Description

Issues of ecological, social, economic and political sustainability are of great interest to the Western Program community, due to the interdisciplinary investigation and action necessitated by these issues. The purpose of this class is to allow each student to connect to the sustainability focus in a way that is based on their knowledge, assets and interests; and to extend that connection in service to our community. This semester our class will investigate and take action on a project central to sustainability, which has both global and local dimensions: sustaining regional community access to healthy food, as well as covid-19 response, and ecological restoration work of wetlands. ***See the Canvas syllabus page for this year's community partner and service learning options.***

Course Objectives

What is my role in creating the change I believe in*?* With mounting social and environmental challenges facing our communities, this service-learning designated course is designed to help you answer this question within the context of philanthropy and civil society. You will:

1. critically examine the ways in which you believe socio-environmental-economic change happens, and your relationship to it
2. evolve your skills in group facilitation and coordination, through your team-based service project
3. put one's values and passion to work in a service learning project around a shared purpose; consider this project as a living case study in which you synthesize traditional and action-based methods of inquiry
4. explore career and leadership paths in social change and transformation, while you gain transferrable professional skills in project coordination/management that build on the assets of you your team, and your community partner

What is Service Learning?

An experiential pedagogical practice that uses action and reflection to meet needs and enhance learning through mutually beneficial, reciprocal partnerships. Service-Learning involves integrating community service or other forms of engagement into course content. As a result, Miami students are able to gain real world skills and enhance your learning while contributing to the community.

Readings:
TEXT:
Brown, Adrienne Maree. (2017). **Emergent Strategy: Shaping Change, Changing Worlds**. AK Press.

Online WORKBOOK Excerpts (See Canvas Modules0:
Mack Parker, T. Greenberg, R. (2021). **Citizen Philanthropy: A Hopeful Path Toward Social Change.** ***Please note: we will use the Canvas-based online excerpts from this workbook.***

Online Support Readings:
Use-Value Support Readings: you will find PDFs and/or links to occasional required use-value readings that support your team's work on the service learning project. See the Course Schedule and Canvas Modules.

A few words on use-value….
Karl Marx first coined "use-value" to describe a commodity's simple ability to meet a human need. Use-value is a qualitative measure of a commodity or service's worth to its owner/user. It presupposes that something's ability to simply "meet a human need" is enough for it to be valuable. He argued that a real problem with the capitalist system is that it places much higher priority on a commodity's "market-value" that is measured only in monetary terms and whose value is irrational and subject to any number of market-related whims.

Today there is even more of a drive to define everything's value in market terms. For example, we should only be concerned with publicly funding permanent housing for the homeless IF that is more cost effective than paying for the basic maintenance of homeless individuals (e.g., healthcare, court, and other costs). Use-value, in contrast, recognizes that it is critical for all individuals to have permanent and quality shelter from the elements as a basic human need, and that this must be provided for all members of a society regardless of that society's economic system. In part, this is because you can't separate somebody's experience of homelessness from their experience with the lack of affordable healthcare and their experience with long-term unemployment. Each is shaped and reshaped in intricate and complex ways by the others. But we do know that permanently housing people often has long-term positive impacts on a person's physical and mental health as well as their ability to obtain and maintain employment. Use Value places value on human dignity and community contributions.

Personal Technology Policy:
Personal technology will usually not be necessary on Tuesdays, unless you are registered with the Office for Disability Services / Rinella and your plan requires personal technology use. We can agree to assign a looker-upper for class when we have questions that can be answered on the internet. No video recording or our class meetings. Thursdays, group work days, groups are

expected to have tech available in whatever way they may need it to support their project work…if it supports their service work.

FLEXIBILITY CLAUSE:

Community work is a process--especially when it happens during a pandemic--and as a process it cannot be entirely predicted. This is not a traditional class where change is a rarity; indeed, change and flexibility will be required often and throughout the semester. As such, this syllabus is NOT a binding contract. The dates of lectures, exams, projects, etc. may be revised as the term progresses. All modifications to the syllabus will be documented on the Syllabus page of our course's Canvas site, and verbally communicated during class meetings. Such changes will often be the result of democratic decision-making among the students, instructor, and community partner/s.

Students are responsible for keeping informed about any modifications announced during class sessions.

Academic Integrity: Integrity of scholarship is essential for an intellectual community. This means that knowledge must be pursued honestly. The University expects that both faculty and students will honor this principle and in so doing protect the validity of intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned without unauthorized aid of any kind. If an assignment is plagiarized or otherwise completed in an unfair manner, the minimum penalty will be a failure on that assignment, and the likely penalty will be failure for the course.

Attendance

I will take attendance each class. If you have attended consistently by the end of the semester, your Engagement (showing up for yourself and others) grade will reflect that. See 'In-Class Engagement," below under Assignments.

SAFETY is a community effort, and we want to take care of ourselves and each other.

This course will be held in-person and on-campus, unless Covid-19 new infections or serious illness drastically increases on campus and/or in the community. The instructor reserves the right to move to an online synchronous mode of instruction for a period of time, if community spread is drastically increased. It is very unlikely that this type of format change will happen, but it is worth mentioning here.

If you are feeling unwell for any reason (Covid included, obviously), stay home and make arrangements to get notes from a colleague and/or notify your small project team that you will need to attend small team meetings virtually on a particular Thursday or arrange to make the work up with your community partner if you miss more than 1 week of service. Public safety and

respect for your own self care are reasons we do not want potentially/sick people physically in class meetings. We also want to honor the in-person and on-campus design of this course, whose success requires that class not be a vector for transmission.

Risk Reduction: Vaccinations, and Facial Coverings

Facial Coverings
After vaccination, the second most effective risk reduction method is wearing a face mask. Facial coverings are strongly recommended, but not required by the university at this time.

Evaluation & Assignments

EVALUATION: The following learning models are critical to our work in this course. As you engage in your project and complete assignments, consider your experience through the lenses of these models and incorporate their fit (or potential lack of fit) into your writing and action project.

- Citizen Philanthropy (Tracy Mack Parker, see online worksheet PDFs)
- Emergent Strategy (adrienne maree brown)

ASSIGNMENTS: See below for a complete list. Assignment descriptions will be available on Canvas Modules as they arise. 540 points total.

1. Engagement--Showing Up and Being Present: 150 points Creating a classroom learning community will be an integral component of achieving synthesis in our work as an interdisciplinary collaborative. Your engagement with each other, the class material, and your own goals will be essential to our work.

- In-Class Engagement: 50
- Midterm & Final Reflective Individual/Peer/Project Evaluations: 50 (25 pts each)
- Final Letter of Experience by Community Partner: 50
    - Community Partners will be asked to email me their evaluation of the process and product of your work with them. Their evaluation of you will inform this part of your grade. Jacque will collect these directly from community partners.

2. Personal Transformation: 90 points You will be assessed by your efforts ***to engage in the process*** of personal transformation as demonstrated by your work on the assignments below:

- Individual Inquiry Assignments (Hopeful Paths PDFs—critical self reflection: 90

<u>3. Social Transformation: 300 points</u> (2-part assessment)

1. ***Community Partner Action Project: 250 points*** The purpose of the action project is *to immerse yourself in a complex real world problem* and *engage your interdisciplinary skills in synthesis and collaboration* to formulate an action-based research project. The project should respond to a real community need, but it should also allow you *to feature and develop your own skills as a researcher/artist/activist/educator*. Showing Up to your project (direct or indirect service projects)—whatever that means for your projects--and working toward your project goals is presupposed. Projects are so different in this class that it is difficult to equitably quantify this idea.

    a. Group Project Proposal/Work Plan: 150
    b. Group Project Execution, Group work, and Final Documentation: 100

2. ***Community Presentation of Learning (Public Narrative—story of self, us, now): 50:*** Group Grade. You will link your group's shared story of your service learning experience to the broader MU/Oxford Community. ***Think about community members and others you want to invite to participate as you do your projects***. This will be an engaging, fun and creative presentation of your group's project and learning that inspired others to take action.
        i. We will co-create this event. More details TBA as assignment approaches.

    NOTE: the in-person format of this presentation is heavily dependent on the Covid-19 situation in our region.

Western Program/Individualized Studies
WST 444 Senior Workshop (3 cr)
Spring 2024 Tuesdays 4:25-6:55 p.m.

Instructor: Dr. Nik Money
Office: 111 Peabody Hall
Office Hours (online consultations): By e-mail appointment
Phone/E-mail: 529-5044/moneynp@miamioh.edu

Course Description

WST 444 provides a forum in which students share the process of writing, revising, researching, enacting, or otherwise executing their senior projects with peers and advisors. Short written assignments are designed to enhance reflection on the ongoing project work and to facilitate the completion of the final project. The experience culminates in the completion of the project work in April with the option of making a presentation to the wider community. In 2023, the format for this presentation will be determined closer to the end of the semester.

WST 444 Prerequisite: senior standing and completion of preceding WST requirements.

As we discussed in WST 421, three genres or categories of senior project are appropriate: 1) thesis projects that combine library research in multiple academic disciplines with a case study or applied focus, 2) creative projects, and 3) action-oriented projects. The most common type of senior project is an **essay style thesis**, which is a standard exercise in the natural and social sciences, and in the humanities. Although there are no hard and fast rules, generally, the Western Program thesis takes the form of a written product with a minimum of 45 pages (double-spaced) that develops an argument based on objective evidence.

A **creative project** can feature an expressive product, or a major activity grounded in relevant professional literature and complemented by a shorter written project. Expressive products in the fine and performing arts, or the humanities, may take the form of a portfolio of poems, drawings, or photographs, an original musical score or play, or involve the staging and direction of a theatrical work. All creative projects must include two parts: a performance or exhibition (photographed or videoed for archiving), and a written portion. The written portion should explain the process to non-specialists, namely, what was done and why, a detailed rationale for the artistic choices grounded in the professional literature, and a discussion of the relationship of the project to the relevant tradition or form.

An **action-oriented project** (e.g., founding a social justice organization) must include a similar written portion as well as appropriate documentation (e.g., personal journal, scrapbook, documentary video) of the activity.

WST 444 Miami Plan Learning Outcomes

i. Students will explore a complex question, or series of questions, of their choosing. In doing so, they will identify an interdisciplinary problem, develop a methodology to investigate that problem, and complete a process of intensive research. Ideally, students will add to the scholarship in their chosen fields of inquiry.

ii. Students will understand the value of interdisciplinary research. They will engage in a self-reflective process (with both written and oral components) that identifies the multiple disciplinary backgrounds relevant to their research. As their project work proceeds, students will integrate information from different disciplines to develop their conclusions.

iii. Students will show excellence in different modes of writing. Students will produce summaries and abstracts of their project work. They will synthesize the academic literature relevant to their projects and determine how their work is related to existing knowledge. Students will also reflect upon ethical issues raised by their research. Students will revise their written assignments in response to the suggestions made by their faculty advisor and the instructor of WST 444. Students will also engage in the peer-review of the work of their classmates, and incorporate peer suggestions into their own work.

iv. Students will learn how to prepare and deliver a formal presentation of their project findings appropriate for a general audience. These conference-style presentations require each student to translate their specialized project work into an oral and visual presentation that is suitable for a broad non-specialist audience.

Additional Information

To complete an interdisciplinary senior project, you need to interact with people with different disciplinary interests, as well as with people who share your research approaches. The workshop is set up to provide feedback from both sources. In addition to attending the workshop and fulfilling its requirements, seniors are required to meet frequently with their project advisors. The length of those meetings can be negotiated between senior and advisor and may vary across the semester. Advisors will discuss the progress of these meetings periodically with the workshop instructor. The focus of weekly meetings will be on the substance of your project. Here are some discussion items: Fine-tuning the project topic in the spring semester; deciding which issues you want to address; revising your written work; strengthening supporting arguments; breaking up the project into smaller non-threatening pieces (e.g., by writing one piece at a time, getting feedback from your advisor, and then rewriting); constructing the abstract.

If you have not done so, you are also encouraged to cultivate an informal advisor from outside Western Program, someone with expertise in your topic or in a key contributing discipline, to complement the expertise of your Western advisor. Informal advisors complement but do not replace Western senior project advisors. Over the course of the semester will also use workshop class time to discuss ideas to create meaningful events and experiences surrounding graduation. Traditionally these include discussion regarding the senior dinner, final conference presentations, signing ceremony, catering, invitations, etc.

WST 444 Workshop Assignments

Four Short Papers: Each of the short papers asks you to consider a specific issue as you progress with your project work. Topics of these papers: Paper I, research plan incorporating advisor feedback; Paper II, developing a project outline; Paper III, integration, and Paper IV, ethics.

Abstract: Each project must be accompanied with a 250- to 300-word abstract. Class time will be devoted to abstract composition.

Revised iPlan: You will need to update your iPlan to add recent coursework.

Attendance/Participation and Attendance Policy: Since this is a workshop where we will discuss ideas and engage each other and other stakeholders, attendance and full participation is expected. Your attendance will also be factored into your final grade.

WST 444 Grading: Short papers: (4 x 5% each) 20%
Abstract 10%
Completed project 70%

On Academic Integrity: Please review the university's policy regarding academic misconduct. Violations of this code will be investigated and prosecuted according to university policy. https://www.miamioh.edu/integrity/index.html

CLASS MEETINGS AND ASSIGNMENT DEADLINES
Bolded dates are for whole class meetings in PBD 407

Jan 30	Catch-up and explanation of Papers I & II
Feb 6	Individual meetings; Paper I due Friday Feb 9 6:00 p.m.
Feb 13	Individual meetings
Feb 20	Explanation of Papers III & IV; Paper II due Friday Feb 23 6:00p.m.
Feb 27	Individual meetings
March 5	Individual meetings; Paper III due March 8 6:00 p.m.
March 12	Individual meetings
March 19	Update on progress; Paper IV due March 22 6:00 p.m.
March 25-29	Spring Break
April 2	Individual meetings
April 9	Individual meetings
April 16	Project abstract guidelines and discussion of the presentation format Abstracts due Friday April 19 6:00 p.m.
April 23	Presentations
April 30	Presentations
May 7	Due date for completed projects

Western Program/Individualized Studies
WST 421 Senior Project Proposal Workshop
Fall 2023

Instructors: Dr. Nicholas P. Money
Offices: Peabody Hall
Office hours by appointment (send an e-mail)
Emails: moneynp@miamioh.edu
Class meeting time: Tuesday 4:25-6:55
Classroom: 407 Peabody Hall

Course Description

The workshop (WST 421) provides guidance for students as they begin their senior projects. Students identify a research topic, search online resources in their chosen field, compile an annotated bibliography and literature review, and submit a project proposal at the end of the semester.

Learning Outcomes

Interdisciplinary and disciplinary thinking: students will compare, analyze, and employ distinct disciplinary approaches to explore a complex topic.
Problem solving: students will address complex problems with self-directed inquiry.
Construction of knowledge: students will analyze questions and identify issues that require deeper analysis.
Independence and collaboration: students will engage in constructive peer review; group project work is optional.
Communication: students will develop writing skills through a weekly writing assignment and a term paper; students will develop oral communication skills through formal presentation; students will develop and communicate arguments through weekly discourse.

Assignments

Online database search
Annotated bibliography
Literature review (introduction to project)
Senior project proposal

The 421 workshop serves as an intellectual community. This means you will share intellectual experiences with other students that will help improve the quality of your project work. Effective interdisciplinary work depends on conversations with people with different perspectives. To develop a good interdisciplinary project, you need to talk with people who have developed different kinds of disciplinary expertise as well as working with people who share your specific interests. The workshop is set up to give you two kinds of feedback on your project—from peers whose interests overlap yours (through affinity groups), and from those whose interests have little in common with yours (through wider class discussions).
Western Program faculty and staff (as advisors and evaluators) recognize three genres or categories of projects: 1) **Thesis Projects** that combine library research from several professional disciplines with a case study; 2) **Creative Projects**, and 3) **Action Projects**. The most common type of senior project is an essay style thesis project. Although there are no universal rules, generally, a thesis takes the form of a 30- to 40-page document that contains an argument supported with evidence (e.g., experimental, theoretical, narrative). **Creative Projects** can

feature an expressive product, or a major activity—grounded in relevant professional academic literature and complemented with a shorter written thesis. Projects in the fine and performing arts or the humanities might take the form of a portfolio of poems or drawings or photographs, an original musical score or play, or the staging and direction of a theatrical work. All creative projects must include two parts: a performance or exhibition (photographed or videoed for archiving), and a written portion. The written portion explains the process to non-specialists—explaining what was attempted and why, a detailed rationale for the artistic choices grounded in the relevant professional literature, and a discussion of the relationship of the project to the relevant tradition or form. **Action Projects** (e.g., founding a social justice organization) must include a similar written portion as well as appropriate documentation (e.g., personal journal, scrapbook, or documentary video) of the activity.

In addition to attending workshop once a week and fulfilling its requirements, seniors should meet at least once every two weeks with their project advisor. The length of these meetings can be negotiated with the advisor. Advisors will discuss the progress of these meetings periodically with the workshop instructor.

Meetings with advisors concentrate on the substance of your project:
Identifying and narrowing down your topic
Identifying the people and the academic literature you need to get to know
Immersing yourself in the project topic
Processing information from multiple sources and deciding which specific issues you want to address
Developing your thesis and the supporting argument
Constructing an outline
Breaking up your project into smaller non-threatening pieces
Writing and rewriting

You are also encouraged to cultivate an informal advisor outside Western, someone with expertise in your topic or in a key contributing discipline that will complement the expertise of your Western advisor.

Evaluation

Online database search	5%
Annotated bibliography	25%
Senior project background	35%
Full project proposal	35%

Attendance Policy
Since this is a workshop where we will discuss ideas and engage with other class members, attendance and full participation is expected. Your attendance will also be factored into your participation grade. For each unexcused absence from two class meetings your final grade will be reduced a letter grade. Repeatedly coming to class late or leaving early will be treated as an absence.

On Academic Misconduct
https://miamioh.edu/policy-library/students/undergraduate/academic-regulations/academic-integrity.html

Electronic sources should be cited using URL of website and date accessed.

Weekly Schedule:

Aug 29 Review syllabus & discuss the purpose of the workshop. Review iPlans and discuss topic ideas. Contact your advisor after this class and arrange a brief meeting before the next classes (September 5 and September 12 at 4:25 pm) to discuss topics.

We may form three or four Affinity Groups based on the project subject areas identified in the first class meeting.

Sept 5 Meeting with Katie Gibson, Resources Librarian at King Library room 134 at 5:15, who Will introduce the library website and general interdisciplinary research strategies. Refer to Katie's web resource for WST421: https://libguides.lib.miamioh.edu/western
Preliminary computer search (list of 5-10 sources) due Friday Sept 8

Sept 12 Class discussion on evaluating sources and engaging in independent research. Discuss annotated bibliography and presentations for Sept. 19 & 26.
Final computer search (list of 40 sources) due Friday Sept 15

Sept 19 First set of informal project overviews (5-10 min each)

Sept 26 Second set of informal project overviews (5-10 min each)

Oct 3 Annotated bibliography and project background or literature review
Submit annotated bibliography to Nik & advisor by Friday Oct 6

Oct 10 Individual meetings with Nik &/or advisors this week, e.g., for debriefing on annotated bibliography

Oct 17 How to develop the project background from the annotated bibliography

Oct 18 Individual meetings with Nik &/or advisors this week

Oct 24 Individual meetings with Nik &/or advisors this week
Submit final project backgrounds to Nik & advisor before Fri Oct. 27

Oct 31 Format for full project proposals; format for project proposal presentations; meet in Affinity Groups to discuss progress

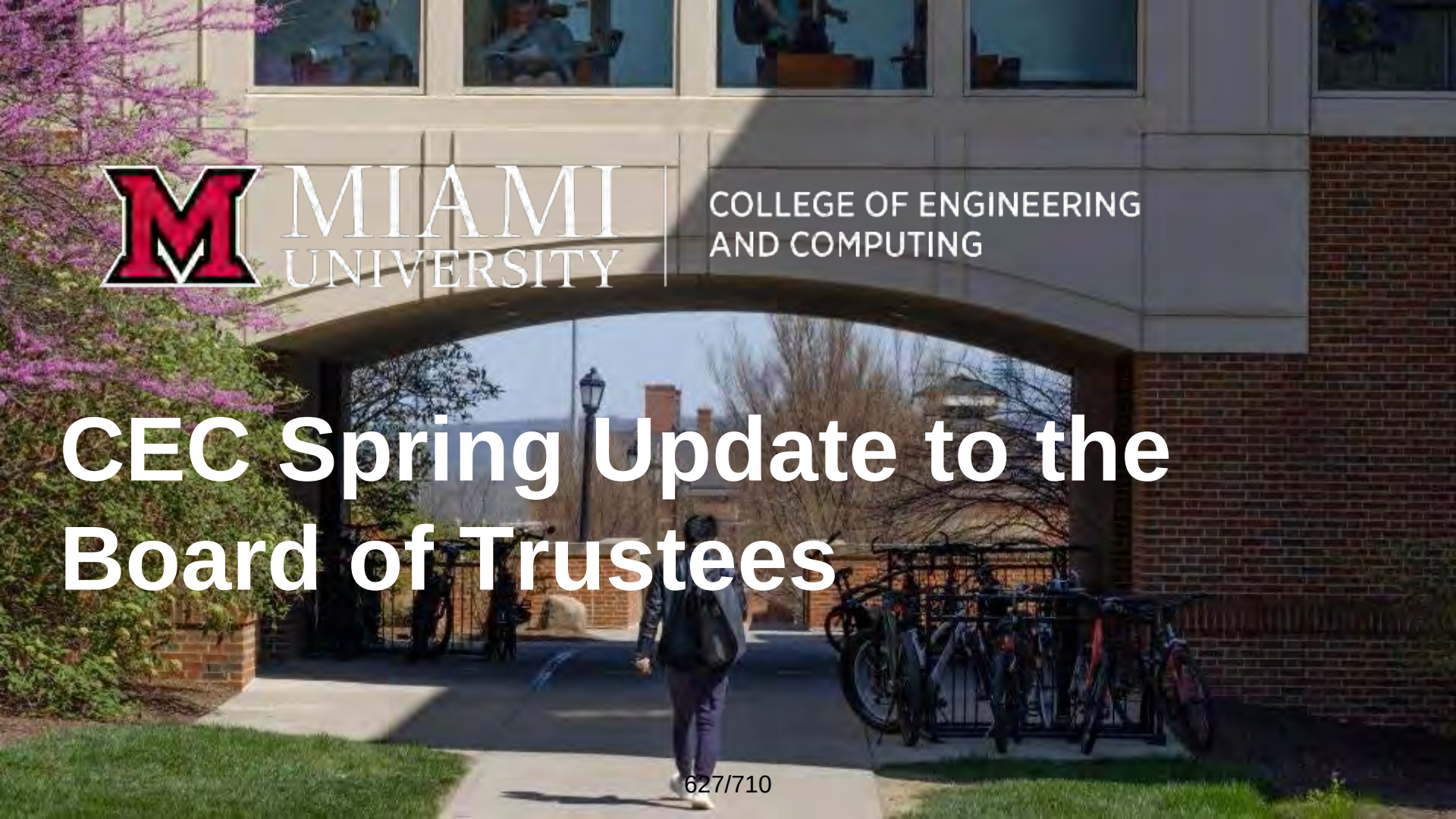
Nov 7 First set of project proposals (5-10 min each plus discussion)

Nov 14 Second set of project proposals (5-10 min each plus discussion)

Nov 21 Thanksgiving week

Nov 28 Proposal completion

Submit completed proposals to Canvas on or before Friday December 8



CEC Spring Update to the Board of Trustees

College of Engineering and Computing

VISION:

To be an **inclusive** community of scholars:

- known for **exceptional personalized** engineering and computing education
- which **champions** technical innovation, entrepreneurial mindset, leadership, and advancing technology for **societal good**.

At CEC, we will...

Constantly INNOVATE the delivery of engineering and computing education

HOW

- Increase faculty adoption of high-impact pedagogical approaches.
- Provide clear pathways to help students transition into CEC programs, enhance upward curricular mobility, and facilitate career success.
- Update physical spaces to facilitate collaboration and community.

Embrace INGENUITY to increase collaboration and research participation

HOW

- Enhance graduate program to support faculty research and workforce needs
- Identify areas of technical strength and facilitate resources for research success

Amplify the IMPACT of our people and programs by elevating CEC visibility

HOW

- Showcase CEC scholarship, ingenuity, and achievement at the national level
- Build and sustain industry and community partnerships and enhance outreach opportunities

Build a strong sense of INCLUSION AND BELONGING where all are welcome and valued

HOW

- Increase opportunities for students to explore interests, form communities and build network connections
- Increase opportunities to strengthen faculty and staff interpersonal connections, rewarding contributions to inclusivity

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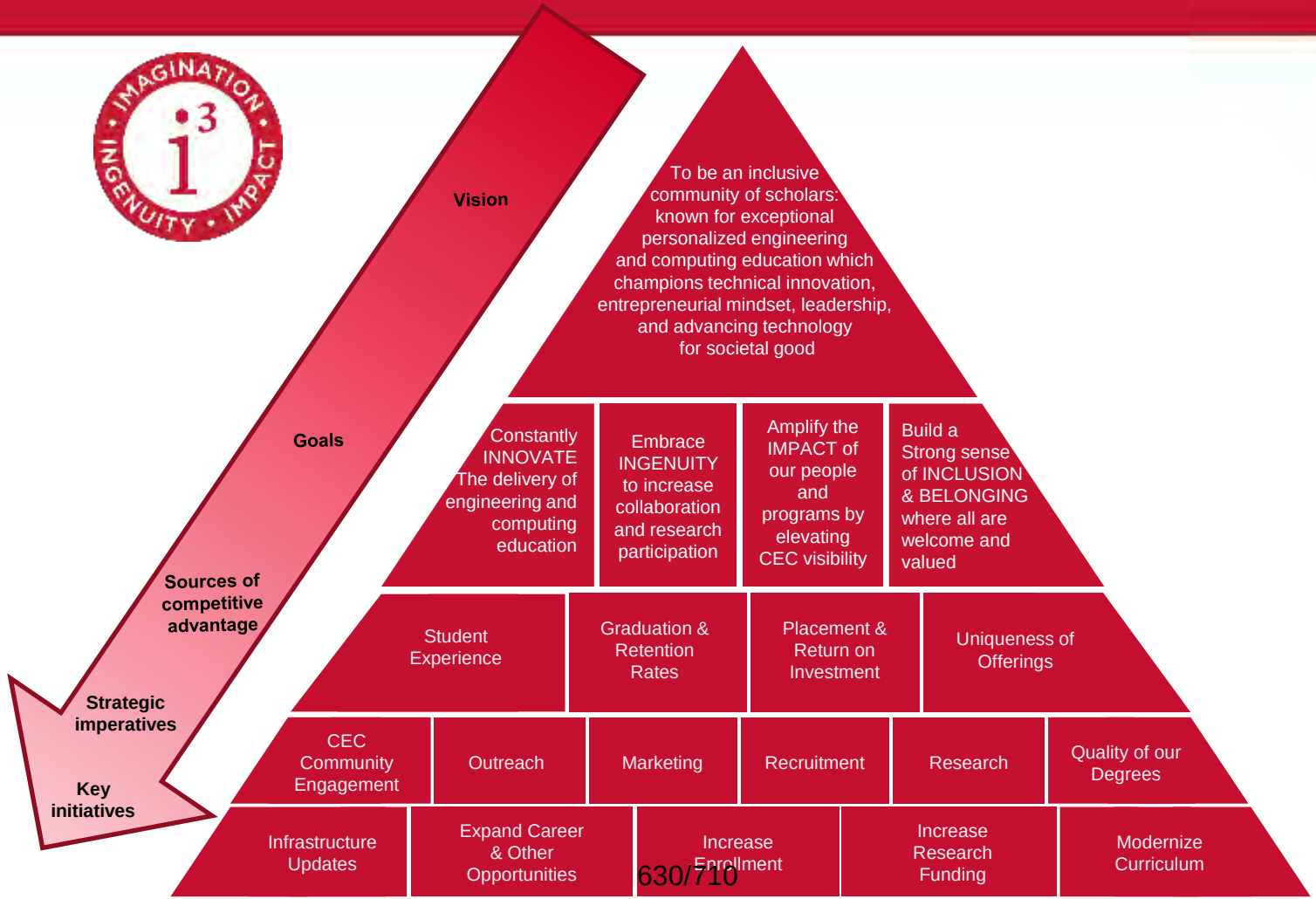
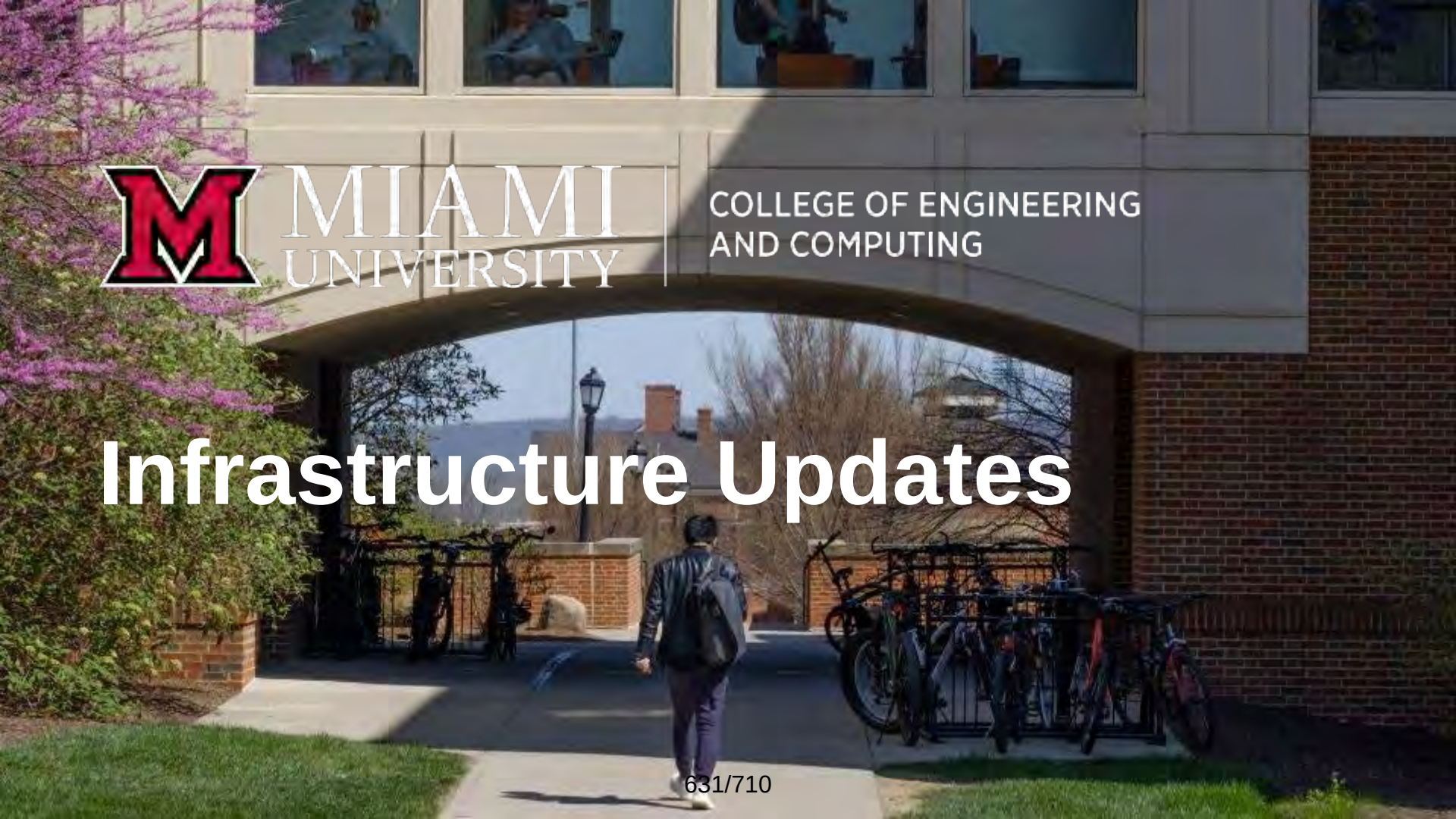

IMAGINATION
i3
INGENUITY • IMPACT
Vision
Goals
Sources of competitive advantage
Strategic imperatives
Key initiatives
To be an inclusive community of scholars: known for exceptional personalized engineering and computing education which champions technical innovation, entrepreneurial mindset, leadership, and advancing technology for societal good
Constantly INNOVATE The delivery of engineering and computing education
Embrace INGENUITY to increase collaboration and research participation
Amplify the IMPACT of our people and programs by elevating CEC visibility
Build a Strong sense of INCLUSION & BELONGING where all are welcome and valued
Student Experience
Graduation & Retention Rates
Placement & Return on Investment
Uniqueness of Offerings
CEC Community Engagement
Outreach
Marketing
Recruitment
Research
Quality of our Degrees
Infrastructure Updates
Expand Career & Other Opportunities
Increase Enrollment
Increase Research Funding
Modernize Curriculum



Infrastructure Updates

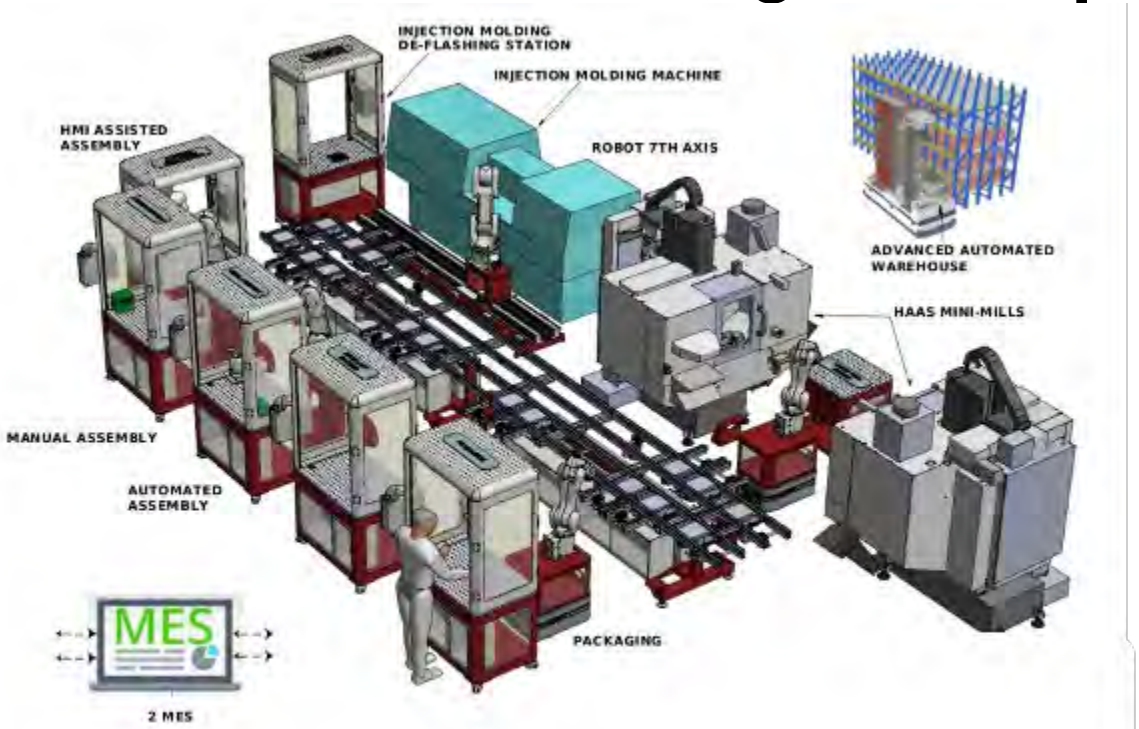
Rick McVey Data Science Building

Opened January 2024

CSE moved to new spaces

- Cybersecurity lab
- Additional Computer lab
- Two dedicated CSE Classrooms

Smart Manufacturing Revamp



Create a Smart Factory lab that includes: Manufacturing Operations, Warehouse operations, Inventory tracking, Quality, Maintenance, and Environmental/Health/Safety

Components of the smart factory lab

- Milling machines
- Robots – seven axis gantry robot, SCARA robot (Sorting and material handling etc.)
- Injection Molding
- Vision System – Quality Control
- Human Machine Interface (HMI) stations
- Guided Vehicle
- Conveyor system (Chain and magnetic levitation)
- Digital Warehouse with Tending robots
- Data servers

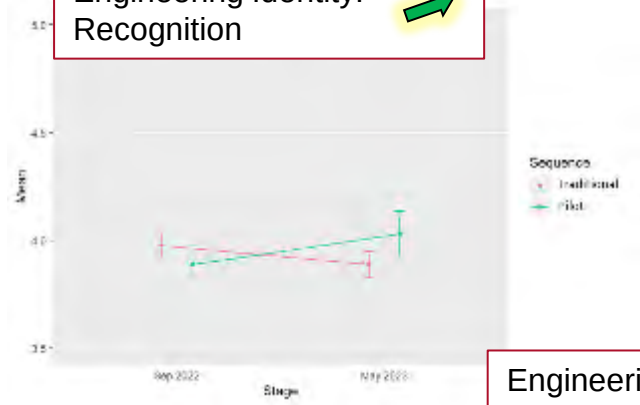
Courses

- MME 232 Polymer Processes. (3)
- MME 337 Manufacturing Automation. (3)
- MME 331 Advanced Manufacturing and Design. (3)
- MME 432/MME 532 Digital Manufacturing. (3)
- MME 433/MME 533 Smart Factory. (3)
- MME 435/MME 535 Process Engineering. (3)

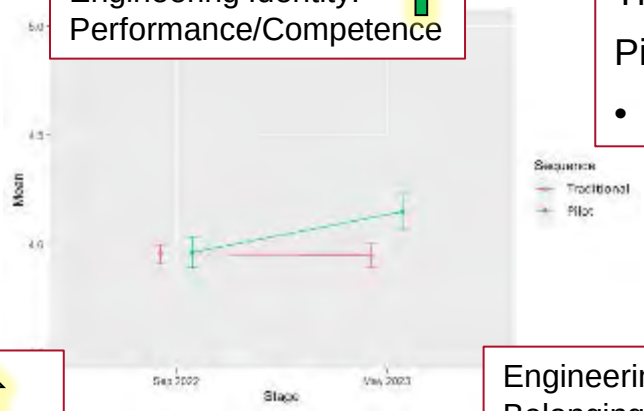
Modernize Curriculum

Revamp of First Year Courses – CEC 111/112

Engineering Identity: Recognition



Engineering Identity: Performance/Competence



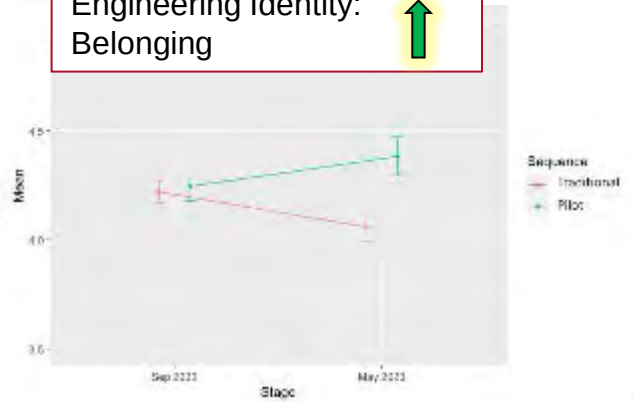
Traditional = CEC 101

Pilot = CEC 111 & 112

- 418 unique students

Engineering Identity: Interest

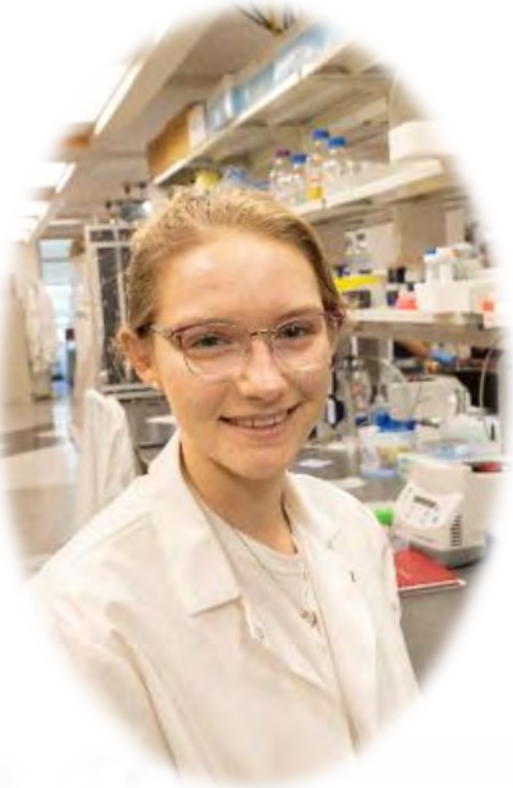
Engineering Identity: Belonging



New Degrees

- **Boldly Creative Funded Initiatives**
  - BS Robotics (ABET visit in Fall 2024)
  - Automation and Industrial Manufacturing Graduate Certificates (Tech Cred)
  - BS Cyber Security
  - MS Clinical Engineering
- **New Programs Approved by the State (Fall 2023)**
  - MS Clinical Engineering
  - BA in Computer Science
  - BS in Cybersecurity
- **New Programs**
  - 4+1 BS+MBA for Engineer and Computer Scientist
  - Certificate in Generative AI

Revamp of CEC Master Degrees

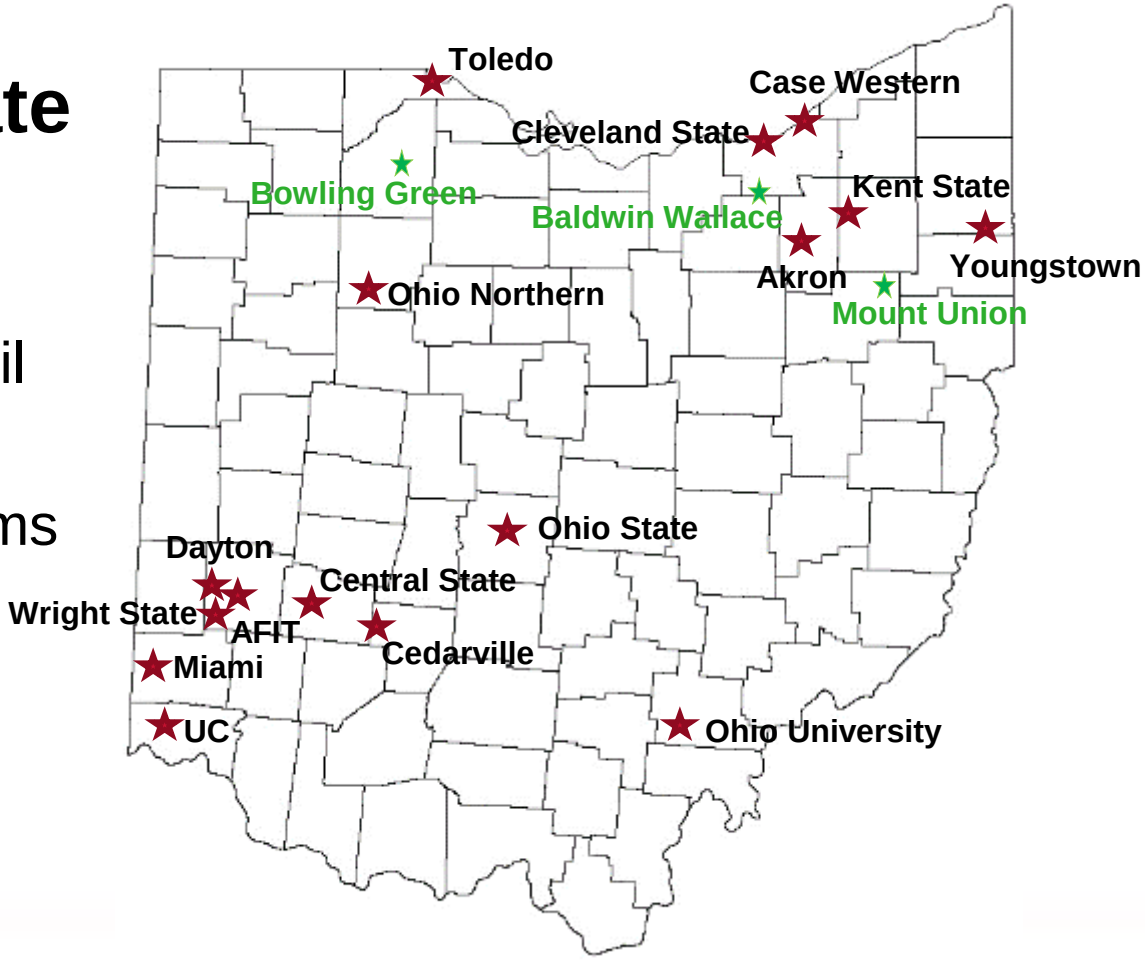


CSE Department
Master of Computer Science (non-thesis)
ECE Department
Master of Science in Electrical and Computer Engineering (thesis)
Master of Engineering in Electrical and Computer Engineering (non-thesis)
MME Department
Master of Science in Mechanical Engineering (thesis)
Master of Engineering in Mechanical and Smart Manufacturing Engineering (non-thesis)
CPB Department
Master of Science in Chemical and Biomedical Engineering (thesis)
Master of Engineering in Chemical Engineering (non-thesis)
Master of Engineering in Biomedical Engineering (non-thesis)

Increase Enrollment

Competition in State

- 16 Members of the Ohio Engineering Deans Council
- 3 new engineering programs



K-12 Outreach
Ms. Joanna Hohn

- Tremendous impact in 3.25 years
  - Developing a pipeline of future engineering and computing students by hands on projects with 2384 K12 students in the Tri-State area
  - Wrote and submitted grants that brought in $527,481 in external funding to support the programs
- Here is one example

DIVE INTO CHEMICAL ENGINEERING

Dive Into Chemical Engineering (DICE) was held in two sessions in January and February for educators and students. The workshops were held at Miami University's campus with an additional field trip to the Fairfield Water Treatment Plant during the student workshop. Participants learned about chemical engineering and potential careers in the field. The program was led by Miami engineering professors who led participants through hands-on activities including an accelerated version of the 2022 annual ChemE Cube Competition hosted by RAPID, which challenged students to create a water purification device contained within a 1 foot cubic space.

PARTICIPANT EXPERIENCE

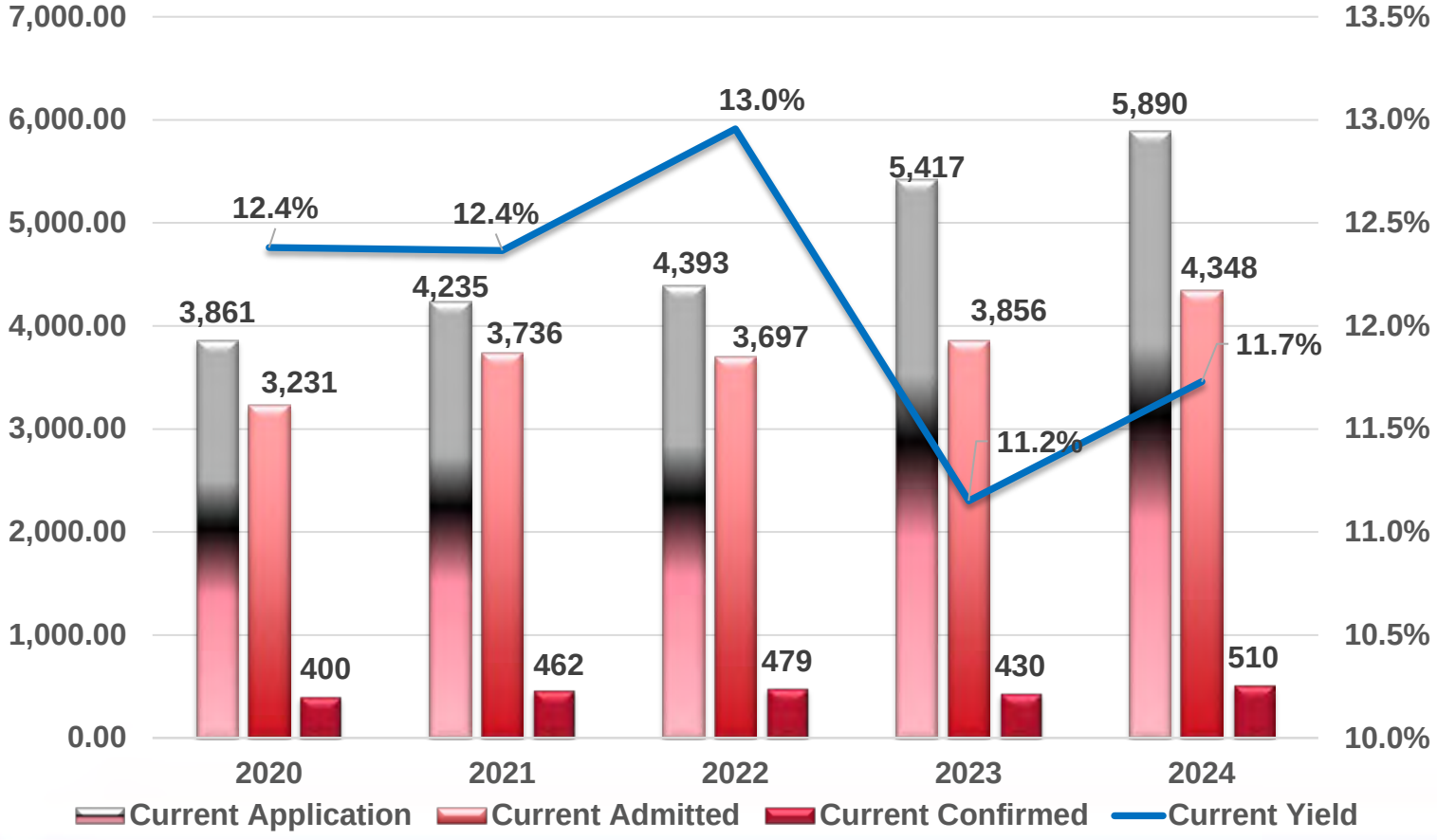
Overall, both educators and students who participated in the event reported positive experiences. Of the 18 educators who completed the pre and post surveys, 16 used an open ended question to express compliments for the program, and some also stated they would be interested in participating in a similar program in a different engineering department. Of the 14 students who completed the surveys, 84% said they enjoyed the experience, and 92% said they learned new things.




Impact Statistics

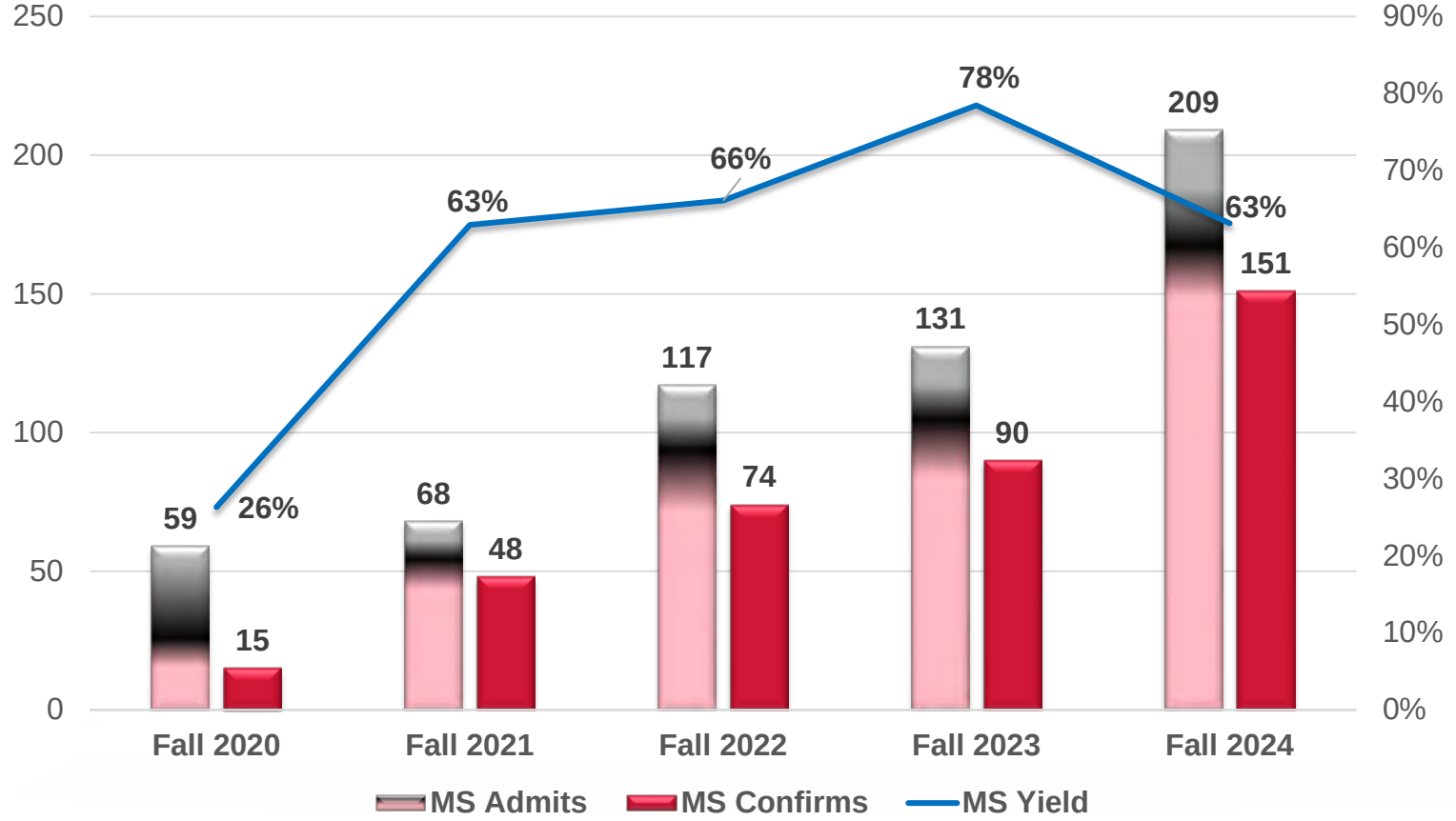
- 24 teachers
- 21 students
- 92% students reported greater interest in stem after participation
- 17 schools
- 92% plan to go on to take advanced math classes after participation

CEC Overall Admissions 2020-2024



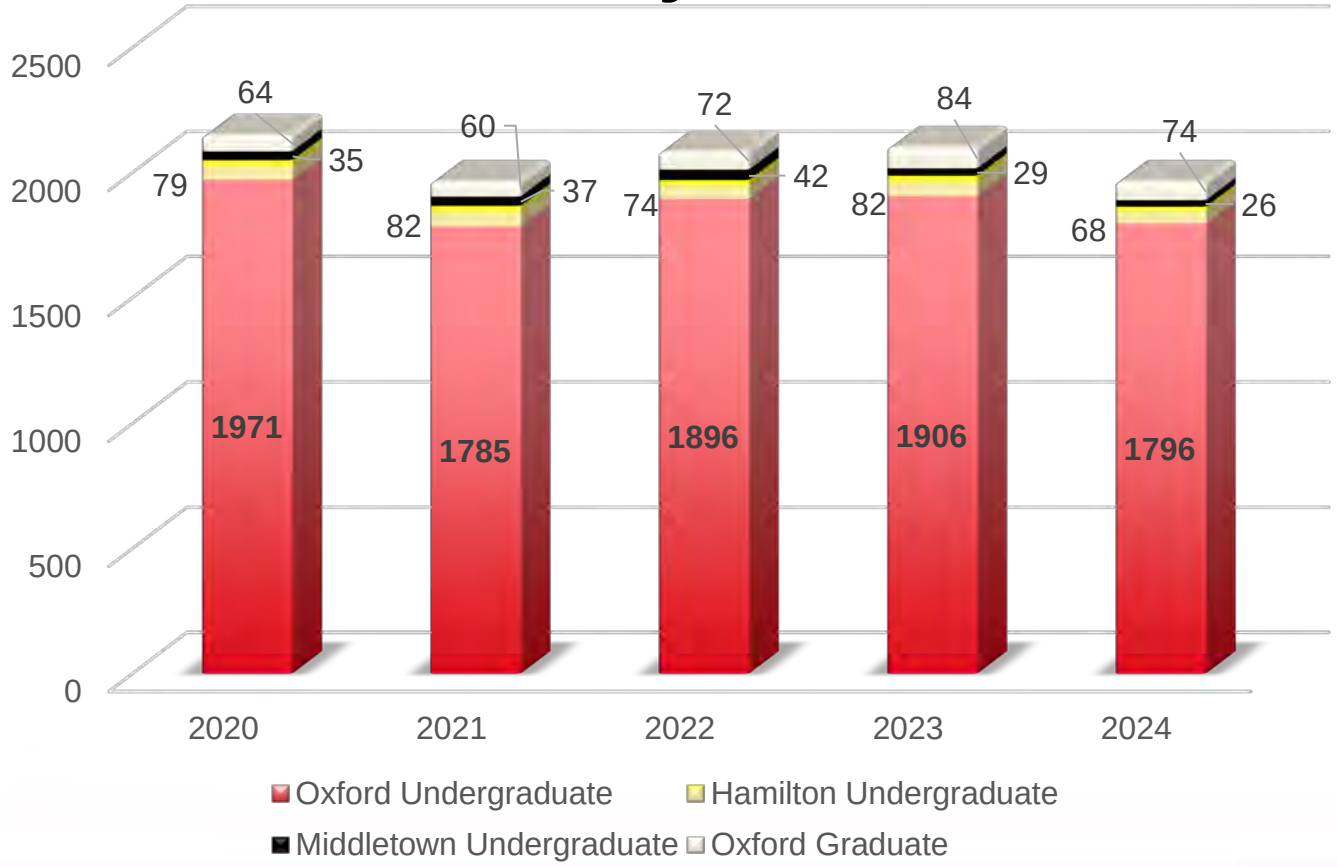
Each Year as of 15 May

Confirmed Graduate Students

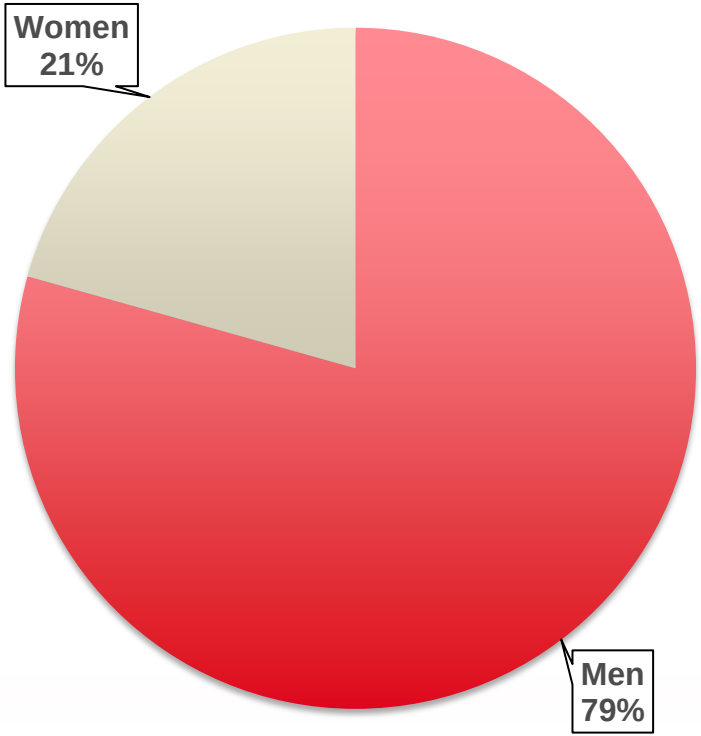


Each Year as of 15 May

Total CEC Student Body 2020-2024



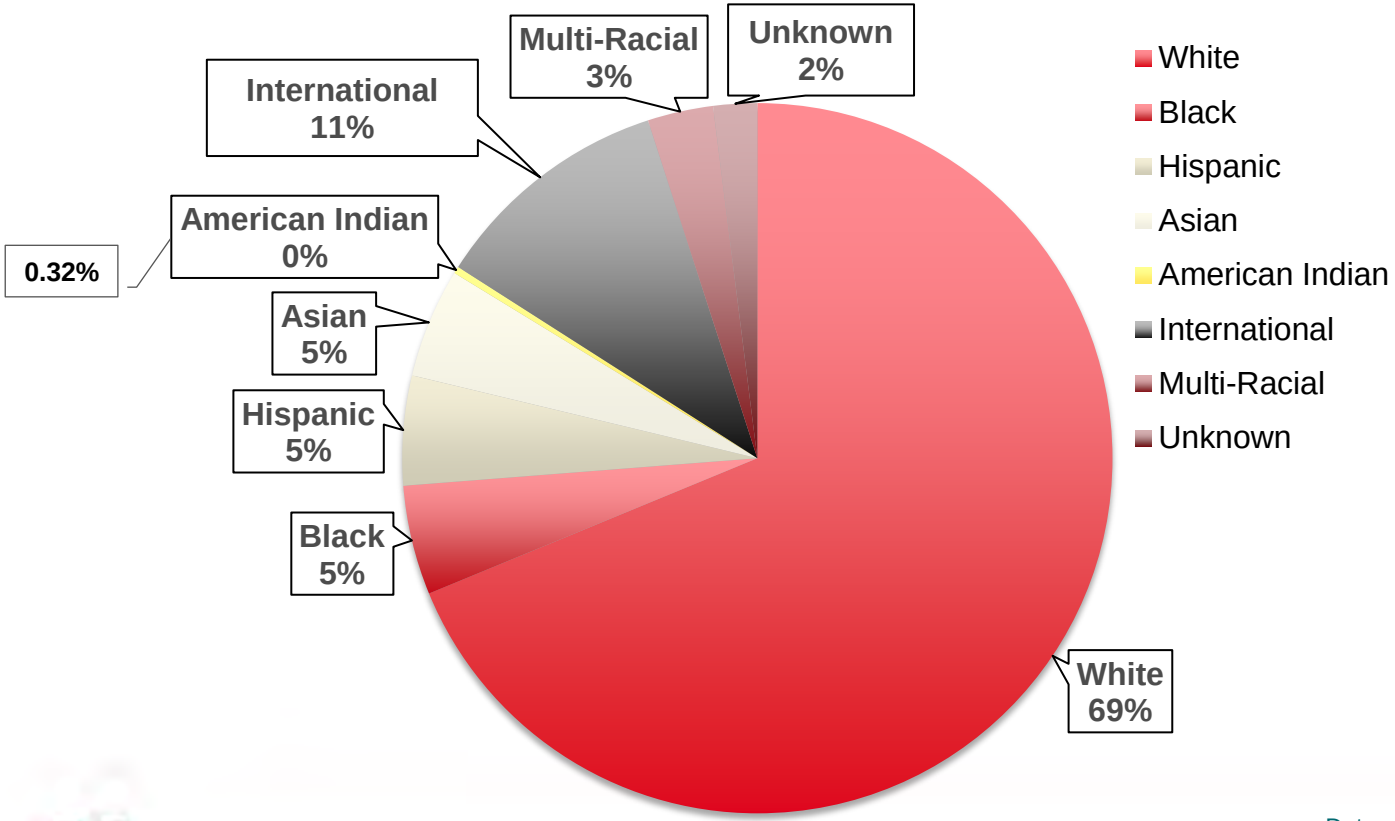
Gender Balance in CEC



Gender	Oxford Students
Male	1451
Female	379

Data pulled from2024 Spring 15 Day Report

Demographics of CEC students



Data pulled from2024 Spring 15 Day Report

Expand Career Opportunities and Enhance Student Support

Industry Relations
Ms. Colleen Bush

- Tremendous impact in just 3.25 Years
- Here is just one example:

  MHI Careers in Supply Chain Day

  Brett Wood, President & CEO, Toyota Material Handling

  - He interfaced with over 150 students

INDUSTRY RELATIONS

College of Engineering and Computing

SINCE MARCH 2021, College of Engineering and Computing (CEC) Industry Relations initiatives have resulted in...

160

INDUSTRY EVENTS

- Employer Showcase
- Evening with Industry
- SEMI Professional Development Seminar
- MHI Careers in Supply Chain Day
- Employer Info Sessions
- Classroom Visits
- Tabling
- Career Exploration Panel
- Career Fair Prep

15

CORPORATE PARTNERS

- Swagelok
- Avery Dennison
- Powell Industries
- The Cincinnati Insurance Companies
- US Bank
- American Axle and Manufacturing (AAM)
- The Whiting-Turner Contracting Co.

3,000+

INDUSTRY CONNECTIONS

- Amgen
- Atricure
- BECKHOFF Automation, LLC
- Blue Water Thinking, LLC
- Booz Allen Hamilton
- Cincinnati Children's Hospital
- Crown Equipment Corporation
- Cryptic Vector
- Elite Biomedical Solutions
- Energizer Global Auto Care
- Frito Lay/Pepsico
- Mettler Toledo
- Nestlé Purina North America
- NTT Data
- Ocado Group
- Parker Hannifin
- Sodexo
- Tokyo Electron Limited - TEL

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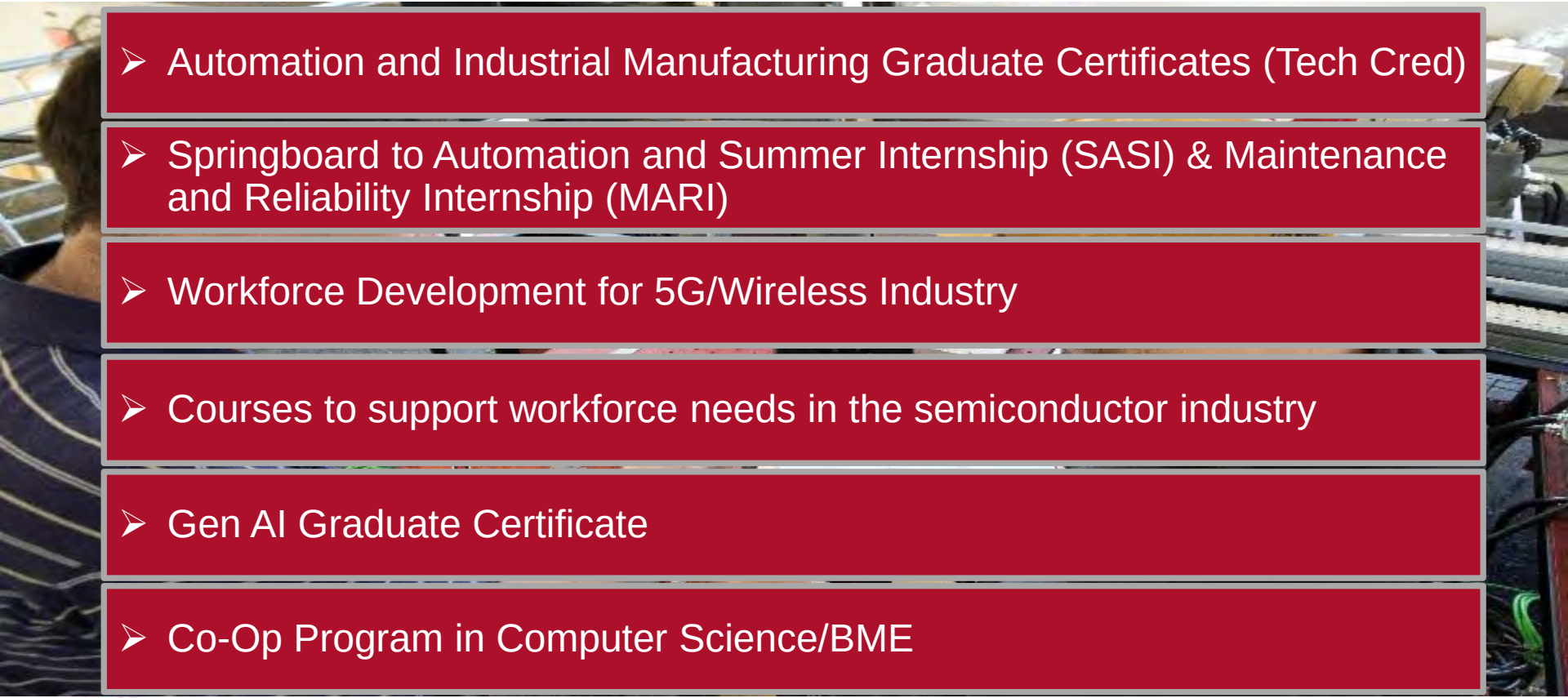
Unique Programs to promote workforce development



- Automation and Industrial Manufacturing Graduate Certificates (Tech Cred)
- Springboard to Automation and Summer Internship (SASI) & Maintenance and Reliability Internship (MARI)
- Workforce Development for 5G/Wireless Industry
- Courses to support workforce needs in the semiconductor industry
- Gen AI Graduate Certificate
- Co-Op Program in Computer Science/BME

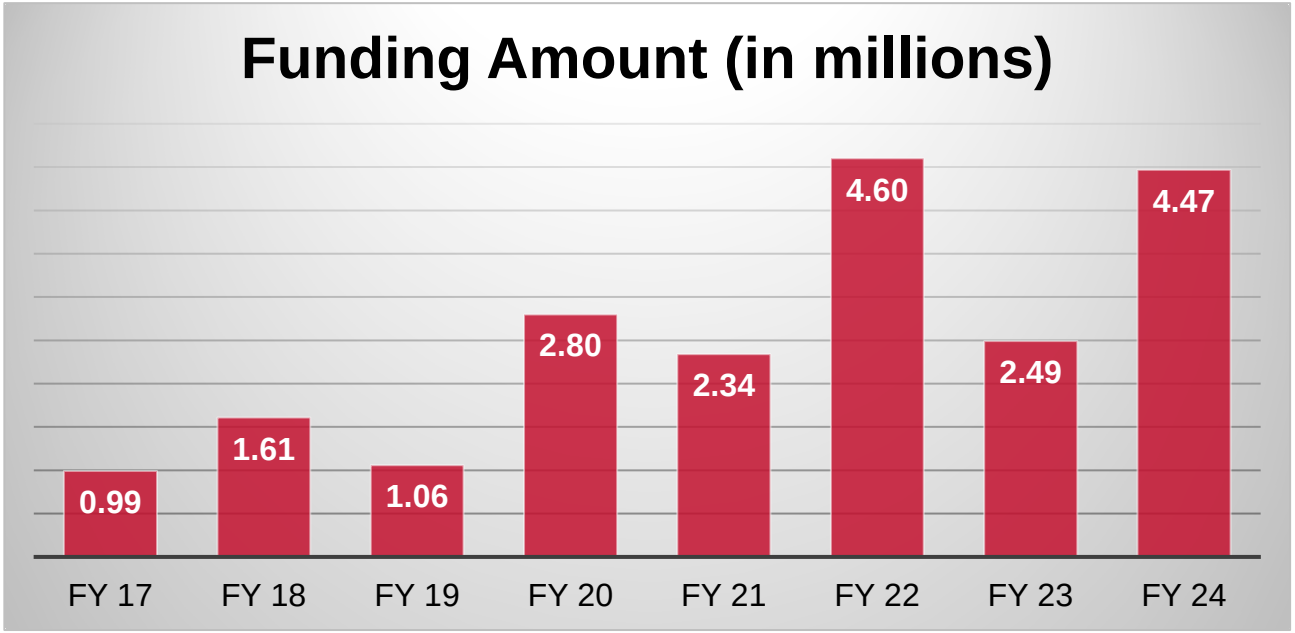
Miami College of Engineering – Inclusive Excellence

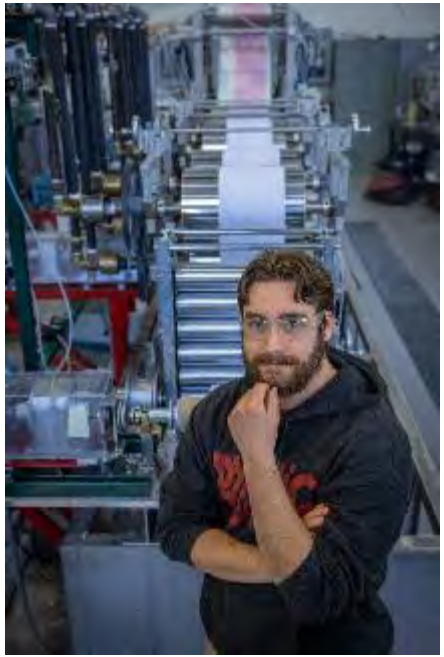
K-12 Outreach & Admission Standards	➢ SAT- optional admissions standard for CEC ➢ Change evaluation process for transfer students ➢ Offer an academic bridge program
Perception and understanding of inclusive excellence among students, faculty and administrators.	➢ Faculty, staff and students will participate in workshops on inclusiveness, with the goal of developing a “collective intentionality”
Develop Mentoring Program for efficient transition, retention and graduation.	➢ Mentoring program for incoming first year and transfer students – CEC Women’s Advisory Committee ➢ Establish an Engineering & CS living-learning community
Transform existing engineering and computer science curriculum	➢ Faculty workshops on designing an inclusive curriculum ➢ Redesign core CEC courses
Enrich students’ aspirations and strengthen their identity as engineers and computer scientists	➢ Leadership Training ➢ Order of the Engineer ➢ Career development

Increase Research Funding

Research Awards

Research Funding during Last 5 Academic Years





As of 7 May 2024 Awards Dashboard

Top 7 Departments at Miami Based on External Research Awards

Department Amount (FY21-23)	$M
Chemistry and Biochemistry	9.5
Scripps Center for Gerontology	5.8
Biology	5.0
Psychology	4.3
Electrical and Computer Engineering	2.9
Mechanical and Manufacturing Engineering	2.7
Chemical, Paper and Biomedical Engineering	2.3

CEC Fiscal Reality

COLLEGE OF ENGINEERING
AND COMPUTING

Campaign Goals

Two Overarching Goals

Creating visionary programs and degrees of the future

Develop industry ready engineers and computer scientists

Fundraising

- $5.3M Raised in 2023 – Largest Year Ever
- $4.8M Cash Received in 2023 – Largest Year Ever
- Over $3.2M directly to support Faculty, Programs and Equipment & Technology
- First Endowed Presidential Scholars scholarship on campus
- For love. For honor. FOR THOSE WHO WILL.
  - Has surpassed our last campaign by 233% - Currently $28.3M raised

Miami University Instructional Cost by Discipline

Name	Miami 2015-2017 Average	National 2015-2017 Average	+/- National Average
Physics	$169	$281	-66.77%
Mathematics	$176	$163	7.39%
Media, Journalism & Film Studies	$191	$185	3.14%
Economics	$200	$218	-9.27%
Computer Science & Software Engineering	**$217**	**$274**	**-26.56%**
Philosophy	$231	$181	21.65%
Education	$235	$291	-24.04%
English	$238	$199	16.21%
Fine/Studio Arts	$245	$273	-11.43%
Political Science	$253	$215	15.02%
Chemistry & Biochemistry	$261	$248	4.80%
Accountancy	$267	$261	2.06%
Management	$273	$263	3.66%
Sociology & Gerontology	$278	$172	38.13%
History	$285	$186	34.62%
Information Systems & Analytics	$301	$274	8.97%
Psychology	$307	$176	42.58%
Biology	$314	$221	29.62%
Mechanical & Manufacturing Engineering	**$326**	**$372**	**-14.29%**
Nursing	$349	$375	-7.60%
Electrical & Computer Engineering	$443	$434	2.03%

Ref. Delaware Study

National Average Costs by Discipline

Degree	National 2015-2017 Average
Computer Science & Software Engineering	$274
Mechanical & Manufacturing Engineering	$372
Electrical & Computer Engineering	$434
Fine/Studio Arts	$273
Management	$263
Mathematics	$163

Ref: Delaware Study

Engineering Fees

- Every top quality engineering program charges a fee differential
- The amount charged varies and is either presented as total tuition or a separate engineering/infrastructure fee
- The per credit fee makes sense so that we are in line with FSB
- The proposed fee increase to $65 or $75 per credit hour would net an additional $1M revenue

RCM revenues, expenses and ending balance in million $

	Total Revenue Sources	Total Expenses	Ending Balance
FY'21	26.91	24.20	**2.71**
FY'22	26.57	25.06	**1.51**
FY'23	25.25	26.81	**-1.56**
FY'24	25.75	28.65	**-2.90**

From FY'23 onwards, the proportion of shared services cost has jumped from $9M to $12M or more

Key Observations & Impacts

- The cost of educating an Electrical Engineering major is more than two and a half times that of a Mathematics major (least expensive major).
- CEC has the highest instructional cost of any college, which tracks national data. We charge $475 semester CEC fee. The business school in contrast charges a $125 per credit fee.
- The number of faculty/staff supported by the CEC Engineering Fee is 14. This is not established practice at most schools where the engineering fee is used for infrastructure enhancement.
- Some options to account for the differential cost is to use a different budget model, **a weighted RCM model**, reorganize colleges or to **increase our CEC fee**.

Designing solutions for the world, the community, and for individuals

Discussion

Division of Student Life

NEWS AND UPDATES | May 2024

Community and belonging • Diversity and inclusion • Student transitions • **Academic support** • Health and wellness • Engagement and leadership

The Division of Student Life aims to help students access the support and resources they need to focus on and succeed in their pursuit of academic excellence. This comes in the form of helping students navigate barriers, creating positive learning environments, and contributing to learning both in and out of the classroom. This report shares some of the ways we accomplish this goal.

Rinella Learning Center Certification

The **Rinella Learning Center** received recertification as a Learning Center of Excellence from the International College Learning Center Association (ICLCA). Currently, only five other university learning centers in the country hold this prestigious designation. The designation recognizes learning centers which demonstrate excellence in establishing programs and services that provide college students with the resources and opportunities for student academic success. The learning center also received recertification from the College Reading and Learning Association's international tutor training program through the highest possible level of certification.

Collaboration on "Spark" Emails

The Provost's Office, the College of Arts and Science, and the **Office of Residence Life** developed a faculty syllabus this year that details what is happening in a typical student's life week-to-week during the semester. They created and distributed bi-weekly student transition information for faculty, staff, and administrators, including stressors, resources, and a reflection prompt. This short newsletter (called *Spark*) has been a campus-wide collaboration, with content contributions from almost every department in the Division of Student Life, the Student Success Center, Campus Services, and the academic advising community.

Each Spark is a new lens through which to look at teaching with a clearer sense of the student perspective and experience. One College of Arts and Science faculty member wrote, "I just wanted to let you know how much I appreciate these 'spark emails'. They often put into words exactly how I feel during a certain week, and they help me think about my students in a more open and encouraging/benevolent way. I can't really imagine how it must be for a young person in 2024!" More than 450 faculty, staff, and administrators receive Spark.

Faculty Learning Community

Orientation and Transition Programs, with leadership from the Division of Student Life, will host a Faculty Learning Community (FLC) during the 2024-25 academic year. The FLC, called *Enhancing Curriculum Content and Delivery for First-Year Experience Courses*, will create a learning environment among instructors to examine best practices, explore data on the student experience, and develop tangible deliverables for engaging other instructors. The experience will build on a lens of considering generational changes in current and future college students. Participants will exchange ideas on content delivery, complete activities to meet learning objectives, and engage with generationally-relevant training in curriculum design.

The Division of Student Life: Learning. Growth. Success.

Supporting Student Success

The Division of Student Life plays a pivotal role in supporting student success and persistence. Inevitably, some students will encounter unexpected challenges or obstacles and need help navigating those situations.

Student Persistence Support

The **Office of the Dean of Students** regularly works with various entities across the university (e.g., the Moonshot Coordinated Care Committee, the Student Emergency Support group, etc.) to support students through difficult times so they can continue to persist at Miami. Working closely with the Student Success Center, they help identify appropriate next steps for students related to financial aid, career advising, academic support, health and counseling, and beyond. Part of this initiative includes helping faculty identify and support struggling students through the Student of Concern form. The office, in partnership with the Provost's office, offered training for 96 new faculty in August 2023. During the 2023-24 year, 280 academic student concern reports were submitted, and the office provided appropriate outreaches and interventions to best address student needs.

Title IX Process

The Deputy Title IX Coordinator for Students in the **Office of the Dean of Students** continues to work with faculty and staff on equitable, supportive measures for respondents and complainants in matters of sexual and interpersonal conduct. This year, the coordinator held more than 50 consultative meetings with faculty members and collaborated with faculty and staff from FSB, CAS, EHS and the Graduate School to provide 88 academic accommodations to students navigating the Title IX process at Miami (e.g., extended time on test, alternative space for an exam, recorded lectures so two students don't have to be in the same space, etc.).

New Student Life Director

Dan Darkow is the new director of the **Miller Center for Student Disability Services**, as of April 15, 2024.

Darkow comes to Miami from Cleveland State University, where he served as the director of Disability and Testing Services. However, the move to Miami's Miller Center is somewhat of a homecoming. Darkow had spent the previous eight years at Miami, first as a graduate student, then in roles of increasing responsibility with the Miller Center. During most of that time, he also served as visiting adjunct faculty in the educational psychology disability studies minor program.

Darkow has a bachelor of science in management information systems from Wright State University and a master of science in student affairs in higher education from Miami University. He is currently pursuing a Ph.D. in Miami's student affairs in higher education doctoral program.

Partnering with Parents

The **Office of Parent and Family Programs**, with the Provost's Office, the **Rinella Learning Center**, and Enrollment Management and Student Success, sent an email to 6,156 family members of first-year students in December on understanding student grades. The email contained links to resources and context on comparing college grades to high school grades. It was designed to empower family members as they help students make sense of their first semester grades, including providing direction if the student did not reach their goals. The email was highly successful, with a 78.8% open rate and 20.6% click rate.

The Office of Parent and Family Programs also hosts regular webinars for families to help them support their students. This year, academic-related webinars included *Advising and Registration* with the Provost's Office and *Libraries + Parents* with the University Libraries.

Neurodivergent Resiliency Support Group

The **Student Counseling Service** piloted a new Neurodivergent Resiliency support group to foster accountability and academic success. The weekly therapy group focused on topics related to neurodivergence, including goal setting, motivation, time management, organization, and topics suggested by members. The small group of student participants gained practical skills and bonded with one another over their shared experience.

Creating Positive Learning Environments

The Division of Student Life creates positive environments where students feel motivated, engaged, and supported in their academic endeavors so they are prepared to learn, grown, and succeed.

Armstrong's Final Exam "Study Center"

During finals week each semester, the **Armstrong Student Center** becomes the Armstrong "Study Center." The Fritz Pavilion is converted into two separate study spaces - one for group study and one for quiet study. In fall 2023, a total of 358 students used the space. In addition to the Fritz Pavilion, some east wing meeting rooms are converted to include a small quiet study space, a sensory room, and a break room, serving nearly 250 students in fall 2023. These spaces provide students with an alternative to more traditional locations that are busier than usual during final exams.

The Commuter Center in Armstrong also does a finals week grab-and-go snack bar the week before finals week. The bar includes snacks and study supplies to support commuter students during a study-heavy week.

▲ In addition to space created during exams, there are always 18 study rooms students can book for two hours at a time.

Individualized Support for Faculty

The **Miller Center for Student Disability Services** engaged with faculty through 230 individual appointments during the 2023-24 academic year to provide support in meeting their accommodation responsibilities in the classroom. These collaborative meetings address issues like ensuring the use of accessible technology and formatting, negotiating testing accommodations, clarifying the impact of accommodations on fundamental aspects of curriculum, and advocacy on the student's behalf.

2,000

appointments held between the Miller Center and students with disabilities, in addition to the 230 meetings with faculty this year.

Honors Residential College Partnership

The **Office of Residence Life** is completing its third year with the Honors Residential College and the community continues to get stronger every year. Staff and residents in the hall promote an atmosphere that allows students to integrate their social, co-curricular, and academic life through programming and community development. Students also work to achieve learning outcomes that will prepare them for success in college and beyond.

Many students enjoy the way the community is focused on academic achievement and choose to return to the community for their second year. Next year, a large projected first-year Honors class has created a waitlist for second-year students who wish to return to the community in the fall.

▲ Registration breakfast in Young Hall featuring Assistant Director of Student Engagement for the Honors College Jonathan James.

Miller Center Awards and Celebration

The **Miller Center for Student Disability Services** held an inaugural Miller Center awards and celebration ceremony this May. The purpose of the new event is two-fold. First, it recognizes, celebrates, and inspires individuals in the campus community to become disability advocates in their areas of impact. Second, it recognizes graduating students with disabilities at Miami. According to the 2023 annual disability statistics compendium, 20% of people with disabilities between ages 25-34 have a bachelor's degree or higher, as compared to 48% of non-disabled people within the same age group. By consciously and publicly recognizing disabled, graduating students, we hope to give future disabled students a goal to aspire to and help the community recognize the disparities of education access for those with disabilities.

▲ The event was held in Shideler Hall on May 1, 2024.

Supporting Classroom Learning

The Division of Student Life supports classroom learning through a multifaceted approach, from providing additional support for students to comprehend course material to supporting faculty in delivering accommodations, to serving in the classroom as instructors.

Supplemental Instruction

The **Rinella Learning Center**'s Supplemental Instruction (SI) program has significantly expanded its reach this year. SI offers free, regularly scheduled out-of-class review sessions to all students enrolled in historically difficult courses. Sessions are facilitated by students who have successfully completed the course in the past.

By the end of the 2023-24 academic year, the SI program will have academically supported roughly 4,200 students over 30,000 times. This is an increase of 23% over last year and is largely attributed to expanding Supplemental Instruction to new courses, including MTH 135, ECO 202, and some nursing courses. There may also be an increase in student confidence in the support they receive through SI. This academic year, students enrolled in SI-supported classes attended an average of 6.5 sessions.

> "My personal experience has been great. My knowledge of the content was definitely improved because of it. Also, I learned great test-taking strategies.

> "[The] SI leaders I had this semester were incredibly intuitive about the questions students would ask, kind when we would be confused, and completely understanding to our level of confusion in a difficult course.

▲ **Supplemental Instruction sessions have been well attended this year.**

Student Life in the Classroom

Staff members in the Division of Student Life taught 71 sections of various courses during the 2023-24 academic year. A few of these courses include:

- 4 sections of graduate courses
- 7 sections of EDL 290
- 9 sections of EDL 301
- 19 sections of TCE 110
- 23 sections of UNV 101

1,486

students enrolled in courses taught by Student Life staff in 2023-24.

Course highlight: EDL 290 W

Exploration of Leadership is affiliated with the Scholar Leader Living Learning Community, a partnership between the **Center for Student Engagement, Activities, and Leadership** and the **Office of Residence Life**. The class, taught in three sections, aims for students to understand and articulate their core leadership values and skills and evaluate models of leadership development.

Rinella Academy

The Rinella Academy is a partnership between the **Rinella Learning Center** and faculty instructors. The Rinella Academy is a series of short videos intended to provide instruction on academic topics often covered in tutoring. The videos, focused on math and chemistry to start, have been vetted by faculty for accuracy for the courses listed. There are 55 videos in the series, with more being added regularly.

Extending the Classroom

We know that student learning in college happens both inside and outside the classroom, and the Division of Student Life works to intentionally create extra-and co-curricular experiences that contribute to this learning. Many of these experiences happen in partnership with faculty; others are standalone student life programs.

Miami Strengths Project

The Miami Strengths Project is an effort from the **Center for Student Engagement, Activities, and Leadership** to provide team and individual coaching sessions to the Miami community through the CliftonStrengths assessment. Through the CliftonStrengths *Name It, Claim It, Aim It* philosophy, participants gain an in-depth understanding of their top five talent themes, an appreciation of how their individualized themes manifest in themselves and others, and how to maneuver their goals and responsibilities to better align with their strengths. About 440 students participated in a CliftonStrengths assessment session this academic year. Some examples include:

- Four one-hour strengths sessions with first-year student athletes through the Athletics Initiative Champions 4 Life Leadership Academy.
- An initial team session and follow-up session with students in Dr. Cameron Hay-Rollin's ATH 448 senior seminar. Students take the assessment early in the semester and are then grouped into semester-long groups to develop grant proposals on topics related to global health based on their top five talent themes. Using strengths to divide the groups is an effort to create more invested and productive groups.

Social Work Internship Opportunities

The **Office of Student Wellness** has expanded its internship opportunities for students. A new partnership with the social work program led to the office being designated a clinical site placement for undergraduate and graduate students. Supervised by the assistant director for mental health promotion, graduate social work interns commit to a one-year placement in the office and receive a $1,500 stipend. Internship positions available include sexual assault prevention and survivor support, community prevention initiatives at Talawanda Schools, harm-reduction support at Oxford syringe services program, and mental health promotion program development. Responsibilities of an undergraduate internship include maintaining and coordinating initiatives in the wellness studio, creating social media content, and connecting and applying concepts and knowledge from their courses to their work in the office.

Engagement Menu for First-Year Experience Courses

A central goal of the first-year experience course UNV 101, co-coordinated by the Provost's Office and the Division of Student Life, is to build awareness of resources and opportunities at Miami. For the past two years, the course has included a four-part assignment called the engagement menu. The assignment asks students to complete an activity from each of four categories and submit a reflection of each. Activities include virtual and in-person options in the following categories: health and wellness, belonging and community, campus involvement, and career development. The assignment aims for students to engage early in the semester with activities outside the classroom that will help them connect, get involved, and learn. Students largely agreed (4.2 on a 5-point scale), that the assignment exposed them to opportunities they didn't know about, and that they will continue to look for ways to participate in activities throughout campus.

> "Attending this mental health program helped me see an overview of what I can change in my everyday life to get things done. [...] I will use the resources they gave to help benefit my college experience.

SOUL Symposium

During **Orientation and Transition Programs**' recent SOUL Symposium retreat, Student Orientation Undergraduate Leaders (SOULs) built on what they learned in their EDL 290F leadership course through teambuilding and training at Hueston Woods State Park. SOULs competed in the inaugural "SOULympics," considered what new students will need during the orientation process, and bolstered their team relationships with other SOULs, all in support of their readiness to welcome new students through orientation this summer.

▲ The symposium gets students off campus to learn.

Student Engagement

Division of Student Life | Board of Trustees Report

May 2024

The Center for Student Engagement, Activities, and Leadership (SEAL) brings together the Cliff Alexander Office of Fraternity and Sorority Life, the Office of Student Activities, and the Harry T. Wilks Institute for Leadership and Service. This report highlights a few examples of the many ways Miami students can get involved and engage with our signature programs and events.

Involvement Overview

Student engagement and involvement is a large part of the vibrancy of campus life. Our events provide opportunities for students to connect with others and explore their interests. This year, student groups hosted over 5,200 events and 41 new organizations have formed. Student organizations registered more than 23,000 members and the fraternity and sorority community alone provided 36,000+ hours of service to the Butler County region this year.

Student Activities and Programming

Our programming team provides large-scale, campus-wide events while also supporting and training 600 student organizations and their advisors.

Accessible Programming Initiative

Miami Activities and Programming (MAP) has worked to make student events more physically and psychologically inclusive. With the Miller Center for Disability Services and the Center for Student Diversity and Inclusion, the team gathered ideas and feedback on how to improve campus programming and focus on MAP's accessible and inclusive programming goals. To date, they have increased communication of event expectations and accommodations, increased seating and accessible locations, and began considering sensory options and noise levels when planning events.

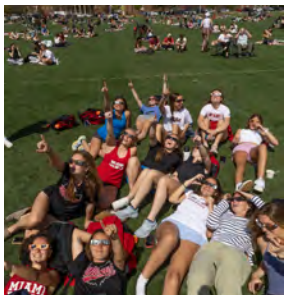
SEAL Ambassadors

The SEAL Ambassador peer mentors group began in 2018 through a student-led initiative to encourage student organization success. The program expanded this year to include more aspects of engagement, adding 19 ambassadors in three areas, amounting to 35 total SEAL Ambassadors.

- 10 ambassadors for leadership who host leadership workshops/conferences and meet with student leaders to discuss their leadership strengths.
- 4 ambassadors for service who facilitate student connections with local agencies and help

student organizations connect with service opportunities.
- 5 ambassadors for civic engagement who help with voter registration and education.
- We also rebranded the existing team of 16 to SEAL Ambassadors for Involvement. They help student organizations navigate university processes and access resources.

Eclipse Programming



The SEAL team began working with the City of Oxford in December 2022 to plan for the once-in-a-generation total solar eclipse on April 8, 2024. Cook Field was transformed into a festival atmosphere for students, faculty, staff and visitors. MAP supplied 30,000 pairs of certified eclipse glasses and instructions for safe viewing, as well as a DJ, food, and games. An estimated 3,000 attended the Cook Field watch party.

Wilks Institute for Leadership and Service

The Wilks Institute for Leadership and Service provides opportunities for students to become civically engaged, participate in service projects, and develop leadership skills.

The Leadership and Service Certificate

The Wilks Institute Leadership and Service Certificate (LSC) challenges students to examine leadership from diverse perspectives and reflect on their own leadership skills, values, and beliefs. The LSC is a self-paced, year-long experience. Requirements of the program include:

- Attending three leadership workshops facilitated by SEAL Ambassadors for Leadership.
- Attending two Clifton Strengths coaching sessions.
- Completing five hours of service.
- Attending three book club sessions on leadership topics.
- Submitting a leadership and service philosophy statement and reflections after each session and one final, two-page statement that summarizes their experience – what they have learned and how they hope to implement new skills in their future work.

"This process of exploring my personal values and strengths has been incredibly eye-opening and empowering. By gaining a deeper understanding of myself, I feel better equipped to build strong, positive, and meaningful relationships with those around me." -*Santiago Rivera-Brogan*, LSC '24

There were 38 LSC participants this year; they engaged in over 50 leadership workshops, 60 book club sessions, and 32 Clifton Strengths coaching sessions, and completed over 60 service hours.

RedHawk Day of Service

When Nyah Smith and Jules Jefferson ran for student body president and vice president, their campaign slogan was #BuildingtheTable. With SEAL, they planned and hosted a day of service that brought faculty, staff, and students together and built another bridge between the Oxford community

and Miami. More than 100 students and 10 staff members participated in the RedHawk Day of Service in September 2023, serving at over 15 service site locations in the Butler County community.

Fraternity and Sorority Life

We continue to see positive growth in the fraternity and sorority community and have welcomed back organizations who have a historical connection to Miami, while also inviting new organizations to campus.

- Sigma Nu was approved for expansion by a unanimous vote of the Interfraternity Council (IFC). The national headquarters will begin providing support for the re-chartering process in the 2024-25 academic year.
- Pi Beta Phi, of the Panhellenic Association, was originally founded at Miami in 1945. After leaving campus in 2017, the national headquarters and local Panhellenic agreed upon their return this year. This spring, Pi Beta Phi welcomed 103 new members into the chapter and the chapter was re-installed.
- Delta Kappa Delta Sorority, Inc. is a South Asian interest, but not South Asian exclusive, non-profit service sorority. They joined the Multicultural Greek Council (MGC) in spring 2024 with four new members and a robust plan to grow.
- Sigma Gamma Rho Sorority, Inc. joined the community and affiliated with the National Pan-Hellenic Council (NPHC). They welcomed five new members and the chapter was installed on April 27. All four sororities that are a part of NPHC will now be represented at Miami.

With the addition of Pi Beta Phi, the Panhellenic Association welcomed exactly 1,000 new members into the community. This is a significant increase from last year's number of 838.

The IFC also saw a successful recruitment season with over 650 new members, an increase of over 100 new members from the previous academic year.

NPHC and MGC chapters recruit independently and are seeing growth through their intake processes.

Overall, fraternity and sorority community numbers remain at roughly 31% of the undergraduate population, with over 5,000 members.

Conclusion

The Center for Student Engagement, Activities, and Leadership is committed to providing Miami students the opportunity to engage with each other and the Oxford community. We strive to help students make connections that lead to a sense of belonging and a deeper understanding of their leadership strengths. We will continue to facilitate a wide range of events and activities that allow students to practice their leadership.

Office of Residence Life

Division of Student Life | Board of Trustees Report

May 2024

The foundational pillars of Residence Life at Miami are:

1. Provide safe and healthy homes.
2. Assist in increasing persistence and retention.
3. Promote inclusive and diverse communities.
4. Extend the learning environment beyond the classroom.
5. Ease students' transition to adulthood.

Our approach to residential education is delivered through educational and social programming, formal and informal interactions, crisis response, and after-crisis care. In this report, we focus on the impact Residence Life has had on students, staff, and university collaborations.

Students

Care Team and Student of Concern Follow Ups

The Care Team, led by the Office of the Dean of Students, coordinates intervention for students exhibiting behaviors that indicate distress, cause a disturbance in the community, and/or present a danger to oneself or others. In spring 2024, the Care Team changed their outreach approach with Residence Life. In the past, reports filtered through the Director of Residence Life before reaching individual halls, causing occasional delays. Reports are now routed directly to the head of hall, leading to quicker response times in connecting with students. We have seen a 54.9% increase in the number of outreaches this academic year (73 in 2022-23 vs. 113 in 2023-24 as of April 22).

New Living Learning Communities (LLC) for 2024-25 Academic Year

- Men in Nursing, Education, and Social Sciences (MiNES) is dedicated to men pursuing majors in helping professions. As an identified underrepresented population in these fields, MiNES is a place where men can lean on each other for support and receive relevant programming from hall staff and stakeholders.
- The Wellness Is Living Drug-free (WILD) affinity community is for students who have a clear, strong desire to not use alcohol or other drugs during their college experience. This community will empower students to be their authentic selves, build connections, and have fun, while navigating their college experience free of alcohol and other drugs.

Promoting and Enhancing Leadership Opportunities

- The Scholar Leader LLC had a record number of applications this year. Over 125 students were interviewed for 75 coveted spots in the community.
- Residence Life saw an increase in Resident Assistant (RA) applications for the 2023-24

year compared to the 2022-23 year. We received 425 applications for the 250 RA positions available. Of those, 125 applicants were current RAs and 300 were new applicants.

- The Residence Hall Association and the National Residence Hall Honorary are two residential student leadership development organizations. In fall 2023, we sent 30 students to the CAACURH student leadership conference. The conference focuses on how to be a better leader broadly, but also specifically in residence hall leadership positions. Students learned about communication, self-care, avoiding burnout, leadership styles, and event planning strategies, among many other topics. Over 87% of the students who attended said that they learned more about leadership skills and would recommend this type of conference experience to other leaders.

Promoting Students' Sense of Belonging

- New for the 2023-24 year, the Office of Residence Life required each residential community to have a weekly "community connection" event to promote students' sense of belonging and build connection with fellow residents. These events focused solely on social community development and included karaoke, trivia contests, late night breakfasts, game nights, and more. While the events themselves aren't necessarily new or innovative, the requirement of having them regularly scheduled was a new initiative. As a result of these events, more students engaged in social activities in the halls and volunteered to lead and host these events. We attribute the increase in RA applications and more active Community Leadership Teams (CLT), at least in part, to the increased social programming.
- Student-Created Communities are an opportunity for rising sophomores to create theme-based communities with their peers. There was a 50% increase (from 17 to 35) in student-created community applications this year and we assigned nearly 250 students to beds in these communities before the general second-year lottery process.

Staff

Training

- In light of the current employment market in the field of student affairs and residence life in particular, we adjusted our professional staff training to include five "back-to-basics" sessions on supervision, building management, student organization advising, a day-in-the-life, and program execution.
- All Resident Directors (RDs) and Graduate Assistants (GAs) participated in Mental Health First Aid training this year, coordinated by the Student Counseling Service. This 8-hour certification course teaches participants how to identify, understand, and respond to signs

of mental health and substance use challenges among adults. Sixty RAs (funded by ASG) also attended the training. Next year, all 250 RAs will receive the training, thanks to a $1,600 grant from the Mental Health Incubator Fund that will subsidize the cost.

Director Transition

In January 2024, Vicka Bell-Robinson left the university for a new opportunity after serving as director for seven years. Since then, Dean of Students BaShaun Smith has been serving as the interim director while leading the office in a director search.

Budget and Staffing Impact

As a result of university needs and divisional budget cuts, the Office of Residence Life has needed to be creative in staffing in recent years. A bachelor's-degree level, 10-month Community Manager (CM) position was created in 2020 to serve as a temporary solution for vacant master's-degree required Resident Director positions. Since 2020, we have consistently staffed 4-6 communities with a CM position. The CM position is considered full-time and receives university benefits. Therefore, many of the CMs choose to enroll in continuing education; mostly in the student affairs and higher education master's degree program. Budgetarily, it is more cost effective to staff with CMs over Graduate Assistants.

University Collaborations

- Each semester, every residential community is required to host one faculty program. This year, we held 36 faculty programs in the fall and 39 in the spring. Programs typically include faculty-led presentations and conversations on topics relevant to their field.
- In collaboration with Global Initiatives, the Office of Residence Life assisted in creating an RA position for the Dolibois European Center Luxembourg program. With more students living in apartment blocks through the program, we recruited and trained four RAs to serve students living in the chalet.
- The Office of Residence Life collaborates with the Office of Admission to implement the Summer Scholars program, during which more than 400 high school juniors and seniors spend a week on campus. Participants engage in academic modules during the day and family meetings, programs and enrichment activities in the evening.
- Residence Life is partnering with the Campus Services Center to create a smoother billing and student experience for checking out of their room (including damage checking) at the end of the year. We are now using eRezlife as a technical platform to perform facility room checks and billing and expect this efficiency will have a positive impact on finances and facility management.

Conclusion

The Office of Residence Life continues to foster safe, inclusive, and dynamic living environments for students. We look forward to continually improving student support structures, addressing challenges creatively, and building meaningful collaborations across the university to enhance the student residential experience.

Center for Student Diversity and Inclusion

Division of Student Life | Board of Trustees Report

May 2024

The Center for Student Diversity and Inclusion (CSDI) has spent the past year focused on developing relationships with students, getting to know them and their needs, and building trust amongst underrepresented groups. We have hosted programs that are intentional in nature and create a sense of community and belonging for students at Miami. We are excited to have built positive relationships and established trust with students and will continue connecting while providing opportunities for personal and holistic development.

Mission

In support of Miami University's mission, the Center for Student Diversity and Inclusion actively creates an inclusive, welcoming, and affirming environment by providing direct services, support, and resources to students. We foster holistic development through transformational learning opportunities, one-on-one mentorship, and programs that empower students to explore and celebrate their identity, engage in intercultural dialogue, and build leadership skills. The center also collaborates with campus partners to cultivate cultural awareness and diversity competency through education. We advocate for equity in order for all identities to learn, grow, and succeed.

Holistic Student Development

The CSDI hosted 44 programs in fall 2023. Our programs continue to build community and fellowship, but have also evolved to support students' personal and professional development. These efforts help students develop a sense of belonging at Miami, making it more likely that they will persist and graduate. Some of these events include:

- Events intended to **support the transition to college life**. Examples include the MADE at Miami pre-semester program and Rainbow Reception to welcome LGBTQ+ students and allies to campus.
- Programs designed to help students **develop as leaders in the Miami community.** Examples include the Multicultural Leadership Training and the Intercultural Student Leadership Conference.
- Events that **celebrate identity**, recognizing that students come to us from all walks of life. Examples include National Coming Out Day and Fiesta! Fiesta! Fiesta!.
- And events geared toward **creating intentional dialogue**, sharing experiences, and learning from each other. Examples include focus groups for different student identities, Brother 2 Brother, and My Sister's Keeper.

Now that we have created buy-in from the students, we have leveraged our relationships to build an intentional programming calendar that encompasses both the social and personal development of our

students, and expanding into well-being, thriving, and reaching goals. This report focuses on the opportunities offered during the fall 2023 semester.

Rainbow Reception

Rainbow Reception is the first major event of the fall semester for LGBTQ+ Initiatives. This event is the largest queer gathering at the university, with nearly 250 people in attendance. The purpose of the event is to welcome LGBTQ+ students to the university and introduce them to the resources available for their success. This year, we hosted 15 organizations who tabled at the event.

Offices who participated in tabling:

- Women and Gender Studies
- Dean of Students
- TriHealth
- Office of Transformational and Inclusive Excellence
- Out in STEM (oSTEM)
- Sexualtiy Education Center
- SPECTRUM
- Graduate Student Pride Association

Student Focus Groups

CSDI's Intercultural Initiatives staff members held six focus groups this fall to gain qualitative data around the experiences of marginalized students and the programming they wanted to see from the Center for Student Diversity and Inclusion. Focus groups were held for Asian students, Indigenous students, Black students, QTBIPOC students, Latine, and Middle Eastern/North African students.

Through the focus groups, we learned:

- Students are looking for more programming that is representative of their respective cultures and identities.
- Students want to be included in the planning of cultural celebrations in the center.
- Students want more intentional programming outside of planned heritage months.
- Students would like more frequent opportunities to provide feedback about programming in the center.

My Sister's Keeper

My Sister's Keeper (MSK) was created to serve undergraduate women of color at Miami and friends/allies. My Sister's Keeper aims to create a haven to come together, foster relationships with one

another, engage in meaningful dialogue, and participate in activities that will help them to grow as individuals and within their community.

Brother 2 Brother

Brother 2 Brother creates space and community for underrepresented men at Miami and friends/allies. The initiative offers discussion based programming, skill building workshops, and social opportunities. There is also a mentoring component with upper class students and faculty/staff members.

Mental Health and Wellness

This year the CSDI has embraced opportunities to support students' mental health and overall well-being.

HIV Testing

The Center for Student Diversity and Inclusion provides free and confidential HIV testing in the center in partnership with Caracole. Caracole is Greater Cincinnati's nonprofit devoted to positively changing lives in the fight against HIV/AIDS. Testing is offered three times per semester for students.

Wellness Room

The Wellness Room in the Center for Student Diversity and Inclusion was formed in collaboration with the Office of Student Wellness to create a space for students to unwind, reflect, meditate, or engage in a quiet activity. Different activities, features, and resources available in the room help students relax including fidget toys, aromatherapy, sound machines, low lighting, anxiety-reducing bean bag chairs, and more.

Wellness Retreat

With funding support from the new mental health incubator fund, we will host our inaugural wellness retreat through the My Sister's Keeper program. The retreat, called Reset, will take place at the Oxford Community Arts Center in March. The program is intended for students to take a pause from the hustle and bustle of the semester, reflect, and determine what they need to finish the semester strong.

Looking Forward

The Center for Student Diversity and Inclusion has established a strong foundation with students and we look forward to bringing more development centered programming to provide a more well-rounded experience. We look forward to providing large scale resource programming in LGBTQ+ Initiatives, including sharing information on legal name change and how to access Pre-Exposure Prophylaxis (PrEP) for HIV prevention.

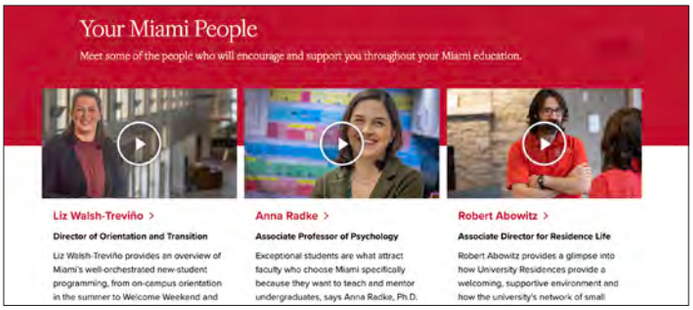
The CSDI's primary goal is to equip students with the tools to be successful at Miami and beyond. We are committed to providing a well-rounded calendar of events and activities for our students that help accomplish this goal.

NEWS AND UPDATES

University Communications and Marketing

MAY

ONGOING PROJECTS



▲ Miami University's new webpage: Your Miami People.

NEW WEB, VIDEO PROJECT SUPPORTS YIELD

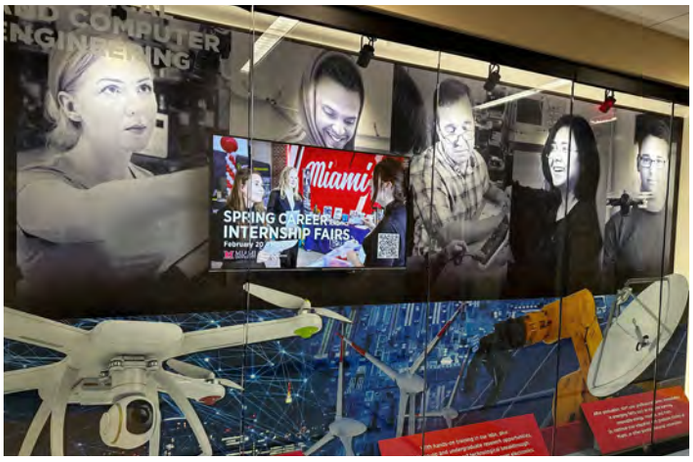
In collaboration with colleagues across campus, UCM developed Your Miami People – a new webpage and videos to support admission yield efforts. The project humanizes the institution by introducing enrolling students and their families to some of the real people who will support and encourage them during their Miami journey. Those featured in the videos represent a broad spectrum of the undergraduate student experience: orientation, residence life, career development, academics, undergraduate research, belonging, health and wellbeing, and more. Members of Miami's Parents Council also participated — describing how Miami has allowed their three children to customize their Miami experience.

UCM AND FSB SALUTE ENTREPRENEURS

In March, UCM helped the Farmer School of Business launch the inaugural RedHawk50 celebration — an annual program that recognizes the 50 fastest-growing Miami RedHawk-owned or Miami RedHawk-led businesses in the world. UCM was there every step of the way — from designing graphics; to managing the production of banners, backdrops, and displays that transformed Cincinnati Music Hall into a magical space; to creating the awards and takeaways. The event drew more than 300 people, and the feedback from attendees has been extremely positive. Ads congratulating the RedHawk50 awardees were designed and placed in Cincinnati Magazine, Cincinnati Business Courier, and Forbes.

REFRESHED DISPLAYS HIGHLIGHT THE ENGINEERING EXPERIENCE

Brought to life through photography by UCM photographers, environmental design from UCM's design team, and close collaboration with CEC stakeholders, five new display cases in the CEC building complex are strengthening recruitment efforts. In each display case, dynamic photography features current CEC students, faculty, staff — as well as notable alumni. Additional layers of visuals communicate professional outcomes that CEC students can expect to live out post-graduation. Expertly crafted text, along with display screens displaying up-to-date events, photos, and rotating graphics, communicate key messaging points. Positioned to be seen during CEC's in-person tours, these cases provide vibrant storytelling opportunities.



▲ One of five display cases dedicated to CEC students, faculty, staff, and alumni.

CINCINNATI TV STATION INTERVIEWS CEC DEAN

Through an opportunity coordinated by UCM, Beena Sukumaran, dean of the College of Engineering and Computing, was interviewed on Local12 (WKRC-Cincinnati) for their "Healthy Innovations" segment. Interview topics included the McVey Data Science Building, Miami's clinical engineering coursework, and why we need more women in engineering. The March 24 segment garnered 18,862 viewers, with a local publicity value of $171.16 per 30 seconds. In addition to this coverage, social media efforts between UCM, CEC, and Miami's Alumni Association about the McVey grand opening resulted in more than 160,000 organic impressions and 38,000 positive fan interactions.

UCM'S GOAL To establish and grow Miami University's influence, reputation, and ranking as a leading public university that prepares students for lifelong success in a vibrant campus community that values academic rigor, character, intellect, and serving the public good. Miami University's success depends upon messaging and visual identity strategies that are compelling and consistent across all communication outlets in order to grow enrollment and increase brand awareness.

Marketing by the numbers

Jan. 16 – March 31, 2024

SOCIAL MEDIA

33.5M
Total social media impressions on the university's primary accounts

215K | 4.6M | 19.2M | 8.9M | 484K

770K
Total social media engagements

5.2K | 119K | 307.3K | 312K | 26.8K

577K
Total social media followers

78K | 94K | 77K | 121K | 253K

WEBSITE

2.9M
Total website users

1.9M
New website users

17M
Website pageviews

771K
Clicks
(up 11% from 2022)

33M
Impressions
(up 11.5% from 2022)

Organic (Google) search

CONVERSION TRACKING

38.9K
Applications
EO/EMSS

22.6K
Requests for information
EO/EMSS

Social Media top highlights

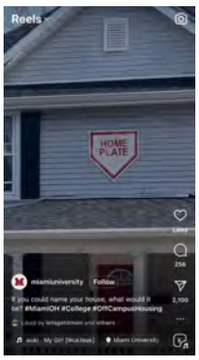
Jan. 16 – March 31, 2024

5.7K Total engagements

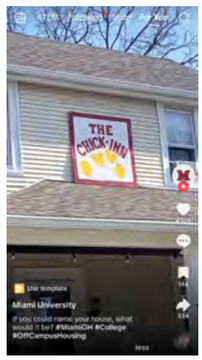
809 Total engagements

27.2K Total engagements

9.1K Total engagements



4.4K Total engagements



News by the numbers

Jan. 16 – March 31, 2024

172
News media pitches

639M
News reach

26.3M
News mentions

$17.2M
PR value

407
National news media mentions

The Conversation

35
Articles

20
Authors

162
Publishers

1M
Reads

Merit

15.4K
Personalized student stories

12.7K
Student achievement press releases sent via Merit

11.9M
Merit generated impressions on social

Board of Trustees
May 2024 Report

Explore. Prepare. Connect. **Succeed**.

MIAMI
UNIVERSITY

CENTER FOR CAREER
EXPLORATION AND SUCCESS

Overview

The Center for Career Exploration and Success (CCES) is a comprehensive, award-winning university career center that serves as the primary source of career development for Miami University students on the Oxford campus. Our mission is to empower undergraduate and graduate students to engage in career exploration, professional development, and experiential learning. By building meaningful connections with employers, students optimize their personal and career potential. We exist to help students choose meaningful career paths and excel in today's diverse, rapidly changing, and global society.

The Miami Career Advantage

At Miami, our position of strength results from a unique combination of factors: the exceptional caliber of our highly engaged students, our faculty's dedication to teaching and learning, and our institution's overall commitment to student success. Within CCES, our approach to career development builds on these strengths and requires an intentional and active career community to fulfill our vision. We embrace the philosophy of a Miami Career Community, wherein all stakeholders (employees, faculty, staff, alumni, and parents) understand their vital role in supporting the career development of students.

New Strategic Plan. New Strategic Priorities.

In September 2023, CCES launched a new strategic plan in close partnership with the Career Leadership Collective (consultant) and with feedback from stakeholders within the Career Community. CCES strives to:

- Focus on High Impact Career Mobility Practices
- Further integrate career readiness throughout the student experience to ensure equitable career outcomes and enhanced market position
- Leverage, diversify, and sustain career outcomes data and visualization to benefit the Career Community

High Impact Career Mobility Practices

UNDERSTAND opportunities

CREATE a career plan

NETWORK with employers

INTERN in chosen field

RECEIVE career advice *faculty/employers*

LEARN critical thinking

Students who engage in these practices MORE THAN TRIPLE their likelihood of career mobility

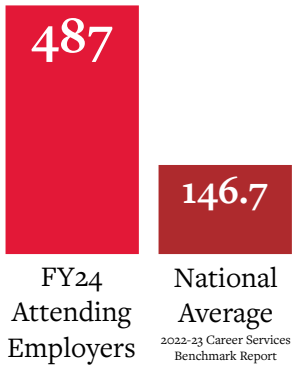
Source: Career Leadership Collective National Alumni Career Mobility Report

By the Numbers: Career Fairs

40.4%

increase in student attendance to

7,161 FY24 **from** **5,098** FY23



FY24 Attending Employers

National Average
2022-23 Career Services Benchmark Report

982 students used CCES's free resume printing service

2023-24 Events

Fall

- Fall Career and Internship Fair
- Diversity and Inclusion Networking Event
- STEM Career and Internship Fair
- Sport Career Exploration and Networking Expo

Spring

- Spring Career and Internship Fair
- **NEW!** College of Arts and Science Networking Night
- Careers for the Common Good Fair
- Architecture + Design Career and Internship Fair
- Teacher Job Fair
- **NEW!** RedHawk Student-Athlete Networking Night

Presidential Career and Leadership Series

CCES partnered with President Gregory P. Crawford to present three Presidential Career and Leadership Series events during the 2023-24 academic year. The immersive career treks spotlighted opportunities in Miami's home state and encouraged students to become active Ohio citizens.

Into the Queen City

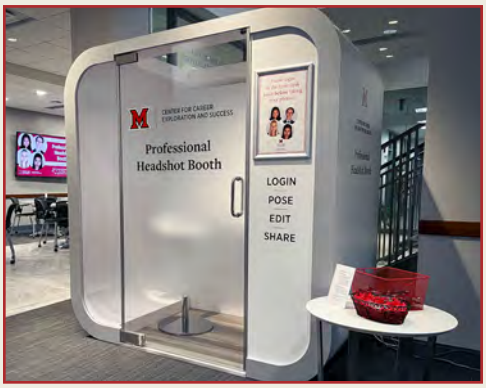
Students networked with Cincinnati employers representing the Engineering/Technology and Economics/Data Analytics career clusters from October 12 to 14, 2023. They also visited the Cincinnati Museum Center.

Into the Capital City

Students traveled to Columbus to meet with employers representing the Law/Government and Management/Sales/Consulting career clusters from January 24 to 26, 2024. They also toured the Ohio Statehouse.

Adam Savage Keynote Speech

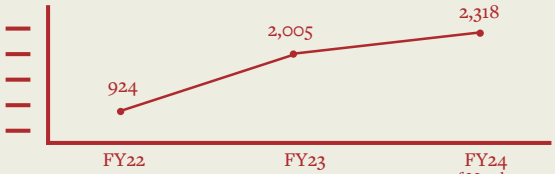
Adam Savage, an internationally acclaimed STEM communicator and Emmy-nominated producer/host, busted myths about career trajectory for a sold-out crowd in Harry T. Wilks Theater on April 16, 2024.



Professional Headshot Booth

To give students a competitive advantage, CCES offers a professional headshot booth. This convenient service, which offers high-quality photos at no cost, helps students convey professionalism within their online brands.

Booth Usage Numbers



Internships, Micro-internships, and Co-ops

Experiential learning, including internships, micro-internships, co-ops, and job shadows, are critical to Miami's career development strategy. This year, CCES piloted the Ohio Internship Preview Program, which connected students with employers around Ohio for job shadows and micro-internships over Winter Term. To reach more students in the coming years, plans are in place to expand this initiative beyond the College of Arts and Science.

OHIO INTERNSHIP PREVIEW PROGRAM

January 2024 Employer Partners

Andelyn BIOSCIENCES — Reliably Expert. Purposefully Driven.

ABILITIESFIRST — Potential Made Possible

KENT DISPLAYS

RPM — Reese Pyle Meyer PLL — Attorneys at Law

Q-LAB

99% of Miami graduates employed or furthering their education **by fall 2022**

Internship and Research Grants

$1,119,570 granted over 501 awards

FY22 to March 2024

Professional Attire Grants

$102,275 granted over 314 awards

FY24 to March 2024

Welcoming Brandon Prew

Brandon Prew will serve as CCES's director of experiential education. In this newly created role, he will expand internship, micro-internship, and co-op opportunities for Miami students. In addition, he will design an on-demand job shadowing program and invigorate the Career Champions program for Miami faculty and staff.

Prew joins CCES from his alma mater, the University of Cincinnati. There, he was the director of employer relations and operations for the Lindner College of Business. He also has experience in private industry, working for U.S. Bank and ThirdChannel.

Career Development Starts Early at Miami

Even before students arrive on campus for their first semester of classes, they are exposed to career development. Our motto is "Career Development: Early and Often."

New Student Orientation

All students are exposed to career planning during orientation. Students declare their career cluster(s) of interest so they can be matched with a career advisor and receive information tailored to their goals. They are also introduced to key resources they will use throughout their time at Miami, including Handshake, VMock, and MiamiOH.edu/Careers.

UNV101: I Am Miami

Most students complete this course during their first semester. Designed to foster a sense of belonging and create a plan for making the most of their college experience, students complete a resume, engage in a self-directed career activity, and are encouraged to attend the Fall Career and Internship Fair. Students also receive a professional padfolio they can use throughout their Miami experience.

First-Year/First-Time Friendly Services at Career Fairs

Launched in Spring 2024, this initiative centered on an assignment that required students to engage in career development (e.g. attend an event, meet with a career advisor, etc.). The engagement stages included discovering how to use Handshake to research organizations and opportunities, touring the career fair, practicing an elevator pitch, and reflecting on their experience and learning outcomes.

CAREER GRANTS
– SUPPORTED BY –
MIAMI'S CAREER CENTER

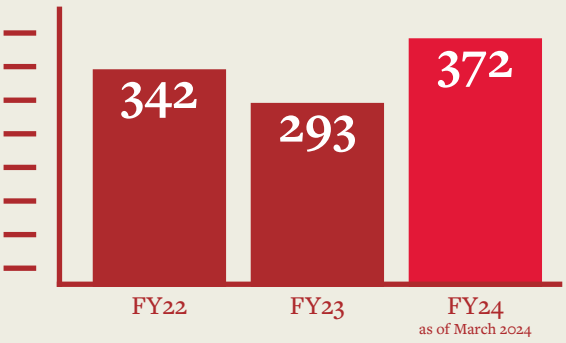
Career Grants for Faculty/Staff

CCES catalyzes career development initiatives within the Career Community through Career Grants. These grants support faculty- and staff-led career development initiatives like real-world projects in the classroom.

22 Awards | $115,319 in Funds

FY24 as of April 2024

Number of Career Programs



136+ Classroom Presentations

FY24 as of March 2024

10 staff made 9 Presentations at Professional Conferences

FY24 as of March 2024

Inclusive Excellence

CCES is committed to identifying career pathways for students that speak to the uniqueness and intersectionality of their identities and the ways these identities operate in our global society. Its signature initiatives include:

Diversity and Inclusion Networking Event (DINE)

DINE unites students from diverse backgrounds with employers committed to diversity, equity, and inclusion. Students can learn about these employers' available internship and job opportunities.

ELEVATE: The Diversity and Inclusion Career Institute

A space where the Career Community identifies ways to advance inclusion, equity, and diversity in professional spaces, ELEVATE features a Reverse Career Fair of multicultural student organizations.

Career Academy

Career Academy is a group of distinguished scholars who strive to advance their cultural competencies and career development. Career Academy most recently traveled to Washington, D.C. (FY24) and Luxembourg (FY23).

JCPenney Suit-Up

Held before the Fall Career and Internships Fairs each year, JCPenney Suit-Up allows students and alumni to purchase professional attire at bargain prices.

Breaking Barriers Series

Through workshops, skill-building sessions, and mentorship opportunities, this series gives students the tools and confidence they need to excel in any industry.

Onyx, Equity and Access Student Organization Advisory Council

Participants share their perspectives, helping to inform CCES's outreach to historically marginalized groups.

Meet Alexis Andrews

As assistant director for global career development, Alexis Andrews launched new initiatives for international students this year. The series, designed to give them the tools they need to navigate today's global job market, was headlined by an International Career Day on February 17, 2024.

Mock Interview Program

CCES touts a robust mock interview program staffed by a full-time professional advisor and trained student Peer Career Coaches. During the 2024 fiscal year, CCES held 30 interview workshops and about 600 live mock interviews. An additional 342 practice interviews were conducted on Big Interview, an online platform powered by AI.

24/7 Career Development

CCES has partnerships with a number of online resources to allow students on-demand access to career development.

70,374 applications completed through Handshake, Miami's job/internship board, from July 2023 to March 2024, up from **57,735** in FY23

2,917 students used VMock, an AI-powered resume feedback site, over the same span

An Award-Winning Career Center

CCES was awarded the inaugural Pursuit of Excellence Award by the Career Leadership Collective in 2023. This award recognized four career centers nationwide that embody long-standing and holistic commitment to excellence in career services.

CCES also received a Career Spark Award from Handshake in 2023 for being in the top two percent of institutions in student engagement on this platform.

May 2024

ARMSTRONG STUDENT CENTER

Board of Trustees Report

MIAMI UNIVERSITY

STUDENT SUCCESS CENTER

Miami University's Oxford campus stands out among both public and private institutions by consistently excelling in student retention. We draw an exceptional, driven student body eager to dive into our vibrant community. Students benefit from rigorous academics, supportive faculty and staff, an exciting campus life, and a stunning environment to call home.

While we are confident in our students' abilities, life can be complex, and obstacles like financial constraints, mental health issues, family struggles, misalignment with a chosen major, health concerns, homesickness, and feelings of disconnection can become potential roadblocks. Keeping students on track requires more than before, and that need will likely grow.

We recognize boosting our retention and graduation rates demands a coordinated, thorough approach that reaches every part of the University.

About the Student Success Center

The Student Success Center (SSC) within Enrollment Management and Student Success (EMSS) plays a pivotal role in supporting student retention and graduation through many targeted initiatives and programs.

The SSC offers personalized assistance and proactive outreach to students from diverse backgrounds, including GradU8 Scholars, Bridges Scholars, former foster youth, and other special populations. It strives to enhance their academic journey and overall university experience. Learn more about three of these groups below:

GradU8 Scholars

By providing targeted resources, the GradU8 Scholars program helps high-need students from Ohio succeed.

221 students
participated in the 2023 Fall Semester

98% of students
registered for the 2024 Spring Semester

75% of students
completed all GradU8 requirements* to be eligible for a $300 book scholarship

* 2.75 GPA, 12 hours completed, and a meeting with their Student Success Advocate

Top Three Majors among 2023-24 GradU8 Scholars

Psychology: 17 students

Nursing: 15 students

Marketing: 14 students

Bridges Scholars

Bridges Scholars are students who completed the Bridges Program for high school seniors, an inclusive recruitment initiative led by the Office of Admission.

Bridges Scholars benefit from a variety of SSC services, including personalized check-ins, advocacy, problem-solving, and connections to campus resources.

The SSC also advises the Bridges Scholars Student Organization and the Bridges Scholars Living Learning Community. These groups engage in campus activities that promote scholarship, leadership, inclusion, and career preparation.

Bridges Scholars often occupy top student leadership positions and are well-represented in the Honors Program and on the Dean's List.

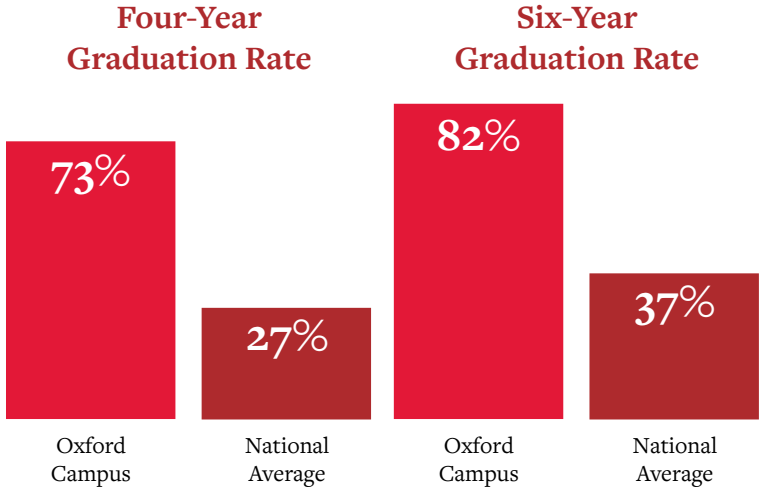
First-Generation Students

The SSC supports first-generation students by advising the Miami Firsts Student Organization and helping to organize events like the annual National First-Generation College Student Celebration.

Miami Firsts focuses on social and workshop activities to build connections between first-generation students. The SSC also maintains an online First-Generation Ally Directory of faculty and staff who offer support to first-generation students.

Many students begin college with a goal of graduating in four years, but factors such as changing or adding majors, retaking courses, or taking personal breaks can extend the timeline to five or six years. While making the most of your college experience is valuable, staying in school longer results in paying greater amounts in tuition and fees.

The Oxford campus's 73% four-year graduation rate is the highest among Ohio public universities and well above the national average of 27%.



Graduation and Retention Rates: 2022 Reporting Cycle

Institution	Four-Year Grad Rate	Five-Year Grad Rate	Six-Year Grad Rate	Pell Six-Year Grad Rate	First-Year Retention Rate
Bowling Green State University - Main Campus	47%	58%	60%	45%	77%
Central State University	15%	23%	25%	25%	41%
Cleveland State University	31%	45%	49%	41%	69%
Kent State University at Kent	56%	63%	65%	56%	78%
Miami University - Oxford	**73%**	**80%**	**81%**	**74%**	**89%**
Ohio State University - Main Campus	69%	86%	88%	81%	93%
Ohio University - Main Campus	49%	63%	65%	56%	79%
Shawnee State University	32%	45%	48%	45%	66%
University of Akron - Main Campus	27%	48%	52%	39%	68%
University of Cincinnati - Main Campus	38%	68%	72%	59%	86%
University of Toledo	33%	53%	57%	44%	75%
Wright State University - Main Campus	27%	40%	44%	32%	64%
Youngstown State University	28%	44%	48%	38%	78%
Ohio Public Institution Average	40%	55%	58%	49%	74%

Source: Integrated Postsecondary Education Data System (IPEDS), 2022 reporting cycle
Four-year rates are from the 2018 cohort, five-year rates are from the 2017 cohort, six-year rates are from the 2016 cohort, and the fall-to-fall retention rate is from the 2021 cohort

60% of Oxford students who earned a Bachelor's degree during the 2022-23 Fiscal Year completed their degrees with multiple majors or at least one minor

MADE at Miami Pre-Arrival Program

A collaboration between the SSC and the Center for Student Diversity and Inclusion (CSDI), MADE at Miami is a two-day pre-semester program that brings together first-year students who identify or embrace all forms of inclusion (students of color, international students, LGBTQ+ identifying students, first-generation students, and friends/allies).

The program begins two days before move-in, allowing students to acclimate to campus by building relationships, learning about resources, and developing a stronger sense of their identities.

MADE has positively influenced retention rates among Pell eligible and first-generation students. In 2021, 86% of Pell and 88% of first-generation students who participated in this program returned to Miami for the spring semester; these percentages were higher than the 81% (Pell) and 80% (first-generation) who did not partake.

EAB Navigate Implementation

The SSC manages EAB Navigate, which assists students and advising/support staff through system configurations, permissions, and training. Twice each semester, the SSC conducts early alerts and midterm grade facilitation to identify and assist students in need of additional support.

Coordinated Action Team

The Coordinated Action Team formulates strategies to proactively support students at moderate to high risk for attrition. It leverages internal data and data collection tools such as Civitas and EAB Navigate indicators to coordinate high-impact initiatives, outreach endeavors, and strategies for improving retention and graduation rates.

Winter Thrive and Spring Launch

Winter Thrive and Spring Launch target first-year students who earned lower GPAs during their first semester.

Winter Thrive supports students with GPAs between 2.0 and 2.49 through TCE110 courses. Spring Launch brings students with GPAs between 1.0 and 1.99 together for a half-day workshop, which resulted in improved term and cumulative GPAs during the 2022-23 academic year.

Outreach to Students with Holds

Proactive outreach to students with registration holds consistently reduces the number of student holds by significant margins. The SSC offers guidance through personalized email communication to help students resolve holds before registration begins. Before 2024 spring semester registration, this effort reduced the number of student holds from 664 to 144 within three weeks.

Miami Cares Food Pantry and Meal Swipes

The SSC houses the Miami Cares Food Pantry, which is accessible to all Oxford students during University business hours. The pantry offers non-perishable items as well as weekly donations of bread and produce from the campus Panera Bread. The pantry's non-perishable items are stocked through a partnership with Shared Harvest and through donation drives held across campus and in the Oxford community.

The Miami Cares program also helps to facilitate the Meal Swipe Donation Program. Students in need of meal plan assistance can receive dining hall meal swipes donated by students with unused swipes. These swipes are donated at Miami's Armstrong Student Center during the week before Thanksgiving break. During the fall of 2023, the SSC provided 3,069 meal swipes to students in need.

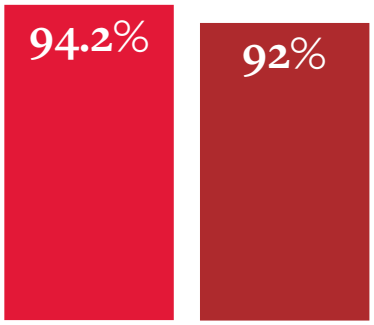
New for 2023-24: The High-Contact Program

The High-Contact Program is a new initiative that aimed to provide additional support for 2024 cohort students who meet one or more of the following criteria:

- Academic Read Score (ARS) of six or lower on their Miami application
- High school GPA below a 2.90
- Had originally been admitted in Pathways but then moved into the cohort

Students in this program receive prioritized attention from academic advisors and residence hall staff, early invitations for registration advising, and personalized invitations to programs like Winter Thrive and Spring Launch.

Fall to Spring Semester Retention Rate



Students in High-Contact Program (*2023 to 2024*)

Students Meeting Program Criteria (*2022 to 2023*)

2023 High-Contact Program Students by College

College/Program	# of Students
College of Arts and Science	112
College of Creative Arts	55
College of Engineering and Computing	54
College of Education, Health, and Society	98
Farmer School of Business	80
Oxford - Nursing	5
Office of Exploratory Studies	156
Total	**571**

Characteristics of 2023 High-Contact Program Students

	Total	High School GPA	Academic Read Score	Best Test Score*	Included Test Scores	Pell Eligible	First-Gen	SOC2**	Student-Athlete	Female
Not a High-Contact Program Participant	3,355	3.96	14.67	26.58	51%	14%	16%	11%	3%	54%
High-Contact Program Participant	571	3.20	5.80	23.11	29%	21%	24%	17%	4%	37%
All 2024 Cohort Students	3,926	3.85	13.38	26.19	47%	15%	17%	12%	3%	5%

* Best test score given on the ACT scale

** SOC2 represents students who identify as African American, LatinX, Native American, Native Hawaiian/Pacific Islander, or two or more races

A Comprehensive Approach: Managing Unpaid Balances and its Impact on Student Retention

With a focus on enhancing student retention and success, Enrollment Management and Student Services (EMSS) actively pursues a comprehensive approach to managing unpaid balances. Through targeted initiatives and collaborative efforts across various departments, it aims to proactively identify and address unpaid balances and financial stressors that could lead to student attrition.

Leading this effort within EMSS are the SSC, the Office of the Bursar, the Office of Student Financial Assistance (SFA), and the One Stop. This comprehensive approach to managing unpaid balances serves as a model for higher education institutions aiming to improve student outcomes and institutional sustainability.

Early Identification of At-Risk Students

EMSS has established a system for the early identification of students who may be at risk of developing unpaid balances. EMSS offices, academic departments, the Office of the Provost, and International Student and Scholar Services (ISSS) work together to monitor student accounts and identify potential financial issues as they arise. Early detection allows for timely intervention and support, helping to prevent unpaid balances from accumulating.

Personalized Support and Resources

Once at-risk students are identified, EMSS staff provides personalized support to address their financial concerns. SFA/One Stop advisors offer one-on-one counseling sessions to discuss students' financial situations and provide guidance on available resources. By offering tailored solutions, such as financial aid adjustments or payment plans, the University can reduce the likelihood of unpaid balances and financial stress.

Clear and Transparent Communication

Effective communication is key to ensuring students understand their financial responsibilities and available resources. EMSS staff maintains a clear and transparent communication channel, providing students with comprehensive information about their financial obligations, payment deadlines, and support services. This clarity helps students navigate their finances with confidence and avoid potential issues with unpaid balances.

Flexible Payment Options

To accommodate diverse financial circumstances, the University offers flexible payment options that help students manage their tuition and fees. These options include installment plans, deferred payments, and other arrangements tailored to individual needs. By providing flexible payment methods, the University removes barriers to payment and supports student retention.

Data-Informed Strategies and Targeted Interventions

EMSS leverages data and analytics to inform its strategies for managing unpaid balances and supporting student success. By analyzing trends and identifying patterns, the University can implement targeted interventions and support mechanisms to address specific issues and populations effectively. This data-driven approach optimizes institutional sustainability while enhancing student retention.

Undergraduate Academic Advising Council (UAAC) Report

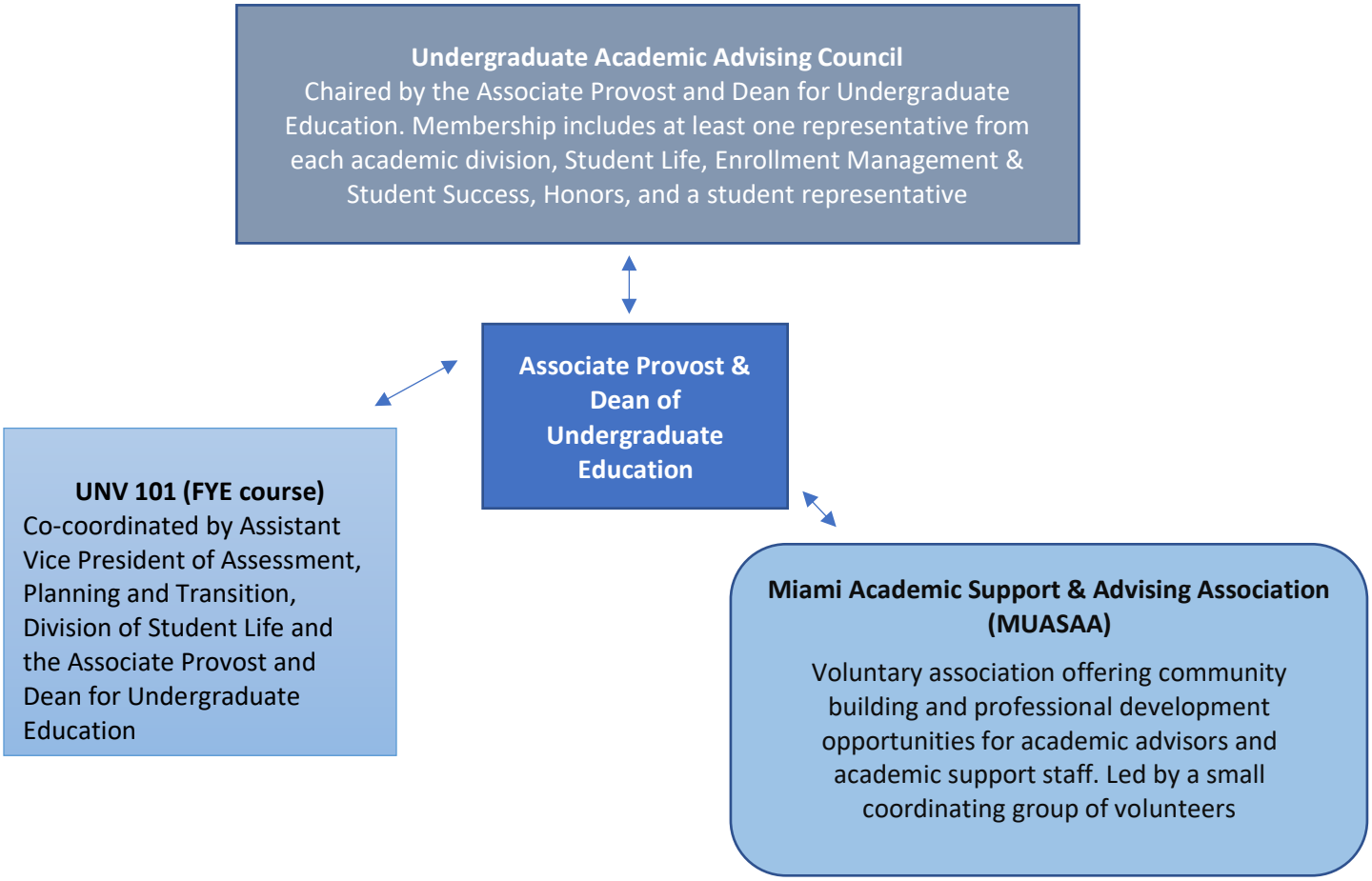
Miami University, 2024

Introduction

This report provides a summary of the Undergraduate Academic Advising Council's (UAAC) activities for the 2022-23 and 2023-24 academic years. We report on the goals set by the UAAC and our progress on those goals, all of which contribute to increases in student success, as evidenced by increasing retention rates over the last two years. Much of this work occurs within the academic advising community, but the initiatives and outcomes shared below represent a campus-wide partnership across Academic Affairs, Student Life, and Enrollment Management & Student Success. This partnership is a strength unmatched in other higher education institutions.

2022-2024 Organizational Structure & Membership

Over the past two academic years, the following organizational structure for academic advising was in effect:



During the period included in this report, the UAAC membership consisted of Amy Aldous Bergerson (Associate Provost and Dean for Undergraduate Education), Craig Bennett and Becki Bleikamp (Student Success Center), Mandy Euen (Registrar), Christina Carrubba-Whetstine (Rinella Learning Center), Teresa Radomski-Bomba (Honors College), Tonia Hyllengren, Stephanie Beck, and Tori Myles (Regionals), Brian Kirkmeyer (CEC), Chanelle White (FSB), Ted Peters (CAS), Chad Reynolds (CCA), Lea Minniti (EHS), Chelsia Potts (Exploratory Studies), and undergraduate student Spencer Mandzak (ASG). The UAAC meets every other week during the academic year, and several times over the course of the summer.

Goals and Outcomes

Academic advisors at Miami University support students in navigating University processes and policies, and facilitating their progress toward degree completion. They also assist students in adding, changing, and registering for their courses. The following goals for academic advising support these essential functions:

Goal 1: Advisor Training & Professional Development

Professional and faculty academic advisors receive appropriate training and ongoing development to ensure they can meet the changing needs of Miami University students.

Objectives	Progress on Objectives
Develop comprehensive advisor training for all new Miami University advisors	A subcommittee of UAAC has evaluated the current training over the 2023-24 academic year. The committee has outlined the new training and will commence developing the new modules in fall 2024. Completion of the advisor training modules is now required for all new professional academic advisors.
Revise and update advisor training content annually	The current modules have been updated with new information and the Assistant Dean for Undergraduate Education is tasked with ensuring modules are updated annually.
Support the ongoing professional development opportunities for advisors led by MUASAA and external organizations	The Provost's Office supports MUASAA's annual symposium by providing meals. This funding has been reduced due to budget constraints, so MUASAA is exploring other ways to generate funds. Annual Navigate trainings have been instituted by the Provost's Office in conjunction with the Student Success Center which provides support for Navigate 360, our academic advising

	technology. Advisors are updated on new features and tools which can improve their work with students.
Develop ongoing training for continuing advisors	This area has not seen much progress due to the effort required to update the advisor training modules.
Create an advising syllabus/curriculum to guide advisors' work with students	While this mindset was included in the conversation around the new advisor training modules, we have not implemented this across the campus. Some divisions, and Regionals Advising, do have this in place.
Maintain processes for advisor advancement within Miami University	The process for moving advisors to senior advisor and assistant director roles has been in place for two years. Divisions initially made a number of adjustments to advisors' status as current staff met requirements.

Goal 2: Student Advising Experience

The University-wide advising structure is student-focused, sustainable, and collaborative across advising units, student life, and enrollment management and student success, enhancing the student experience with academic advising.

Objectives	**Progress on Objectives**
Develop an institutional advising website that serves as a common platform for information about academic advising, policies, and registration information and provides links to Divisional advising websites	Due to lack of resources in the office of the Associate Provosts and Dean for Undergraduate Education, and the institution-wide change to a new web format, this has not been accomplished. We will endeavor to complete this in the coming year.
Encourage, support, and guide students to take responsibility for using the technology and support for meeting their educational, personal, and career goals	Navigate Student was launched in fall 2023 allowing students to see holds, schedule with advisors, and receive notifications/messages based on a campaign by department, office, or advisor. 3558 new student users have signed into Navigate Student, with 9140 all-time users. We will continue to use Navigate Student to engage students in the academic advising process.
Ensure that students receive relevant information and referrals unique to their situation	Learning outcomes assessment (see below) indicates that students are receiving the information and referrals they need, but that we can strengthen this area. We will add this as a focus in the new advisor training modules. The Coordinated Care group in Moonshot for Equity is working on using Navigate 360 to

	develop support teams for students. This includes expanding access to Navigate to some student life offices and librarians, and defining how to use the system for different levels of users.
Assist students in understanding the purpose of higher education and their role in adding to the intellectual community	Learning outcomes assessment indicates that students are gaining this understanding in their interactions with academic advisors.

Goal 3: Advising Assessment

Professional advising at Miami is assessed on an ongoing basis to promote continuous improvement of the advising system. Professional staff advisors and academic support personnel are evaluated on a regular basis to ensure that students receive the best support possible.

Objectives	**Progress on Objectives**
Assess student progress on measurable institutional advising outcomes	Institution-wide assessment of student progress on institutional learning outcomes began mid-fall 2023. Results are shared below.
Evaluate professional and faculty advisors on institutional metrics for advising effectiveness	Divisional leaders can use institutional learning outcomes assessment to indicate points of improvement for individual advisors.
Conduct Divisional Advising Assessment as deemed necessary	Divisions continue to evaluate advisors through divisional tools as needed to support institution-level information gained through the learning outcomes assessment.

Goal 4: Utilizing Data for Student Success

Professional staff advisors engage in proactive, data-informed advising to support students' progress through key milestones in their academic experience.

Objectives	**Progress on Objectives**
Develop institutional practice around specific student experience milestones	Updates to Success Markers in Navigate will begin in fall 2024. Additionally, we are

	implementing new predictive analytics through Navigate that will guide decisions on deploying advising resources. These analytics will be available to advisors in fall 2024. Associate Provost and Dean for Undergraduate Education will work with the advising community to develop institutional standards for practice related to these milestones.
Create expectations for regular, data-informed, coordinated outreach to students using midterm grades, Navigate Student, and early alerts as well as new metrics that guide the deployment of advising resources.	Institutional practices are established for early alerts and mid-term grades, registration campaigns, and responding to Navigate intake survey information. New initiatives, High Support Students and Transfer Concern indicator in Navigate, have been established to create processes for students who may need additional support and students who have indicated they might leave Miami to attend another institution.

Advising Activity

During summer of 2022, the advising community developed a set of guidelines for the use of Navigate 360 by professional advisors. These guidelines included scheduling all appointments through Navigate and recording appointment summaries within Navigate. In summer 2023, adhering to these community standards became an evaluation point in every professional academic advisor's annual performance review. The more consistent use of Navigate has allowed the University to better track the level of academic advising activity across campus. Below we share data on this activity.

The following table provides appointment information for each of the academic divisions, the Office of Exploratory Studies, and Regionals Advising for academic years 2022-23 and 2023-24. (Please note that the 2023-24 academic year is still underway; numbers are lower in this timeframe.)

Division/Office	**Appointment Activity**	**2022-23**	**2023-24**
CAS	Scheduled	5844	4965
	Drop-In	861	1807
	No Show	841	552
	Cancel	15	12
	Total Appts	7559	7334
	Distinct Students	3840	3676
CCA	Scheduled	622	611
	Drop-In	607	615

	No Show	74	44
	Cancel	8	0
	Total Appts	1310	1270
	Distinct Students	717	664
CEC	Scheduled	1049	1326
	Drop-In	202	149
	No Show	113	74
	Cancel	0	1
	Total Appts	1364	1550
	Distinct Students	895	866
EHS	Scheduled	929	1084
	Drop-In	529	588
	No Show	221	96
	Cancel	3	1
	Total Appts	1636	1767
	Distinct Students	943	986
FSB	Scheduled	7790	6977
	Drop-In	3821	3587
	No Show	1280	674
	Cancel	24	5
	Total Appts	12899	11238
	Distinct Students	4761	4660
OES	Scheduled	729	931
	Drop-In	93	49
	No Show	141	144
	Cancel	0	0
	Total Appts	963	1124
	Distinct Students	406	489
REGIONALS	Scheduled	3255	2859
	Drop-In	6474	3231
	No Show	495	416
	Cancel	2	2
	Total Appts	9075	6240
	Distinct Students	3752	2783

Scheduled means the appointment was scheduled in Navigate.
Drop-In means the appointment was not scheduled through Navigate. Some offices have true Drop-Ins which are included here, and this also encompasses appointments scheduled outside of Navigate that have an appointment summary submitted after the fact.
Scheduled & Drop-In Combined include all appointments that were held for the year
No-Show - Student prescheduled the appointment and did not attend without prior notice
Canceled - Appointment was scheduled and was canceled by either the staff or student

Early Alerts/Progress Reports

An important initiative supported by our use of Navigate 360 is early alerts/progress reports. Twice a semester, faculty in selected high DFW and gateway courses are asked to provide progress reports for enrolled students. The following courses are included in this initiative:

ACC 221	GLG 111, 115L, 121
ATH 185	HST 111, 112
BIO 161, 171, 116	IDS 159
CCA 111	ISA 225
CEC 266	MBI 111, 116, 131
CHM 141, 142, 144, 145	MTH 025, 122, 125, 141, 151, 245, 249, 251, 252
CSE 148, 174, 271	PHY 181, 185
ECO 201, 202	PSY 111
EDL 204	STA 261
EDP 256	UNV 101
ENG 111	WGS 201
FIN 301	CJS 101
GER 101	THE 101

Early Alert Progress Reports are sent out twice within the first six weeks of the semester:

- Sent Week 2 and closes at the end of Week 3
- Sent Week 5 and closes at the end of Week 6

As alerts are issued by the faculty, advisors and residence hall staff receive notification via email on a rolling basis. Students are also notified of the alert from an automated email at the time the alert is issued by the faculty member. Within 24 hours of receiving an assigned case, the academic advisor sends an email to the student indicating that they will follow up with a phone call if the student does not respond. Shortly after sending the email (ideally within 24 hours), the advisor makes the follow-up phone call to the student. If the student has still not responded 2-3 days following the phone call, the advisor follows up with an email or phone call to the student and checks to see if the student has been in touch with any other people within Navigate. They then log this information in the case notes and add the additional success staff to the case if needed.

The goal is to close cases quickly and efficiently to help close the loop back to the faculty member issuing the alert. Faculty receive notifications of closed cases. We strive to close cases within 1-2 weeks. Occasionally, extenuating circumstances mean a case is open longer.

The tables in Appendix A illustrate the distribution of at-risk progress reports across fall and spring semesters for academic years 2022-23 and 2023-24. In the fall semesters, the overall numbers of at-risk reports doubles from the first progress report to the second. The distribution of reports across academic divisions essentially mirrors the proportion of the overall population enrolled in each division, with the exception of Exploratory Studies. This is likely due to the fact that conditionally admitted National Pathways students are part of the OES student population.

Across semesters, first-generation college students make up around 20% of the special population at-risk reports. This data point will guide additional programming and support for first generation college students in the future.

Early alerts are intended to improve student outcomes. In the tables in Appendix B, we provide final grade outcomes for students flagged by instructors as at-risk. Typically, about 30% of the students whose instructors have submitted at-risk progress reports end up with a final grade A+ through C. Approximately 25% of these students end up with grades in the C-D range, and another 20-25% withdraw from these courses. The outcomes of the early alert process are generally positive, and show that students who respond to the outreach from advisors generally have better results that students who do not.

We also track how these outcomes translate into retention rates. The table in Appendix C shows retention rates for types of at-risk cases by closed status comparing cases that were *resolved*, meaning the issue was addressed directly with the student, and cases that were closed as either *no-response* (student never responded to multiple outreach attempts) or *administrative closures* (case was no long applicable, duplicate cases were consolidated, or administratively closed upon completion of semester with no notes from the advisor). These data indicate higher retention rates for students whose cases were resolved, meaning that the advisor was able to work directly with the student regarding the particular concerns expressed by the instructor in the progress report. Please note that we do not have retention data for the 2023-24 academic year yet, because retention is measured fall to fall. Overall, these are promising outcomes, and as a result we will continue to engage in the early alert process.

Learning Outcomes Assessment

Academic advising at Miami University assists students in navigating the University as well as its systems and processes. It also supports them as they pass through key milestones as students. During the 2022-23 academic year, the UAAC developed a set of institutional learning outcomes for academic advising. We now assess professional academic advising on the three clear and measurable student outcomes listed below.

As a result of working with their Academic Advisor, students will be able to:

- Craft an educational plan based on their academic performance, aspirations, interests and values
- Be self-advocates in University processes
- Utilize University policies and procedures and campus resources to facilitate their success

Supporting undergraduate students at Miami University involves seeing them as whole people with complex needs, listening to them, and collaborating with them to find solutions to problems. To facilitate this process, the following goals have been developed for the academic advising experience:

In the process of working with their Academic Advisor, students will:

- Feel that the advisor listened to them
- Feel that their identities are validated and valued
- Receive information, resources, or referrals related to their questions

Learning outcome and advising experience assessment is conducted through Navigate 360. Students receive an automated 5-question survey focused on these outcomes and experiences within an hour after their scheduled advising appointment through Navigate. The survey takes less than a minute to complete and results are sent to the Navigate system where division advising heads and the Associate Provost and Dean for Undergraduate Education have access to them. Below we share the results of the advising learning outcomes and experience assessment.

Table 1 in Appendix D shows the number of responses to the post-appointment survey. Overall, response rates are lower than we would like. We recently moved the timing of the survey to one hour after their advising appointment rather than 24 hours, which was our initial timing. This has resulted in an uptick in responses. We are working with advisors to encourage them to alert students to the fact that they will receive the survey, with hopes of increasing response rates in the future.

Table 2 in Appendix D shows the average rating on each of the four survey questions. Students were asked to rate their progress on the learning outcomes and their perception of the advising experience on a 1-5 scale (5= high; 1=low). This table indicates high levels of success on each of the four outcomes as a whole and across divisions. The two areas with the most room for improvement are related to campus resources and policies. We will work with advisors across campus to ensure they focus on improvements in these areas, and will ensure that these areas are highlighted in the new advisor training modules. We are particularly pleased with the very high rating students gave on the advising experience overall, indicating that students feel listened to, validated and valued, and that their questions have been addressed.

Our main goals related to this assessment for the future are to ensure a higher response rate and to encourage division heads to include these data in the performance reviews of advisors as a point for congratulations and improvement.

Intake Survey

Another tool that is now open to us through Navigate 360 is an intake survey. The first time a student logs into Navigate Student, they are asked to complete this survey. The results show up in the student's profile and provide more context and information for those who work with the student across campus. The table in Appendix E summarizes student responses to this survey and indicates the types of automated messages students receive based on their answers. These data give us a sense of what our students are concerned about as they start the academic year, and they provide an opportunity to communicate with students about these concerns. Several of the responses generate a custom to-do on the student's to-do list in Navigate Student, which provides advisors a chance to follow-up in future conversations with students. We are currently

in the process of revising our intake survey questions and fine-tuning our use of this information for the coming academic year.

Advisor Recognition

As seen in the assessment results above, Miami's academic advising community is a strength of the University's overall retention and completion efforts. As such, it is important to note how the community is recognizing its strongest advisors. Below we provide this information.

- In May, 2023, MUASSA offered its 7th annual Advising Symposium "Supporting Students, Sustaining Ourselves." MUASSA and the Provost's Office partnered to host an advisor recognition luncheon, at which advisors attaining advising levels A (27) and B (25) and Master Advisor (9) status were recognized. Additionally, the following awards were given:
    - Outstanding Advising Supporter/Friend of Advising: Jake Matig, Farmer School of Business, and Sarah Meaney, Office of Residence Life
    - Outstanding Advising Community Builder: Conor Burns, Farmer School of Business
    - Outstanding DEI Initiative: Dr. Genesis Ross, Division of Education, Health, and Society
    - Provost's Excellence in Advising Award – Faculty Advisor: Amanda Pyzoha, Farmer School of Business
    - Provost's Excellence in Advising Award – Professional Advisor: Keisha Norris, College of Engineering and Computing
- In May 2024, the 8th Annual MUASSA Symposium was held. The theme for this year's symposium was "Setting the Stage for Success". Advisors who had attained the two advising levels (A=22 and B=29), along with 15 Master Advisors were recognized. The following advising community members were honored with awards:
    - Outstanding Advising Supporter/Friend of Advising: The Office of the Registrar
    - Outstanding Advising Program: Julia Pond, Regionals Advising
    - Outstanding Advising Community Builder: Conor Burns, Farmer School of Business
    - Outstanding DEI Initiative: Jennifer Troutman, Farmer School of Business
    - Professional Development Grant: Leah Evans,
    - Provost's Excellence in Advising Award – Faculty Advisor: Dr. Michelle Buchberger and Dr. Caryn E. Neumann, Department of Interdisciplinary and Communication Studies (Regionals)
    - Provost's Excellence in Advising Award – Professional Advisor: Tailyn Walborn, College of Arts and Science

Moving Forward: 2024-26 Goals

As we look to the future for Miami University, academic advising and support of students are key to our success, and to the success of our students. Below, we present UAAC goals for the coming academic year, each of which contributes directly to Miami University's larger goals and strategic mission.

- Complete development and implementation of new academic advising training.
- Work process review as part of Workday Student implementation.
    - Review work processes in light of new ERP to determine where we can make improvements to better serve students
        - Registration processes
        - Withdrawal process
        - Courtesy email account process
        - Others identified by the campus community
    - Select and implement new degree planning technology necessary for advising students and curriculum planning
- Provide training and development opportunities for faculty advisors to increase use of Navigate 360 in faculty advisement of students.
    - Encourage faculty advisors to adhere to advising community guidelines
    - Include faculty advisor appointments in learning outcomes/experience assessment
- Continue to use data to guide advising work with students
    - Implement Navigate success markers and data analytics to support advisors in determining which students are in most need of their attention and begin moving our advising culture towards differentiated advising

Conclusion

The past two years have been a time of shoring up our professional advising system with attention to training, assessment, and data-driven outreach. We are pleased with our progress and are excited to share the strong results of our work with students. We will build on our successes in the next two years, expanding the reach, efficiency, and impact of professional advising, and bringing our faculty advisors into these professional advising processes as well. We will finalize our new training modules, and continue to refine our student outreaches. And, we will focus on how we can use our new Workday Student ERP system to make our work processes more student- and advisor-friendly.

We are excited about our work on the goals identified in this report, and know that each step we take towards meeting these goals will support Miami University students and build on Miami's strong reputation as an institution that excels in providing an exceptional undergraduate student experience. We appreciate the support of campus leadership and the Board of Trustees in this work.

Appendix A: Distribution of At-Risk Progress Reports

Progress Report #1 (Weeks 2 and 3 of Semester)				
	Fall 2022		Fall 2023	
	Count	Percent of Total	Count	Percent of Total
Total At-Risk Reports	478	4% of all submitted reports	416	4% of All Reports
Unique Students	437		378	
Special Populations				
First Generation	97	22.20%	77	20.37%
Honors	8	1.80%	9	2.38%
Athlete	41	9.40%	45	11.90%
International	24	5.50%	15	3.97%
By College				
CAS	131	30%	117	31%
CCA	27	6.20%	14	4%
CEC	94	21.50%	46	12%
EHS	52	11.90%	40	11%
FSB	94	21.50%	102	27%
OES	38	8.70%	34	9%
CLAAS	1	0.20%	25	7%

Progress Report #2 (Weeks 5 and 6 of Semester)				
	Fall 2022		Fall 2023	
	Count	Percent of Total	Count	Percent of Total
Total At-Risk Reports	812	9% of all submitted reports	1008	8% of all submitted Reports
Unique Students	728		914	
		Special Populations		
First Generation	130	17.90%	178	19.47%
Honors	14	1.90%	15	1.64%
Athlete	53	7.30%	69	7.55%
International	34	4.70%	33	3.61%
		By College		
CAS	187	25.70%	272	29.76%
CCA	26	3.60%	36	3.94%
CEC	146	20.10%	127	13.89%
EHS	77	10.10%	105	11.49%
FSB	240	33%	266	29.10%
OES	52	7.10%	57	6.24%

Progress Report #1 (Weeks 2 and 3 of Semester)		
	Spring 2023 - Progress Report 1	**Spring 2024 - Progress Report 1**

	Count	Percent of Total	Count	Percent of Total
Total At-Risk Reports	464	5% of all submitted reports	488	4% of All Reports
Unique Students	418		456	
Special Populations				
First Generation	82	19.62%	91	19.96%
Honors	17	4.07%	13	2.85%
Athlete	10	2.39%	16	3.51%
International	21	5.02%	20	4.39%
By Academic College				
CAS	136	32.54%	122	26.75%
CCA	17	4.07%	15	3.29%
CEC	98	23.44%	76	16.67%
EHS	45	10.77%	71	15.57%
FSB	103	24.64%	143	31.36%
OES	18	4.31%	27	5.92%
CLAAS	1	0.24%	2	0.44%

Progress Report #2 (Weeks 5 and 6 of Semester)

	Spring 2023 - Progress Report 2		Spring 2024 - Progress Report 2	
	Count	Percent of Total	Count	Percent of Total
Total At-Risk Reports	905	11% of all submitted reports	607	7% of All Reports
Unique Students	818		548	
Special Populations				
First Generation	148	18.07%	124	22.63%
Honors	24	2.93%	23	4.20%
Athlete	14	1.71%	17	3.10%
International	43	5.25%	28	5.11%
By Academic College				
CAS	220	26.86%	139	25.36%
CCA	31	3.79%	15	2.74%
CEC	161	19.66%	89	16.24%
EHS	70	8.55%	92	16.79%
FSB	288	35.16%	166	30.29%
OES	46	5.62%	41	7.48%
CLAAS	2	0.24%	6	1.09%

Appendix B: Final Grade in Class for At-Risk Reports

Final Grade in Class when flagged At-Risk on Early Alert

Final Grade	Fall 2022		Spring 2023	
A+ through C (include X/CR1)	344	31%	470	36%
C- through D-	313	28%	334	26%
F (include Y/CR2)	198	18%	192	15%
IU	2	0%	10	1%
Withdrew	256	23%	287	22%
	1115		1293	

Final Grade	Fall 2023		Spring 2024	
A+ through C (include X/CR1)	502	34%		
C- through D-	351	24%		
F (include Y/CR2/ADF/NCR)	304	20%		
IU (Include N)	13	1%		
Withdrew	322	22%		
	1492			

Appendix C: Retention Rates Based on Case Outcome

Retention Rates based on Case Outcome from Start Semester to Fall 2023

	Fall 2022			Spring 2023		
	Resolved	Not Resolved/Admin Close	Difference	Resolved	Not Resolved/Admin Close	Difference
Attendance Concern	62%	60%	2%	71%	63%	8%
Class Participation	64%	48%	16%	78%	68%	10%
Lacks Access to Technology	50%	56%	-6%	57%	43%	14%
Other Concerns	87%	64%	23%	93%	81%	13%
Recommend Course withdrawal	73%	52%	21%	76%	47%	28%

Appendix D: Academic Advising Assessment

Table 1: Learning Outcomes Assessment Responses

Learning Outcomes Assessment Responses

	Fall 2023			Spring 2024		
	Requests	**Responses**	**Percentage**	**Requests**	**Responses**	**Percentage**
CAS	1861	44	2.36%	751	48	6.39%
CCA	231	6	2.60%	61	6	9.84%
CEC	327	3	0.92%	332	10	3.01%
EHS	289	5	1.73%	127	5	3.94%
FSB	2289	31	1.35%	2316	80	3.45%
OES	291	4	1.37%	123	2	1.63%
Reg	1040	38	3.65%	733	38	5.18%
Total	6328	131	2.07%	4443	189	4.25%

Table 2: Learning Outcomes/Experience Ratings

Learning Outcomes/Experience Ratings

	Overall Average	**CAS**	**CCA**	**EHS**	**CEC**	**FSB**	**OES**	**Reg**
Question 1: I am able to find and use offices and resources that support my academic needs on campus (Tutoring/Academic Coaching, Disability Services, Counseling Center, etc.)	4.4	4.4	4.7	4.1	4.2	4.5	4.7	4.3
Question 2: I have plans for reaching my academic goals or addressing my immediate educational needs.	4.5	4.6	4.9	4.2	4.4	4.6	4.7	4.4
Question 3: I understand what Miami University policies and regulations will help support my academic success (withdrawal deadlines, grade appeal process, course repeat policy, etc.)	4.4	4.3	4.4	4.1	4.2	4.5	4.5	4.4

Question 4: Our goals for your advising experience are for you to: 1) feel your advisor listened to you, 2) validated and valued you and your identities, and 3) addressed your questions. Please tell us how well we met these goals.	4.8	4.7	4.8	4.5	4.8	4.9	4.7	4.8
Count of Responses	315	91	12	9	13	111	6	72

Appendix E: Intake Survey Results

Poll Question	Poll Answer	Number	Percent	Automated Response
I want Miami University to know...	I am a commuter student	865	8.4%	Custom To-Do Item in Navigate
	I am a first-generation college student (my parents have not earned college degrees)	1144	11.1%	Custom To-Do Item in Navigate
	I am a full-time caregiver for 1 or more family members	152	1.5%	
	I am concerned about how I will pay for college this semester	516	5%	Custom To-Do Item in Navigate
	I am nervous about living with and sharing a room with another person	2	0.02%	
	I am returning after a semester or more away from college	676	6.6%	
	I am uncertain if my major is a good fit for me	788	7.7%	Custom To-Do Item in Navigate
	I am working 20 or more hours a week throughout the semester	1034	10%	
	I feel confident I will succeed in my classes this semester	4944	48%	
	None of these apply to me	2088	20.3%	
	This is my first semester at Miami University	3657	35.5%	
I would like to learn more about...	Access to additional assistance programs (food, housing, technology, etc.)	565	5.5%	Custom To-Do Item in Navigate
	Career coaching and planning for internships or future career opportunities	2624	25.8%	Custom To-Do Item in Navigate
	Mental health counseling resources on campus	1073	10.5%	Custom To-Do Item in Navigate
	None of the apply to me	4427	43.4%	
	On-Campus job opportunities	1939	19%	Custom To-Do Item in Navigate
	On-campus leadership opportunities, campus involvement, or service	1714	16.8%	Custom To-Do Item in Navigate
	Resources and involvement with equity, diversity, and inclusion	664	6.5%	Custom To-Do Item in Navigate
	Services for students with disabilities	454	4.5%	Custom To-Do Item in Navigate
	Study abroad opportunities	2807	27.6%	Custom To-Do Item in Navigate
	Tutoring services and/or academic coaching	2089	20.5%	Custom To-Do Item in Navigate

	Undergraduate research opportunities	1466	14.4%	Custom To-Do Item in Navigate
My academic and professional goals include...	Adding or changing my major(s)	1387	13.3%	Custom To-Do Item in Navigate
	Adding or changing my minor(s)	1376	13.1%	Custom To-Do Item in Navigate
	Beginning a career related to my major when I graduate	5255	50.2%	
	Continuing my education in graduate or professional school after college	2674	25.5%	
	Earning my degree and graduating from Miami University	9245	88.3%	
	Graduating early	956	9.1%	
	None of these apply to me	700	6.7%	
	Transferring to a different university	210	2%	Oxford students receive email invitation to discuss their plans