



Undergraduate Research Opportunities

1. Working Groups of Undergraduates and Faculty

Undergraduate students can engage in research activities by participating in one of the Working Groups. These Working Groups are small groups of faculty and students who are interested in a common research venture. Undergraduate students work directly with professors on interesting, open-ended problems, and they will be mentored individually by a faculty member. By exploring their projects together with other students and faculty, students will not only delve into an active research area but also learn how to work and communicate with others. Opportunities exist for students to present research papers at various conferences around the country. One working group meets in the summer to study Knot and Graph Theory. Visit the undergraduate research page at <http://math.osu.edu/research/undergraduate>.

2. Young Mathematicians Conference

The Young Mathematicians Conference (YMC) is a series of national annual conferences for undergraduate student researchers in mathematics. Presentations in the form of talks or posters are made by students of their results and discoveries from activities listed above. Peer discussion of research ideas and experiences are at the center of conference program. See this website for more information: <http://www.ymc.osu.edu/>

3. Research Opportunities in Math for Underrepresented Students (ROMUS)

The Department of Mathematics at the Ohio State University invites undergraduate students, especially those who are underrepresented in math, to pursue research under the tutelage of experienced faculty members. Students work with a faculty member on a project of mutual interest for 8-10 weeks during the summer. In addition to the research projects, all accepted students will participate in various cohort activities. We will support travel, housing accommodations, and a stipend of \$5000 for all participating students. The projects will be in the areas of analysis of PDEs and mathematical finance, ergodic theory and dynamical systems, combinatorics, model theory, algebraic geometry, and quantum algebra, category theory, and operator algebra and operator theory. Applications are due January 15 and decisions will be made in late January and early February. To apply, please submit a transcript, a CV/resume, a personal statement, and a letter of recommendation through mathprograms.org at this link: <https://www.mathprograms.org/db/programs/1542>. For further questions, please contact romus@lists.osu.edu

4. Directed Reading Program (DRP)

The DRP provides an opportunity for undergraduate students to learn about math topics outside of the standard mathematics curriculum and develop mentor-mentee relationships with graduate students in the department. At the beginning of each semester, interested undergraduates are paired up with a graduate student mentor based on shared mathematical interests. They read through a math textbook during the semester, meeting about once a week, all leading up to a short presentation at the end of semester where all the mentees present an interesting theorem or problem that they studied during the program.

The DRP provides an opportunity for students to develop fundamental skills like how to effectively read mathematics texts and proofs as well as how to convey mathematical ideas to an audience. These skills are not only useful in communicating mathematics but are vital for success in graduate school if mentees decide to go down that path. The DRP also provides a space for graduate students to develop and practice their mentorship skills, which they will need should they continue in academia. To learn more about the DRP, please visit the website at <https://u.osu.edu/directedreadingprogram> or send an email to ohiostatedrp@gmail.com

5. Cycle- Mentoring & Professional Development Program for Underrepresented Math Majors

Cycle serves as a bridge to support the transition to college-level mathematics, providing exposure to various pathways into careers in both industry and academia. As a graduate-student led initiative, Cycle also builds mentorship capacity within the next generation of mathematicians.

In the fall session, the mentees focus on professional development activities, with training centered on diversity, imposter syndrome, bias and mental health. Some of it is learning useful technology, like preparing a curriculum vitae in LaTeX or using a computer algebra system. And some of it is handling practical issues like finding job opportunities, applying to those jobs or presenting one's work out loud.

In the spring session, the mentees not only participate in the one credit-hour class, but also take part in research projects organized by the graduate student mentors. These projects include applied mathematics (like epidemiological modeling and topological data analysis) and theoretical work (like automorphisms of groups, category theory and number theory). The projects are created by the graduate students, and the mentees choose the projects they are most interested in joining. At the end of the semester, the mentees summarize their work on a poster. Cycle then culminates with a conference combining graduate student talks with a poster session highlighting the mentees' work. Interested undergraduate participants are encouraged to contact mathcycle@osu.edu to learn more about upcoming opportunities.

6. Research Experience for Undergraduates (REUs)

There are also many mathematics-specific REUs available across the country supported by the National Science Foundation: https://www.nsf.gov/crssprgm/reu/reu_search.jsp

7. Undergraduate Research & Creative Inquiry (URCI)

The Undergraduate Research & Creative Inquiry helps students pursue research opportunities at The Ohio State University. Research can be conducted independently, as part of a team, in collaboration with faculty, here at the university or elsewhere.

The URCI website <https://ugresearch.osu.edu/> includes information about getting started with research, how to find research opportunities, what's involved in presenting your work, and a variety of other information sources for undergraduates interested in making research a part of their college experience.