



Mathematics

Mathematics, one of the oldest liberal arts disciplines, continues to be an innovative field of study. More mathematics, both pure and applied, has been discovered and developed in the past decade than in the previous two thousand years. Math majors have a universe of possibilities in their future.

THE PROGRAM

The Department of Mathematics develops the mathematical knowledge and skills that students apply in the analysis, reflection, and action promoted in the University's Mission Statement. It also provides them with the theoretical structures from which this application derives. The Department's curriculum is a blend of several broad areas of thought in mathematics. Majors are well prepared for positions in industry and government, for teaching mathematics, and for graduate work. Gonzaga's Department of Mathematics offers three degrees for students interested in a **major in Mathematics**:

- Bachelor of Arts in Mathematics (31 credits)
- Bachelor of Science in Mathematics (40 credits)
- Bachelor of Science in Mathematics-Computer Science (49 credits)

All of these degree programs are based on a personalized and complementary blend of two broad areas of thought and application:

- Pure mathematics and its foundations
- Applied mathematics for models in the natural, social, and managerial sciences

Some of the 200-, 300-, and 400-level courses in mathematics include:

- Combinatorics and Graph Theory
- Linear and Abstract Algebra
- Statistics
- Complex Variables
- Advanced Calculus
- Topology
- Partial Differential Equations

Students study these mid- to upper-level courses within the Jesuit tradition of education. Therefore, not only will mathematics students focus on their specific discipline, they will also develop their critical thinking and expression skills through intensive study in philosophy, religious studies, composition and literature, and other disciplines in the humanities.

All majors must take the senior comprehensive exam (MATH 499) in the fall of their final year. Prospective teachers of mathematics should consult the School of Education for the current state certification requirements.

Gonzaga also offers a **minor in Mathematics** (24 credits). To complete the minor, students begin with three required lower-division courses: Calculus & Analytic Geometry I, II, and III. Students must then take four upper-division Mathematics courses. Two are required (MATH 301-Fundamentals of Mathematics and MATH 339-Linear Algebra), while the other two are elective courses.

RESEARCH OPPORTUNITIES

Faculty members often help students preparing for graduate school by offering individually-crafted independent study programs. Students have the opportunity to assist faculty in research projects, including as part of the **Gonzaga University Center for Evolutionary Algorithms**. These Gonzaga research experiences have, in turn, helped several recent graduates attain excellent additional opportunities for research at the undergraduate, graduate, and post-doctorate levels. Recent students have received funding for prestigious undergraduate research opportunities through the National Science Foundation's (NSF) Research Experiences for Undergraduates program. Through this program, Gonzaga Mathematics majors have completed research at the Rice University Summer Institute of Statistics, the University of Southern California, and Ohio Wesleyan University. Other recent successes for mathematic graduates have included a post-baccalaureate position at Los Alamos National Laboratory, an NSF doctoral grant, and a post-doctoral research fellowship at Vanderbilt University.

DISTINCTIVE OPPORTUNITIES

Mathematics students at Gonzaga may volunteer for educational outreach programs as well. Some students participate in the **Saturday Mathematics Tutoring Program**. The goal of the program is to provide free mathematics tutoring and enrichment for local K-12 students. The Department also runs the **Math Tutoring Lab**, a free resource to Gonzaga students proctored by mathematics professors and selected students.

The Department involves students with activities sponsored by the **Mathematical Association of America (MAA)** and sponsors an active **math club**. Majors may also participate in the annual William Lowell Putnam Mathematical Competition held every December.

The Department also offers multiple awards. Underclassmen are nominated to take a mathematics exam with the top student

receiving the Underclassman Award. Leading junior students may earn the MAA Award, which includes an MAA membership during their senior year. Top seniors are nominated for the Carsrud Award, and the winner receives recognition at the University Academic Honors Convocation. Finally, Gonzaga has its own chapter of **Pi Mu Epsilon**, an honor society whose purpose is to promote and recognize student scholarship and achievement in mathematics.

OUTCOMES

The combination of a mathematics major and a comprehensive liberal arts background make our graduates excellent candidates for careers in science, industry, education, and government. Competent, broadly educated professionals in mathematics are in great demand. As a field, mathematics boasts more employment opportunities than qualified candidates to fill them. Furthermore, a recent study of 250 occupations based on salary, stress, work environment, and security identifies occupations related to mathematics as among the five most desirable. Graduates of Gonzaga's Mathematics Department excel in positions in applied mathematics, actuarial science, and education. Recent graduates are now teaching middle or high school math, working in industry positions, and pursuing graduate studies.

Gonzaga Mathematics graduates have attended the following institutions for graduate school:

- Colorado State University
- Eastern Washington University
- Michigan State University
- Oregon State University
- Texas A&M University
- University of Florida
- University of Minnesota

- University of North Carolina
- University of Notre Dame
- University of Texas, Austin
- University of Washington
- Washington State University

THE PEOPLE

Faculty members in the Department of Mathematics focus on teaching, advising, and professional development. They regularly present their research at local and national conferences.

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