

PROGRAMS

M.S. in Mathematics: Consists of approximately two years worth of graduate level coursework and has Pure Mathematics and Applied Mathematics tracks.

Ph.D. in Mathematics: Assumes a master's level background in Mathematics and involves an additional three years of coursework and research experience.

Students are admitted into the MS or PhD program depending on their background. Students with a B.S. level background committed to pursuing a Ph.D. should enter the Pure Mathematics MS track and can transition seamlessly into the Ph.D. program.

Detailed program information is available in the [WVU Academic Catalog](#) and the [Graduate Handbook](#).

FUNDING

Students who pursue a Ph.D. are typically supported through Graduate Assistantships. The minimum stipend is currently \$14,000 for master's level students and \$18,500 for doctoral level students (for the 9-month academic year). The support package also includes a tuition waiver and personal health insurance. Students are responsible for a total of approximately \$2,300 in fees for the academic year.

ENGLISH PROFICIENCY

[English language proficiency requirements](#) for international applicants* to WVU can be fulfilled by several different tests. The minimum TOEFL iBT score for admission is 79. *The requirement applies to all students from non-US countries other than Canada, UK, Australia, and New Zealand.

Spoken English for GTAs: In order to be eligible for support as a Graduate Teaching Assistant, students whose native language is other than English must fulfill the [spoken English requirement](#). One way to fulfill this is a score of 22 on the speaking section of the TOEFL iBT.

APPLICATION DEADLINES

Spring semester: **October 15**

Fall semester: **January 15** (Note: this deadline is earlier than in previous years and might not be reflected correctly on all WVU websites.)

APPLICATION CHECKLIST

- [Graduate application](#)
- Transcripts
- [TOEFL scores \(international students only\)](#)
- GRE score (not required)
- Three letters of recommendation
- Statement of Purpose



FACULTY AND RESEARCH

Whether searching for solutions to real-world problems or constructing theories necessary to tackle such problems quantitatively and qualitatively, successful mathematicians require rigorous training in a nurturing and high-quality academic environment. Our program offers opportunities for research in various areas of mathematics, applied mathematics, mathematics education and statistics.

ALGEBRA: Commutative algebra forms the foundation of algebraic geometry and finds applications in various areas including algebraic number theory, combinatorics, and algebraic graph theory. At WVU we use homological and representation theoretical techniques for our research in commutative algebra which involves commutative rings and modules over such rings.

Faculty: **Ela Celikbas, Olgur Celikbas**

APPLIED AND CLASSICAL ANALYSIS: Applied analysis group studies different physical phenomena using equations and analysis tools. These models are usually from Fluid Dynamics, Finance, Biology, Electro-magnetism, Celestial Mechanics, and other disciplines with direct applications to essential industries. We also have active research in classical real analysis.

Faculty: **Harumi Hattori, Harry Gingold, Dening Li, Casian Pantea, Adrian Tudorascu, Charis Tsikkou, Qingtian Zhang**

COMBINATORICS AND GRAPH THEORY: Combinatorics and graph theory are increasingly important areas of mathematics with many deep questions and surprising applications. Why must large systems contain highly ordered parts? How can we use randomness to advance our understanding of non-random objects? What kinds of structure in a graph (or network) allow problems to be solved efficiently?

Faculty: **John Goldwasser, Hong-Jian Lai, Rong Luo, Kevin Milans, Cun-Quan Zhang**

RESEARCH IN UNDERGRADUATE MATHEMATICS EDUCATION (RUME): The RUME program at WVU offers a PhD in Mathematics with research focused on mathematics education. The current faculty in this area study the teaching and learning of various topics in mathematics (e.g. proofs, definite integrals, etc.), active learning in classes, and ways to increase success of all students in mathematics, and especially underrepresented students.

Faculty: **Marjorie Darrah, Jessica Deshler, David Miller, Laura Pyzdrowski, Vicki Sealey**

SET THEORY AND TOPOLOGY: Set theory provides fundamental theoretical structures for other areas of mathematics and general topology is a bridge joining set theory with applied mathematics. Our research area includes infinite combinatorics, convergence theory and set theoretic topology and analysis.

Faculty: **Krzysztof Ciesielski, Jerzy Wojciechowski**

APPLIED MATHEMATICS: Applied Mathematics is concerned with understanding the world through mathematical models and computation. Research areas include the study of complicated chemical reaction networks, through modeling and simulation, and through theory that combines differential equations and graph theory; celestial mechanics, the study of motion of large bodies over large distances and long times; partial differential equations arising from physical models involving atmospheric flows and flows with mixed phases; and algorithms and machine learning.

Faculty: **Marjorie Darrah, Harvey Diamond, Harry Gingold, Adam Halasz, Casian Pantea**

STATISTICS: We are concerned with developing efficient procedures for recovering unobserved functions and probability distributions in ill-posed and statistical inverse problems, like computed tomography, deconvolution, demixing, and error-in variable models.

Faculty: **Robert Mnatsakanov**

