

## Why Math at WVU?

At WVU, you can concentrate on one of six Areas of Emphasis (AoE) for the Bachelor of Science (B.S.) in Mathematics:

- **Actuarial Science**
- **Mathematics Biology**
- **Mathematics Education**
- **Computational Mathematics**
- **Physical Applied Mathematics**
- **Pure Mathematics**

Each AoE will provide the foundation for careers in industry, government or academic settings that focus on Mathematics, Applied Mathematics, or Actuarial Science. Alternatively, students can choose course work from different AoEs to design their own program under a flexible general program option. Students will receive guidance from academic advisors in choosing an AoE that supports student's interests and future goals.



## Mathematics Major Foundation Courses

- **Calculus 1 | 4 credits**
- **Calculus 2 | 4 credits**
- **Multivariable Calculus | 4 credits**
- **Elementary Differential Equation | 4 credits**
- **Intro to Concepts of Mathematics | 3 credits**
- **Intro to Linear Algebra**  
or **Applied Linear Algebra | 3 credits**
- **Intro to Programming & Computational Math**  
or **Numerical Analysis 1 | 3 credits**
- **Intro to Probability & Statistics | 3 credits**

After completing the Mathematics Major foundation courses (28 credit hours), students choose one of the following Area of Emphasis (AoE) for an additional 18 credits and complete a Senior Capstone Project for 4 credits.

No matter the AoE, you will have the opportunity to conduct undergraduate research with internationally recognized scholars, attend presentations from leading researchers, go to regional or national conferences.

You can also participate in outreach activities such as the National Honor Society, Pi Mu Epsilon, Integration Bee, Putnam Exam, and events organized by WVU Math Club, Association for Women in Mathematics WVU Student Chapter, WVU Actuarial Club, and Society of Industrial and Applied Mathematics Student Chapter.

Many mathematics majors are employed as tutors and class assistants for lower-level mathematics classes. Mathematics majors can continue working on advanced graduate degrees at WVU and attend top graduate schools nationwide.

### David Miller

Assistant Director for Undergraduate Programs  
 WVU School of Mathematical and Data Sciences  
 millerd@math.wvu.edu  
 304-293-5924



## Areas of Emphasis

**Actuarial Science Emphasis** prepares students for a career in actuarial science and passing actuarial exams. Actuaries use mathematics, statistics, and financial theory to analyze the financial costs of risk and uncertainty. Students take four actuarial science courses, one upper-level Theory of Probability and Statistics class and one upper-level proof class.



**Computational Mathematical Science Emphasis** prepares students for graduate study and advanced careers that require both practical computational programming skills and deep knowledge of the underlying mathematics. Students take a variety of courses in discrete mathematics, applied linear algebra, cryptography, operations research, computer science, and statistics.



**Mathematics Biology Emphasis** prepares students for both graduate school and industry positions focusing on Biology and Mathematics interdisciplinary work. Students take a variety mathematics biology courses and electives, and an upper-level proof class.

**Mathematics Education Emphasis** prepares students to teach mathematics in middle and high school, or pursue graduate school with an emphasis on teaching at the community college or higher education institution. Students take a variety of mathematics education coursework, one upper-level proof classes and a math programming class.

**Physical Applied Mathematics Emphasis** prepares students to emphasize mathematical models and analysis most often applied to systems continuously evolving over time and/or varying in space. Upon graduation students are well-positioned to pursue interdisciplinary work in industry or government, or further graduate study in applied mathematics. Students take a variety of upper-level applied mathematics courses and one upper-level proof course.



**Pure Mathematics Emphasis** prepares students with theoretical and problem-solving skills that can be applied in industry, government, or graduate school in mathematics that leads to a Masters or a Doctoral degree in mathematics. Pure Mathematics is the study of core areas of mathematics such as abstract algebra, real and complex analysis, topology and number theory, and is beneficial for almost any area of learning. Students take five core theoretical mathematics courses and one additional advanced level course.

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[mathanddata.wvu.edu](http://mathanddata.wvu.edu)

