

THE MATHEMATICS PROGRAM

The Department of Mathematics offers a bachelor's degree program in mathematics and several minors in mathematical disciplines. The Bachelor of Science program is grounded in a core set of courses in calculus, linear and abstract algebra, and real analysis. Student interest can then be used to determine the best electives to round out the degree. A more theoretical training for those interested in graduate studies involves courses in **Topology, Abstract Algebra** and **Real or Complex Analysis**. Students interested in careers with government and industry will find **Numerical Analysis, Differential Equations** and **Chaotic Dynamical Systems** of interest. Future teachers will take courses in **Modern Geometry** while those interested in careers as statisticians will find use for the advanced **Probability and Statistics** sequence or perhaps the applied **Theory of Interest** course. Courses in specialized areas such as **Coding and Cryptography** or **Partial Differential Equations** are common.

The department offers several minors to complement degrees in other disciplines. Natural and social science students will greatly enhance their résumés with a minor in **Applied Mathematics**, and students in quantitative fields such as business or economics will find great utility in a **Statistics** or **Actuarial Science** minor. Our broadly defined minor in **Mathematics** is a great addition to any degree.



For more information about the programs offered by the department, please contact:

Department of Mathematics
University of Mary Washington
1301 College Avenue
Fredericksburg, Virginia 22401
540/654-1028
cas.umw.edu/math

For an academic catalog and an application for admission, please contact:

The Office of Admissions
University of Mary Washington
1301 College Avenue • Fredericksburg, Virginia 22401
540/654-2000 • 1-800-468-5614
umw.edu/admissions



where great minds get to work



MATHEMATICS PROGRAM



UNIVERSITY OF
MARY WASHINGTON

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THE POTENTIAL



A bachelor's degree in mathematics opens many doors toward a career in education, government, or industry. Completion of our program in mathematics means that you have well-developed problem-solving skills and have learned to attack problems in creative and innovative ways. No matter what your interest, mathematics will help anyone with the ability to understand advanced mathematics can learn quickly and attack problems creatively. A mathematics background opens the door to an almost limitless number of careers.

Earning a degree in mathematics in no way requires you to enter a mathematically oriented occupation. The general analytic and technical skills that you acquire as a mathematics major will be your strong suit. You should also be aware that no one enters the work force with every bit of knowledge needed for the particular position. This is true no matter the occupation. For this reason, one of the most important skills one can master is the ability to grasp new situations and adapt quickly. The ability to assess complex problems critically and assimilate fine details into the "big picture" is crucial. Also, good technical writing skills are valued highly. UMW's liberal arts curriculum will add value to a major in mathematics.

Employers know that a person with mathematics training from UMW will possess these important qualities.

THE FACILITIES

The Department of Mathematics is housed in Trinkle Hall in the heart of UMW's Fredericksburg campus. Our advanced courses are taught in a small classroom setting and typically enroll 15 to 20 students. Our classes engage the students, and active learning is a hallmark of our program. Mathematics students use a computer lab in Trinkle Hall, giving them access to cutting-edge software such as *The Geometer's Sketchpad*, *Mathematica*, *Matlab*, *SPSS*, and more. Professional typesetting software (LaTeX) is also available. Technology is integrated throughout our curriculum, and students leave UMW with the skills to succeed.

ADVANCED STUDY

Students in the mathematics program can enhance their studies in a variety of ways. Independent study offers students the ability to extend their work beyond our typical offerings. Our well-developed undergraduate research program engages students one-on-one with faculty in a high-level project, often leading to conference presentations or publications. Internships abound for mathematics students, and study-abroad opportunities are plentiful at UMW.

Faculty

- Yuan-Jen Chiang**
Geometry/Analysis
- Manning G. Collier**
Analysis
- Patricia M. Dean**
Mathematics Education
- Melody Denhere**
Statistics
- Julius N. Esunge**
Stochastic Analysis
- Randall D. Helmstutler**
Algebraic Topology
- Debra L. Hydorn**
Statistics
- Janusz Konieczny**
Algebra
- Jangwoon "Leo" Lee**
Numerical Analysis
- J. Larry Lehman**
Number Theory
- Jennifer Magee**
Algebra, Mathematics Education
- Keith E. Mellinger**
Discrete Mathematics
- Marie P. Sheckels**
Mathematics Education
- Suzanne Sumner**
Differential Equations



Alumni



Sarah Reese, '07
Postdoctoral fellow at the National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, Durham, NC

"The Department of Mathematics at Mary Washington gave me the knowledge and skills I needed to go on to graduate school and receive my Ph.D. in biostatistics. I am now about to embark on an exciting new career, and I would not be here without the support and encouragement of my professors in the Math Department."



Sean Droms, '07
Ph.D. in mathematics from the University of Virginia
Assistant professor of mathematics, Lebanon Valley College

"The personal contact with my professors at UMW inspired my love of mathematics and teaching, while the summer research and independent study programs gave me a solid foundation from which to launch my career."



Jake Farinholt, '09
Research mathematician and scientometric analyst, United States Navy, and pursuing a Ph.D. in mathematics at George Mason University

"From Dr. Helmstutler's bow ties, to Dr. Mellinger's bluegrass, to Dr. Chiang's lectures on how to become a 'spider mathematician,' to Dr. Collier's discussions on math pickup lines (to name a few), the wide range of personalities in the UMW Mathematics Department made learning mathematics both fun and memorable."



Marianne Dubinsky, '12
Senior Consultant, Booz Allen Hamilton

"The professors in the UMW Mathematics Department make learning interesting and enjoyable. They have high standards for what they consider to be quality work, but they are eager to help you reach these standards and succeed."

Recent Student Presentations

Peter Slattery, *The Wave Equation in One Dimension*, presented at the Shenandoah Undergraduate Mathematics and Statistics Conference at James Madison University, fall 2012

Marianne Dubinsky, *Revisiting the Basel Problem*, and **Kathryn Dillinger** and **Rebecca Presor**, *Black-Scholes Option Pricing Model: Analysis, Approximations, and Applications*, presented at the Joint Mathematics Meetings in Boston, MA, spring 2012

Ryan Vaughn, *On the Contractibility of Finite coH-Spaces*, and **Kelly Scott**, *Anti-Blocking Sets*, at the MD-DC-VA Section Meeting of the Mathematical Association of America at Christopher Newport University, fall 2011

Catherine O'Doherty, *Applications of the Laplace Transform*, MathFest, Lexington, KY, summer 2011

Recent Faculty Presentations

Yuan-Jen Chiang, *Developments of Harmonic Maps into Biharmonic Maps*, presented at the 2nd Pacific Rim Mathematical Association Congress, Shanghai, China, summer 2013

Keith Mellinger, *Minimal Kakeya Sets*, presented at the 24th British Combinatorial Conference, London, England, summer 2013

Suzanne Sumner, *Intensive Experiences for Undergraduate Mathematics*, presented at the Joint Mathematics Meetings, San Diego, CA, spring 2013

Julius Esunge, *Stochastic Control Methods for Insurance*, Summer School and Conference on Financial and Actuarial Mathematics, University of Buea, Buea, Cameroon, spring 2013

Jangwoon "Leo" Lee, *Distributed Optimal Control Problems for SPDE by the $h \times p$ Version of the SGFEM*, Ajou University, Seoul, Korea, spring 2013

