

# MATHEMATICS

## Degree: B.S., Mathematics

Department of Mathematics (<https://cas.umw.edu/math/>)

The interests and expertise of the mathematics faculty cover a broad range of mathematical areas, including algebra, analysis, topology, discrete mathematics, number theory, statistics, and applied mathematics. With this spectrum of faculty knowledge, the student is afforded an opportunity to learn the contemporary view of mathematics. Inside the classroom, student comprehension is the main concern of the faculty. Outside the classroom, the faculty offers opportunities for independent study, undergraduate research, and internship supervision.

Courses in mathematics vary from the theoretical to the applied. Thus, a Bachelor of Science degree in Mathematics can be a foundation for a career in industry, government, teaching, or the pursuit of a higher degree in graduate school. The department faculty encourages double majors, giving students entrance to a wide variety of fields upon graduation. Majors in other disciplines can be enhanced with one of our minors in mathematics, applied mathematics, actuarial science, or applied statistics.

The University of Mary Washington hosts a chapter of Pi Mu Epsilon, a national honorary mathematics society, and a chapter of the Mathematical Association of America. The Oscar Schultz Award in Mathematics represents the department's top academic honor and is given annually to a junior or senior in the department. Four additional scholarships are available. The recipients of the Meredith C. Loughran '94 Scholarship are selected based on their meritorious academic record, citizenship and leadership in public service. The Merrilyn Sawyer Dodson/ class of 1968 Scholarship and the Mary Farley Talley '66 Scholarship each recognize the scholastic achievements of mathematics majors, while the Louise W. Robertson, M.D. '56 Scholarship is awarded to a student majoring in mathematics or a health field.

Qualified mathematics majors having at least a 3.5 GPA in mathematics courses and an overall GPA of at least 3.0 may graduate with Honors in Mathematics by completing a directed study or undergraduate research which culminates in an approved Honors thesis.

Majors are encouraged to fulfill the general education experiential learning requirement by completing URES 197 Undergraduate Research, MATH 491B Directed Study, MATH 492A Directed Study, or MATH 499 Internship. Alternatively, majors may meet this requirement by participating in an approved supervised on-campus or off-campus experiential learning activity developed in consultation with the department (such as the UMW Summer Science Institute or a similar program at another college or university). To complete the experiential learning requirement through a summer research experience, contact the department chair for more details.

## Major Requirements

Code	Title	Credits
MATH 122	Calculus II	4
MATH 224A	Multivariable Calculus	4
MATH 300	Linear Algebra	3
MATH 330	Foundations of Advanced Mathematics	3
MATH 431	Abstract Algebra	3
MATH 471	Real Analysis	3

MATH 432	Abstract Algebra	3
or MATH 472	Real Analysis	
Select an additional 12 credits from MATH or STAT courses at the 300-/400-level with at least three credits from 400-level MATH or STAT courses		12
Select 3 additional credits from MATH or STAT courses numbered 207 or above; computer science (CPSC) courses numbered 220 or above; physics (PHYS) courses numbered 105 or above <sup>1</sup>		3
<b>Total Credits</b>		<b>38</b>

<sup>1</sup> except CPSC 284 Applied Discrete Mathematics and CPSC 302 Computer Ethics; except PHYS 108 General Physics

Mathematics majors must meet the department's computer programming requirement by taking one of the following courses:

Code	Title	Credits
MATH 351A	Numerical Analysis I	3
MATH 421	Applied Partial Differential Equations	3
CPSC 110	Introduction to Computer Science	3
CPSC 219	Foundations for Data Science	3
CPSC 220	Computer Programming and Problem Solving	4

Courses used to satisfy the programming requirement may also be used elsewhere in the major.

At most six (6) credits of directed study (MATH 491B Directed Study /MATH 492A Directed Study or STAT 491 Directed Study/STAT 492 Directed Study) will count for the major.

No internship (MATH 499 Internship or STAT 499 Internship) credits will count for the major.

## General Education Requirements

The general education requirements for Bachelor of Arts/Bachelor of Science degrees (<https://catalog.umw.edu/undergraduate/general-education/requirements-bachelor-arts-bachelor-science-degrees/>) apply to all students who are seeking to earn an undergraduate B.A., B.S. or B.S.Ed. degree.

Students seeking a Bachelor of Liberal Studies degree have a separate set of BLS general education requirements (<https://catalog.umw.edu/undergraduate/general-education/requirements-bachelor-liberal-studies-degrees/>).

## Electives

Elective courses are those that are not needed to fulfill a general education requirement or major program requirement but are chosen by the student to complete the 120 credits required for graduation with a B.A./B.S./B.S.Ed. degree or the BLS degree. These courses may be taken graded or pass/fail (or S/U in the case of physical education and 100-level dance). No student in a regular B.A./B.S./B.S.Ed. program may count more than 60 credits in a single discipline toward the 120 credits required for graduation.

**Total Credits Required for the Degree:** 120 credits

## Mathematics Department

Julius N. Esunge, Chair  
Randall D. Helmstutler, Career Advisor for Pure Mathematics

Jangwoon Lee, Career Advisor for Applied Mathematics  
Debra L. Hydorn, Career Advisor for Statistics

## **Faculty**

### **Professors**

Julius N. Esunge  
Debra L. Hydorn  
Janusz Konieczny  
Jangwoon Lee  
J. Larry Lehman  
Keith E. Mellinger  
Suzanne Sumner

### **Associate Professors**

Melody B. Denhere  
Randall D. Helmstutler

### **Senior Lecturers**

Jennifer M. Magee  
Kelly W. Perkins