APPLIED MATHEMATICS AND
STATISTICS, BACHELOR OF
SCIENCE

Departmental majors can earn either the B.A. or the B.S. degree by meeting the general university requirements and the general requirements of the School of Engineering (see Requirements for a Bachelor’s Degree [https://e-catalogue.jhu.edu/engineering/full-time-residential-programs/undergraduate-policies/academic-policies/requirements-bachelors-degree/], including Writing Requirement, in this catalogue), and the departmental requirements.

Honors
The Department of Applied Mathematics and Statistics awards departmental honors based on a number of factors, including performance in coursework and research experience. To be eligible for departmental honors a student must:

1. achieve a 3.75 GPA in AMS Department courses (EN.553) used toward major requirements 1-12; and
2. earn a C- or better in an additional one semester course in AMS (EN.553) at the 300-level or higher, or undertake significant research activity (equivalent to a 3-credit course) in a subject related to applied mathematics. Such research can be conducted as an official research course, or the student may request that the research supervisor provide an assessment to AMS academic staff toward the middle of the semester of intended degree conferral.

Program Requirements
All courses used to meet the following departmental requirements must be taken for a letter grade and passed with a grade of C- or higher:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I (Physical Sciences &amp; Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
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<tr>
<td>or AS.110.113</td>
<td>Honors Single Variable Calculus</td>
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<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
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</tr>
<tr>
<td>AS.110.201</td>
<td>Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.212</td>
<td>Honors Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>or EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td></td>
</tr>
<tr>
<td>AS.110.302</td>
<td>Differential Equations and Applications</td>
<td>3-4</td>
</tr>
<tr>
<td>or EN.553.391</td>
<td>Dynamical Systems</td>
<td></td>
</tr>
<tr>
<td>or EN.540.468</td>
<td>Introduction to Nonlinear Dynamics and Chaos</td>
<td></td>
</tr>
<tr>
<td>AS.250.205</td>
<td>Introduction to Computing</td>
<td></td>
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</table>

Select one of the following:

1. Calculus I, II, and III
2. Linear Algebra
3. Differential Equations

Select one of the following:

1. Biological Models and Simulations
2. and Nonlinear Dynamics of Biological Systems
3. Intermediate Programming
4. Introduction to Computing
5. Numerical Linear Algebra
6. Discrete Mathematics
7. Probability and Statistics
8. Optimization
9. Area of Focus

Select two courses from one of the following areas of focus. They must be distinct from those courses used to satisfy requirements 1-8.

Program Requirements
Courses coded Quantitative Studies totaling 40 credits of which at least 18 credits must be in courses numbered 300 or higher. (Courses used to meet the requirements above may be counted toward this total.)


2. or JHU credit for AP Computer Science A.

3. Students are strongly encouraged to fulfill this element of the requirement by taking EN.500.113 Gateway Computing: Python, and to do this in their first semester at Johns Hopkins University.

The requirements above together constitute a minimal core program, allowing maximum flexibility in planning degree programs. Students often are able to complete a second major during a four-year program or to proceed to the department's combined bachelor's/master's degree program.

It is highly recommended that students develop a coherent program of study (see below) or at least take additional departmental courses, in order to establish a broad foundation for a career as an applied mathematician. Of particular importance are additional courses in optimization (EN.553.362 (http://e-catalog.jhu.edu/search/?P=EN.553.362) Introduction to Optimization II), stochastic processes (EN.553.426 (http://e-catalog.jhu.edu/search/?P=EN.553.426) Introduction to Stochastic Processes), statistics (EN.553.413 (http://e-catalog.jhu.edu/search/?P=EN.553.413) Applied Statistics and Data Analysis), dynamical systems (EN.553.391 (http://e-catalog.jhu.edu/search/?P=EN.553.391) Dynamical Systems), mathematical modeling and consulting (EN.553.400 (http://e-catalog.jhu.edu/search/?P=EN.553.400) Mathematical Modeling and Consulting), scientific computing (EN.553.385 (http://e-catalog.jhu.edu/search/?P=EN.553.385) Scientific Computing: Linear Algebra, EN.553.386 (http://e-catalog.jhu.edu/search/?P=EN.553.386) Scientific Computing: Differential Equations), and investment science (EN.553.442 (http://e-catalog.jhu.edu/search/?P=EN.553.442) Investment Science).