

# APPLIED MATHEMATICS AND STATISTICS, MINOR

The minor in applied mathematics and statistics should be attractive to students majoring in a variety of disciplines, in both the School of Engineering and the School of Arts and Sciences. The minor provides formal recognition of the depth and strength of a student's quantitative knowledge beyond the minimal requirements of their major.

## Program Requirements

The requirements of the minor in applied mathematics and statistics are the following:

- Completion of an approved program of study containing at least 18 credits in courses coded Quantitative Studies (Q). The first two courses in calculus (AS.110.106 Calculus I (Biology and Social Sciences) and AS.110.107 Calculus II (For Biological and Social Science)), or (AS.110.108 Calculus I (Physical Sciences & Engineering) and AS.110.109 Calculus II (For Physical Sciences and Engineering)), or AS.110.113 Honors Single Variable Calculus, or their equivalents) may not be used to fulfill this requirement.
- Among the courses comprising the 18 Q credits, there must be
  - at least four courses in the Department of Applied Mathematics and Statistics (each of these must be a 3- or 4-credit course); and
  - at least three 3- or 4-credit courses coded Q at the 300-level or above, of which at least two must be in the Department of Applied Mathematics and Statistics<sup>\*\*</sup>; and
  - an approved course based on a high-level computer language chosen from the list below or one of the courses approved to meet the AMS Master's/PhD Computing Requirement (<https://engineering.jhu.edu/ams/computing-course-list/>).

Code	Title	Credits
Select one of the following:		3-4
AS.110.445	Mathematical and Computational Foundations of Data Science	
EN.553.385	Introduction to Computational Mathematics	
EN.553.400	Mathematical Modeling and Consulting	
EN.553.413	Applied Statistics and Data Analysis	
EN.553.432	Bayesian Statistics	
EN.553.433	Monte Carlo Methods	
EN.553.436	Introduction to Data Science	
EN.553.450	Computational Molecular Medicine	
EN.553.463	Network Models in Operations Research	
EN.553.467	Deep Learning in Discrete Optimization	
EN.553.481	Numerical Analysis	
EN.553.488	Computing for Applied Mathematics	
EN.553.493	Mathematical Image Analysis	
EN.553.494	Applied and Computational Multilinear Algebra	
EN.601.433	Intro Algorithms	
EN.601.475	Machine Learning	
EN.601.482	Machine Learning: Deep Learning	

- All courses used to meet AMS departmental minor requirements must be taken for a letter grade and passed with a grade of C- or higher.
- Students may not count these 3 courses, EN.553.311 Intermediate Probability and Statistics, EN.553.420 Probability, and EN.553.430 Mathematical Statistics, toward minor requirements.<sup>\*\*\*</sup>
- A student wishing to complete a minor in applied mathematics and statistics may obtain more information from the Applied Mathematics and Statistics website (<http://engineering.jhu.edu/ams/>).

- <sup>\*\*</sup> A student may count the combination of (AS.110.201 Linear Algebra or AS.110.212 Honors Linear Algebra) AND AS.110.302 Differential Equations and Applications in place of ONE of the required 300-level courses within the AMS Department
- <sup>\*\*\*</sup> January 26, 2024: CORRECTION: This statement should read, "Students may not count **all** 3 courses, EN.553.311 Intermediate Probability and Statistics, EN.553.420 Probability, and EN.553.430 Mathematical Statistics, toward minor requirements."