

# MATHEMATICS (B.S.)

Required course work includes the university requirements (see regulation J-3 (<https://catalog.uidaho.edu/general-requirements-academic-procedures/j-general-requirements-baccalaureate-degrees/>)) and:

Code	Title	Hours
MATH 170	Calculus I	4
MATH 175	Calculus II	4
MATH 275	Calculus III	3
MATH 330	Linear Algebra	3
<b>Options</b>		
Select one of the following options:		36-54
General (p. 1)		
Applied - Computation (p. 1)		
Applied - Quantitative Modeling (p. 1)		
Applied - Mathematical Biology (p. 2)		
Total Hours		50-68

## A. General Option

This is the traditional curriculum in Mathematics. It is more mathematically rigorous than the other options. It is especially good for secondary education majors and students intending to go to graduate school in Mathematics or other sciences.

Code	Title	Hours
<b>Math Courses</b>		
MATH 176	Discrete Mathematics	3
MATH 215	Proof via Number Theory	3
MATH 310	Ordinary Differential Equations	3
MATH 461	Abstract Algebra I	3
MATH 471	Introduction to Analysis I	3
Select one of the following:		3
MATH 430	Advanced Linear Algebra	
MATH 452	Mathematical Statistics	
MATH 453	Stochastic Models	
MATH 462	Abstract Algebra II	
MATH 472	Introduction to Analysis II	
MATH 476	Combinatorics	
Select four math courses above 310		12
<b>Supporting Courses</b>		
STAT 301	Probability and Statistics	3
CS 112	Computational Thinking and Problem Solving	3
or CS 120	Computer Science I	
Total Hours		36

Courses to total 120 credits for this degree

## B. Applied - Computation Option

The emphasis is on the mathematics related to computer science and technology. With a major or minor in computer sciences this is a good preparation for work in the computer industry.

Code	Title	Hours
<b>Math Courses</b>		
MATH 176	Discrete Mathematics	3
MATH 215	Proof via Number Theory	3
MATH 310	Ordinary Differential Equations	3
MATH 385	Theory of Computation	3
MATH 395	Analysis of Algorithms	3
MATH 415	Cryptography	3
MATH 428	Numerical Methods	3
or MATH 432	Numerical Linear Algebra	
MATH 452	Mathematical Statistics	3
or STAT 301	Probability and Statistics	
Select two additional courses from the following:		6
MATH 376	Discrete Mathematics II	
MATH 426	Discrete Optimization	
MATH 430	Advanced Linear Algebra	
MATH 432	Numerical Linear Algebra	
MATH 451	Probability Theory	
MATH 452	Mathematical Statistics	
MATH 461	Abstract Algebra I	
MATH 462	Abstract Algebra II	
MATH 476	Combinatorics	
<b>Supporting Courses</b>		
CS 120	Computer Science I	4
CS 121	Computer Science II	3
Total Hours		37

Courses to total 120 credits for this degree

## C. Applied – Quantitative Modeling Option

The emphasis is on the mathematics used to model phenomena in engineering, science, business and economics. With a second major in one of these disciplines, this provides ideal preparation for graduate school.

Code	Title	Hours
<b>Math Courses</b>		
MATH 176	Discrete Mathematics	3
MATH 215	Proof via Number Theory	3
MATH 310	Ordinary Differential Equations	3
MATH 428	Numerical Methods	3
MATH 451	Probability Theory	3
MATH 437	Mathematical Biology	3
or MATH 438	Mathematical Modeling	
STAT 301	Probability and Statistics	3
or MATH 452	Mathematical Statistics	
Select three additional courses from the following:		9
MATH 371	Mathematical Physics	
MATH 376	Discrete Mathematics II	
MATH 415	Cryptography	
MATH 420	Complex Variables	
MATH 426	Discrete Optimization	
MATH 432	Numerical Linear Algebra	

MATH 438	Mathematical Modeling
MATH 452	Mathematical Statistics
MATH 453	Stochastic Models
MATH 471	Introduction to Analysis I
MATH 472	Introduction to Analysis II
MATH 476	Combinatorics
MATH 480	Partial Differential Equations

**Quantitative Electives**

Select 6 credits of advisor-approved quantitative electives in Science, Engineering, Business, Economics, etc. 6

**Supporting course**

CS 120	Computer Science I	4
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Total Hours 40

**Courses to total 120 credits for this degree**

## D. Applied - Mathematical Biology Option

This option offers training across Mathematics and Biology and provides the background to pursue a career in technical industries and to obtain graduate degrees in Biomathematics, Biostatistics, and Bioinformatics.

Code	Title	Hours
<b>Math and Statistics Courses</b>		
MATH 437	Mathematical Biology	3
MATH 451	Probability Theory	3
MATH 452	Mathematical Statistics	3
STAT 251	Statistical Methods	3
or STAT 301	Probability and Statistics	
Select two courses from the following:		6
MATH 310	Ordinary Differential Equations	
MATH 453	Stochastic Models	
STAT 431	Statistical Analysis	
Select two courses from the following:		6
MATH 428	Numerical Methods	
MATH 430	Advanced Linear Algebra	
MATH 480	Partial Differential Equations	
<b>Biology Courses</b>		
BIOL 114	Organisms and Environments	4
BIOL 115	Cells and the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 310	Genetics	3
BIOL 456	Computer Skills for Biologists	3
Select 12 Credits Upper Division Biology courses		12
<b>Supporting Courses</b>		
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
Total Hours		54

**Courses to total 120 credits for this degree**

1. Students should be able to think critically, apply problem solving strategies, and be able to construct and defend mathematical proofs.
2. Students should be able to use mathematical structures and the language of mathematics to formulate models for real-world problems.

3. Students should be able to effectively communicate their work and should gain experience working in collaborative settings.