APPLIED MATHEMATICS MAJOR: SOLID MECHANICS AND VIBRATIONS OPTION (B.S.)

https://ceps.unh.edu/mathematics-statistics/program/bs/appliedmathematics-solid-mechanics-vibrations-option

Description

Beginning in the 2022/23 academic year, the Applied Mathematics Major: Solid Mechanics and Vibrations option will no longer be accepting new students. Current students will continue to have access to the same highquality education and resources until they graduate.

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

Requirements

Degree Requirements

Minimum Credit Requirement: 128 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: No

All Major, Option and Elective Requirements as indicated. *Major GPA requirements as indicated.

Major Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Code	Title	Credits	
MATH 425	Calculus I	4	
MATH 426	Calculus II	4	
MATH 445	Mathematics and Applications with MATLAB	4	
or IAM 550	Introduction to Engineering Computing		
MATH 527	Differential Equations with Linear Algebra ¹	4	
MATH 528	Multidimensional Calculus ¹	4	
MATH 531	Mathematical Proof	4	
MATH 644	Statistics for Engineers and Scientists ²	4	
MATH 645	Linear Algebra for Applications ¹	4	
MATH 753	Introduction to Numerical Methods I	4	
PHYS 407	General Physics I	4	
Capstone: Select one of the following			
MATH 797	Senior Seminar	4	
MATH 798	Senior Project	4	

MATH 799	Senior Thesis	2 or
		4
Total Credits		50-52

- ¹ The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 645 requirements. MATH 525 may be used to replace the MATH 645 requirement.
- ² Applied Mathematics: Economics Option students must take MATH 539 Introduction to Statistical Analysis.

Solid Mechanics and Vibrations Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
ME 525	Statics	3
or CEE 500	Statics for Civil Engineers	
ME 526	Mechanics of Materials	3
or CEE 501	Strength of Materials	
ME 561	Introduction to Materials Science	4
ME 627	Dynamics	3
Select TWO from the following:		8
ME 727	Advanced Mechanics of Solids	
ME #730	Mechanical Behavior of Materials	
700-level elective, selec	cted in consultation with the academic advisor	
Total Credits		33

Degree Plan

First Year Fall Credits **MATH 425** Calculus I 4 4 **PHYS 407 General Physics I Discovery Course** 4 4 **Inquiry Course MATH 400** Freshman Seminar 1 17 Credits Spring **MATH 426** Calculus II 4 **MATH 445** Mathematics and Applications with 4 or IAM 550 MATLAB or Introduction to Engineering Computing **PHYS 408 General Physics II** 4 **ENGL 401** First-Year Writing 4 Credits 16 Second Year Fall **MATH 528** Multidimensional Calculus 4 **MATH 644** Statistics for Engineers and Scientists 4 ME 525 4 Statics **Discovery Course** 4 Credits 16 Spring **MATH 527** Differential Equations with Linear Algebra 4 **MATH 531** Mathematical Proof 4

Credits1Third Year FallImage: Straig	MATH 645	Linear Algebra for Applications	4
Third Year Fall MATH 647 Complex Analysis for Applications MATH 745 Foundations of Applied Mathematics I ME 627 Dynamics Discovery Course Discovery Course Discovery Course Toredits ME 561 Introduction to Materials Science Elective Course Discovery Course Writing Intensive Course Toredits Fall Toredits MATH 753 Introduction to Numerical Methods I Elective Course Toredits Discovery Course Toredits MATH 753 Introduction to Numerical Methods I Elective Course Toredits MATH 753 Introduction to Numerical Methods I Elective Course Toredits MATH 797 Senior Seminar or MATH 798 or Senior Project or MATH 799 or Senior Thesis Elective Course Elective Course Elective Course Elective Course Elective Course Elective Course Elective Course Elective Course	ME 526	Mechanics of Materials	3
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	Elective Course		4
Total Credits 13		Credits	16
		Total Credits	131

Student Learning Outcomes

- Students recognize common mathematical notations and operations used in mathematics, science and engineering.
- Students can recognize and classify a variety of mathematical models including differential equations, linear and nonlinear systems of algebraic equations, and common probability distributions.
- Students have developed a working knowledge (including notation, terminology, foundational principles of the discipline, and standard mathematical models within the discipline) in at least one discipline outside of mathematics.
- Students are able to extract useful knowledge, both quantitative and qualitative, from mathematical models and can apply that knowledge to the relevant discipline.