APPLIED MATHEMATICS MAJOR: FLUID DYNAMICS OPTION (B.S.)

https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-fluid-dynamics-option

Description

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.

Graduation 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.

Requirements

Major Requirements

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 MATH 525 Linearity I *may be substituted for* MATH 645. MATH 525 & MATH 526, Linearity, *may be substituted for* MATH 527, MATH 528, and MATH 645.

2 Applied Mathematics: Economics Option students take MATH 539 Introduction to Statistical Analysis.

Fluid Dynamics 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 503	Thermodynamics	3
ME 525	Statics	3
or CEE 500	Statics for Civil Engineers	
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
Select TWO of the following courses		**6-8**
ME 707	Analytical Fluid Dynamics	
ME 709	Computational Fluid Dynamics	
ME 712	Waves in Fluids	
One approved 700-level elective, selected in consultation with the academic advisor		
Total Credits		**30-32**

Degree Plan

Course	Title	Credits
First Year		
Fall		
MATH 425	Calculus I	4
Inquiry Course		4
Discovery Course		4
Discovery Course		4
MATH 400	Freshman Seminar	1
	Credits	**17**
Spring		
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
PHYS 407	General Physics I	4
ENGL 401	First-Year Writing	4
	Credits	**16**
Second Year		
Fall		
MATH 528	Multidimensional Calculus	4
MATH 539	Introduction to Statistical Analysis	4
PHYS 408	General Physics II	4
ME 525	Statics	4
	Credits	**16**
Spring		
MATH 527	Differential Equations with Linear Algebra	4
MATH 531	Mathematical Proof	4
MATH 645	Linear Algebra for Applications	4
ME 503	Thermodynamics	3
	Credits	**15**
Third Year		
Fall		
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
	Credits	**14**
Spring		
Discovery Course		4
Discovery Course		4
Discovery Course		4
Discovery Course		4
	Credits	**16**
Fourth Year		
Fall		
MATH 753	Introduction to Numerical Methods I	4

ME 707	Analytical Fluid Dynamics	4
Elective Course		4
Elective Course		4
Elective Course		2
	Credits	**18**
Spring		
Capstone:		4
MATH 797 or MATH 798 or MATH 799	Senior Seminar or Senior Project or Senior Thesis	
700-level ME Elective Course		4
Elective Course		4
Elective Course		4
	Credits	**16**
	Total Credits	**128**

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.