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

https://ceps.unh.edu/mathematics-statistics/program/be/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  4
MATH 527  Differential Equations with Linear Algebra  4
MATH 528  Multidimensional Calculus  4
MATH 531  Mathematical Proof  4
MATH 645  Linear Algebra for Applications  4
MATH 753  Introduction to Numerical Methods I  4
PHYS 407  General Physics I  4
PHYS 408  General Physics II  4
ME 503  Thermodynamics  3
ME 525  Statics  3
ME 539  Introduction to Statistical Analysis  4
ME 545  Linear Algebra for Applications  4
ME 608  Fluid Dynamics  3
ME 627  Dynamics  3
ME 647  Complex Analysis for Applications  4
ME 706  Computational Fluid Dynamics  4
ME 712  Waves in Fluids  4

One approved 700-level elective, selected in consultation with the academic advisor.

Total Credits: 30-32

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  3
ME 608  Fluid Dynamics  3
ME 627  Dynamics  3

Select TWO of the following courses:  6-8

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

Credits:  16

Fourth Year  Fall
MATH 753  Introduction to Numerical Methods I  4
Applied Mathematics Major: Fluid Dynamics Option (B.S.)

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**Spring**

Capstone: 4

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Senior Seminar or Senior Project or Senior Thesis

700-level ME Elective Course 4

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**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.