

APPLIED MATHEMATICS (PH.D.)

<https://ceps.unh.edu/integrated-applied-mathematics>

Description

The IAM Ph.D. is a unique Applied Mathematics program designed to facilitate interdisciplinary research among graduate students and participating faculty. This interdisciplinary program gives students the opportunity to explore the frontier where the sciences meet cutting-edge mathematical analysis and high performance computing. Science topics include Fluid Dynamics, Plasma Physics, Space Physics, Geoscience, and Dynamical Systems.

Admission Requirement

Applicants to the Integrated Applied Mathematics Ph.D. program are expected to have a bachelor's degree in mathematics or an appropriate science or engineering field.

Applying

Please visit the Graduate School website (<http://gradschool.unh.edu/apply.php>) for detailed instructions about applying to the program.

Requirements

Required Courses

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|----------|--|---|
| PHYS 931 | Mathematical Physics | 3 |
| IAM 830 | Graduate Ordinary Differential Equations | 3 |
| IAM 851 | Introduction to High-Performance Computing | 3 |
| IAM 932 | Graduate Partial Differential Equations | 3 |
| IAM 933 | Applied Functional Analysis | 3 |
| IAM 961 | Numerical Analysis I: Numerical Linear Algebra | 3 |
| IAM 962 | Numerical Partial Differential Equations | 3 |

Select a 2-course specialization sequence, for example, one of the following:

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|------------------------|--|--|
| MATH 847 & IAM 950 | Introduction to Nonlinear Dynamics and Chaos and Spatiotemporal and Turbulent Dynamics | |
| ME 807 & ME 909 | Analytical Fluid Dynamics and Viscous Flow | |
| PHYS 953 & PHYS 951 | Magnetohydrodynamics of the Heliosphere and Plasma Physics | |

Select a minimum of three technical electives: 9

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| IAM 940 | Asymptotic and Perturbation Methods | |
| ME 812 | Waves in Fluids | |

Additional elective as approved by your adviser and program

Total Credits 36-37

- Oral or written exam in specialization area

Students must select a research adviser and have a selected research topic.

Dissertation

Students must present a seminar presentation of thesis proposal to dissertation committee.

Upon completion of research, students must present a seminar on the research.

Students must submit a dissertation that includes original research in integrated applied mathematics.

Candidacy Requirements

Students must pass a three part Ph.D. qualifying exam.

- Comprehensive exam in mathematical methods
- Comprehensive exam in numerical analysis and high-performance computing