MATHEMATICS (PHD)

UConn's Ph.D. in Mathematics offers a rigorous path of advanced coursework and original research, with the flexibility to concentrate in pure mathematics, applied mathematics, or actuarial science. Students build a strong foundation through core courses and prelims, preparing them to become members of the mathematical research community. They collaborate closely with faculty mentors and ultimately craft a dissertation that advances mathematical knowledge.

Location

- Storrs Campus

Modality

- In Person

Requirements

In addition to the Graduate School requirements (including the foreign language or related area requirement), the Ph.D. requires that the student pass three preliminary examinations at the Ph.D. level from a list of examination topics approved by the department. A student typically takes the associated preliminary course before the examination, but this is not required. In addition, the student must pass two core courses with a grade of "B" or better. The chosen core courses must be different from the graduate courses associated with the three preliminary examinations passed by the student. The list of core courses depends on the student's research focus.

Pure Math Focus

Course	Title	Credits
MATH 5111	Measure and Integration	3
MATH 5120	Complex Function Theory I	3
MATH 5160	Probability Theory and Stochastic Processes I	3
MATH 5210	Abstract Algebra I	3
MATH 5211	Abstract Algebra II	3
MATH 5260	Mathematical Logic I	3
MATH 5310	Introduction to Geometry and Topology I	3
MATH 5360	Differential Geometry	3
Total Credits		**24**

Applied Math Focus

Course	Title	Credits
MATH 5111	Measure and Integration	3
MATH 5120	Complex Function Theory I	3
MATH 5160	Probability Theory and Stochastic Processes I	3
MATH 5310	Introduction to Geometry and Topology I	3
MATH 5410	Introduction to Applied Mathematics I	3
MATH 5440	Partial Differential Equations	3
MATH 5510	Numerical Analysis and Approximation Theory I	3
MATH 5520	Finite Element Solution Methods I	3
Total Credits		**24**

Actuarial Science Focus

Course	Title	Credits
MATH 5111	Measure and Integration	3
MATH 5120	Complex Function Theory I	3
MATH 5161	Probability Theory and Stochastic Processes II	3
MATH 5210	Abstract Algebra I	3
MATH 5211	Abstract Algebra II	3
MATH 5310	Introduction to Geometry and Topology I	3
MATH 5360	Differential Geometry	3
MATH 5410	Introduction to Applied Mathematics I	3
MATH 5440	Partial Differential Equations	3
MATH 5510	Numerical Analysis and Approximation Theory I	3
MATH 5520	Finite Element Solution Methods I	3
Total Credits		**33**

Students do not need to satisfy the Graduate School foreign language/ related area requirement.

Learning Objectives

1. Knowledge: Demonstrate appropriate breadth and depth of disciplinary knowledge and comprehension of the major topics, theories, and issues of the discipline, including demonstration of specialized knowledge of a sub-field sufficient to carry out substantive independent research or creative pursuits.
2. Research/applied skills: Use disciplinary methods and techniques ethically and professionally to apply knowledge, critically analyze, and, as appropriate to the degree, create new knowledge or achieve advanced creative accomplishments.
3. Communication: Communicate proficiently and effectively to a specialist or non-specialist audience, verbally and in writing, a structured, coherent academic presentation, representation, or argument that cogently summarizes their research or creative pursuit, relevant literature, and its significance at the level appropriate to discipline.