APPLIED AND COMPUTATIONAL MATHEMATICS DEGREE REQUIREMENTS

For students entering after Autumn 2026

Master of Science (Applied and Computational Mathematics) (Campus)

Below are the requirements to complete your master's degree. To stay on track toward graduation, we recommend you submit a degree plan via email for review by the graduate program advisor (GPA) and/or graduate program coordinator (GPC). Also see our website and the graduate school's requirements.

PROGRAM STRUCTURE:

Students complete two sequences from the options below, plus three approved electives, for a total of 9 courses (at least 38 credits).

COURSE REQUIREMENTS BY SEQUENCE:

Sequence	Course Requirements
Sequence A Applied Analysis & Methods	Choose one track: • AMATH 501 → 502 → 503 (Vector Calculus & Complex Variables; Introduction to Dynamical Systems & Chaos; Methods for Partial Differential Equations) • AMATH 567 → 568 → 569 (Applied Complex Analysis; Advanced Methods for ODEs; Advanced Methods for PDEs)
Sequence B Numerical Analysis	• AMATH 584 → 585 → 586 (Numerical Linear Algebra; Numerical Analysis; Numerical Methods for PDEs)

Sequence C Computational Methods for Data & AI	• AMATH 581 (Scientific Computing) • One of: – AMATH 582 (Computational Methods for Data Analysis) – AMATH 515 (Optimization: Fundamentals and Applications) • One of: – AMATH 583 (High-Performance Scientific Computing) – AMATH 563 (Inferring Structure of Complex Systems) – CFRM 521 (Machine Learning for Finance)
Sequence D Probability & Stochastic Processes	• AMATH 561 → 562 → 563 (Probability & Random Processes; Advanced Stochastic Processes; Inferring Structure of Complex Systems)
Sequence E Mathematical Biology	• AMATH 522 and AMATH 523 • One of: – AMATH 536 (Mathematical Modeling of Cancer) – AMATH 575 (Dynamical Systems)

Note: *AMATH 575 requires AMATH 502 as a prerequisite. Students may satisfy this by completing Sequence A (which includes 502), by taking AMATH 502 as one of their electives, or by obtaining instructor permission. AMATH 536 and AMATH 575 are offered in alternating years.*

CROSS-SEQUENCE CONSTRAINT:

If a student selects both Sequence C and Sequence D, AMATH 563 counts toward Sequence D (Probability & Stochastic Processes). The student must complete Sequence C using either AMATH 583 or CFRM 521 as their third course.

ELECTIVES (3 COURSES):

- All electives must be at the graduate level (i.e. 5XX or above), mathematically relevant, numerically graded, at least 3 credits, and approved by the GPA or GPC of AMATH.*

*One of the numerically graded electives may be substituted by 4 credits of AMATH 500 or 600 (i.e. you take 8 graded courses and 4 credits total of 500 or 600). These are usually taken over 2 quarters.

ADDITIONAL REQUIREMENTS:

- Successfully complete 9 numerically graded graduate level courses, including the 6 courses of your two chosen sequences.
- Take at least 24 credits of AMATH program courses.
- Take at least 38 credits overall. This is a minimum, thus it is common to complete more than 38 credits.
- Earn an overall 3.2 GPA (departmental requirement; graduate school requires 3.0).
- Earn at least a 2.7 GPA in each individual course. Course grades below 2.7 GPA do not count towards your degree.
- Regardless of class selection, you may not opt to change programs.
- Students pursuing the thesis option must meet the additional requirements outlined here. (only available in campus programs)
- Maintain registration through the end of the quarter in which the degree is conferred.
- You must file a MS degree request with the Graduate School during the quarter in which you plan to graduate. The request must be submitted by the quarterly deadline.
- You must complete the degree within 6 years.
- You are responsible for knowing, understanding, reading and fulfilling all degree requirements.

Students who wish to be excused from any of these requirements may petition the department by emailing the GPA and GPC. Requests should include your name, student ID number, your request, and the justification for your request.