

APPLIED MATHEMATICS

Requirement Checklist for MS and Ph.D. Degrees

Last _____ First _____

Advisor _____ Degree Goal _____ Entered _____

E-mail _____ Student ID # _____

COURSE REQUIREMENTS

Applied Mathematics M.S. 42 units

| Core | Qtr Passed |
|------|------------|
| 211 | _____ |
| 212A | _____ |
| 213A | _____ |
| 213B | _____ |
| 214 | _____ |
| 280B | _____ |

Electives

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

First-year electives: AM 129/209, 216, 217, 227, 229, 230, 231, 232, 238, 250, 260, 275, STAT 203

M.S. students may substitute one elective course for an independent study course with their required research project

Applied Mathematics Ph.D. 56 units

| Core | Qtr Passed |
|------|----------------|
| 211 | _____ |
| 212A | _____ |
| 213A | _____ |
| 213B | _____ |
| 214 | _____ |
| 280B | ____/____/____ |

Electives

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

First-year electives: Any 5-unit AM graduate course (200-295)

SciCAM M.S. 40 units

| Foundational | Qtr Passed |
|--------------|------------|
| AM 129/209 | _____ |
| AM 147 | _____ |
| AM 211 | _____ |

** Foundational course units are not counted toward 40 units required for degree.*

Core

| | |
|------|-------|
| 212A | _____ |
| 213A | _____ |
| 213B | _____ |
| 214 | _____ |
| 250 | _____ |

Electives

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Students in the thesis track may substitute 2 electives (10 units) for independent study.

Independent Study/Research Quarters: _____

| Incompletes Pending | | Failed Courses | | Other Courses | |
|---------------------|-------|----------------|-------|---------------|-------|
| Course | Qtr | Course | Qtr | Course | Qtr |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |

Ph.D. TA Requirement:

Course #1 _____ Qtr _____ Course #2 _____ Qtr _____

Coursework Requirements

Applied Mathematics M.S.

All applied mathematics M.S. students must complete the core courses listed below..

AM 211: Foundations of Applied Math
AM 212A: Applied Mathematical Models
AM 213A: Numerical Linear Algebra
AM 213B: Numerical Methods for the Solution of Differential Equations
AM 214: Applied Dynamical Systems
AM 280B: Seminar in Applied Mathematical Modeling

In addition to these 27 credits, Master of Science (M.S.) students must complete three additional 5-credit courses, including a first-year elective (see below), for a total requirement of 42 credits. All elective courses must be approved by the student's faculty adviser. First-year electives are designed to prepare students for their ultimate research emphasis within Applied Mathematics. They must be taken during the first year, and must be selected from the following list: AM 129/209, 216, 217, 227, 229, 230, 231, 232, 238, 250, 260, 275, STAT 203.

Students cannot receive credit for both AM 129 and AM 209.

M.S. students will be allowed to substitute one elective course for an independent study course with their required research project.

Applied Mathematics Ph.D.

All applied math Ph.D. students must complete the following core courses:

AM 211: Foundations of Applied Math
AM 212A: Applied Mathematical Models
AM 213A: Numerical Linear Algebra
AM 213B: Numerical Methods for the Solution of Differential Equations
AM 214: Applied Dynamical Systems
AM 280B: Seminar in Applied Mathematical Modeling (x3)

In addition to these 31 credits, doctor of philosophy (Ph.D.) students must complete five additional 5-credit courses, including a first-year elective (see below), for a total requirement of 56 credits. All elective courses must be approved by the student's faculty adviser.

First-year electives are designed to prepare students for their ultimate research emphasis within applied mathematics. These electives can be selected from any 5-credit graduate AM courses (level 200 and above).

Ph.D. students will be required to serve as teaching assistants for at least two quarters during their graduate study. Certain exceptions may be permitted for those with extensive prior teaching experience or those who are not allowed to be employed due to visa regulations.

Detailed and additional requirements for both programs can be found at:

<https://catalog.ucsc.edu/Current/General-Catalog/Academic-Units/Baskin-School-of-Engineering>

Scientific Computing and Applied Mathematics (SciCAM) M.S. Program:

Students entering the SciCAM program must demonstrate mastery in the foundations of scientific computing and applied mathematics, either by producing evidence through undergraduate transcripts, or by taking some or all of the following foundational courses upon entry to the M.S. program:

AM 129/209: Foundations of Scientific Computing
AM 147: Computational Methods and Applications
AM 211: Foundations of Applied Mathematics

All SciCAM M.S. students are required to take the core courses listed below.

AM 212A: Applied Mathematical Models
AM 213A: Numerical Linear Algebra
AM 213B: Numerical Methods for the Solution of Differential Equations
AM 214: Applied Dynamical Systems
AMS 250: An Introduction to High Performance Computing

Any 5-credit AM graduate course (200 - 295) not already listed as a core course may be counted as electives. Elective courses outside of AM must be approved by the SciCAM graduate director. Note that some upper-division electives are allowed, bearing in mind that no more than a total of 15 credits of upper-division courses may be used to satisfy the degree requirements.

Students in the SciCAM program may pursue a Plan I (thesis capstone) or a Plan II (comprehensive examination capstone) curriculum.

Candidates for a Plan I capstone must, in addition to the 25 units required from core courses, (1) complete one additional 5-unit course from the approved elective list, (2) complete 10 units of supervised research (in the form of AMS 297 or AMS 299 with one of the program faculty), and (3) write a thesis.

Candidates for a Plan II capstone must, in addition to the 25 units required from core courses, (1) complete three additional 5-unit courses from the approved elective list, and (2) successfully pass the SciCAM comprehensive examination. The latter takes place in June at the end of the academic year. Students may only take this exam following completion of the last core course. The exam will take the form of a take-home project covering all core and foundational courses.