

Master of Science in Applied and Computational Mathematics and Statistics

Introduction The Master of Science in Applied and Computational Mathematics and Statistics (MS-ACMS) is intended to recognize masters-level competency in applied and computational mathematics and statistics for students enrolled in a doctoral program at the University. Students in ACMS will satisfy the requirements of the master degree en route to their doctorates, and students in other doctoral programs at the University may obtain the degree by taking ACMS courses and passing the written and oral examinations described below. This is a different degree from the professional Master of Science in Applied and Computational Mathematics and Statistics (MSP-ACMS), which is intended to be a terminal degree.

Master's degree requirements

Course and credit requirements

- 30 credits are required
- 21 credits of graduate-level coursework in ACMS are required. At most 3 of these credits can be earned using Directed Readings or Research & Dissertation credits.
- Up to 9 credits of graduate-level coursework in any department may be counted towards the degree. These courses must have a quantitative content and be approved by the ACMS Director of Graduate Studies (DGS) for credit towards the MS-ACMS degree.
- For a doctoral student outside of ACMS, up to 9 credits of the required 30 credits may also be counted towards the requirements a master's degree and doctoral degree in the student's doctoral department, subject to the approval of the student's doctoral department.
- A doctoral student in ACMS should be advised that he or she is responsible for satisfying all additional course and credit requirements that apply to students in the doctoral program.

Advisor Each student in the master's program is required to have an advisor who is a regular or concurrent faculty member in ACMS. For students in the ACMS doctoral program, the advisor for that program will also be the master's advisor. Doctoral students in other programs must secure an advisor at the time of application. In all cases, the choice of advisor requires the approval of the ACMS DGS.

Written examination Each student must demonstrate a working knowledge of two basic areas approved by the DGS. Some possible areas are the material contained in: (1) ACMS 60690 Numerical Analysis I, (2) ACMS 60850 Applied Probability, (3) ACMS 60650 Basic Partial Differential Equations, (4) ACMS 60801 Statistical Inference. The material in selected Mathematics courses, e.g., MATH 60210 Basic Algebra I, may also be acceptable. A student must apply to the DGS for approval of his or her selection of examination subjects at least one month prior to the

examination date. Approval of a course will depend both on the subject matter and the amount of written work required of the students in the course. Obtaining a pass in a course's material may be accomplished by passing the given course with at least a B+ or by passing a separate written examination that covers the syllabus of the course. These examinations are administered at the end of the fall and spring semesters.

Oral examination The oral examination, taken after the written examination is completed, focuses on an "advanced" topic. This material will be taken from advanced research texts or articles. The student should begin working on the advanced topic, with an advisor, well in advance of the examination. The material to be counted as the advanced topic must have the approval of the student's advisor and the DGS. For students in the ACMS doctoral program, the oral candidacy examination serves as the oral examination for the master's degree.

The board of examiners for the oral candidacy examination consists of three examiners including the advisor. The other members of the examining board are selected by the DGS (based on suggestions of the student and advisor). At least two of the examiners must be tenured or tenure-track faculty members of ACMS.

The topic for the oral examination should be chosen months before the examination. The syllabus for the oral examination must be made available to all members of the examining board at the time they agree to serve. All examiners should restrict their questions to the advanced topic or other material on the given syllabus. Thus, the syllabus should provide guidance to the examiners.

The oral examination begins with a presentation by the student lasting between 30 and 40 minutes. This is followed by questions on material from the syllabus. The examination lasts from one and a half to two hours. After the completion of the examination, the four examiners vote "pass" or "fail." A vote of "pass" means that, in the eyes of the particular examiner, the student has passed all parts of the examination. The student is considered to have passed the oral candidacy examination only if at least three of the four examiners vote "pass". The student is informed of the outcome of the examination immediately.

If the oral examination serves as the oral candidacy examination for a doctoral student in ACMS, the examiners first vote on the proposal to pass the student to Ph.D. candidacy. If the student fails the examination at this level, the examiners vote on the proposal to pass the student at the master's level. If the student passes at the doctoral candidacy or the master's level, then the student passes the oral examination for the master's degree.



**DEPARTMENT of APPLIED AND COMPUTATIONAL MATHEMATICS AND STATISTICS
(ACMS)**

MASTER of SCIENCE in ACMS (Research)

PLAN of STUDY for Year of Entry: _____

The same or substantially the same body of work cannot be used to obtain two master's degrees (in ACMS and another program). You may double-count only 9 credit hours. If you earned credits in another master's program that you plan to apply to a PhD program, those credits cannot be applied to your MS-ACMS. Only 6 credits of courses at the 40000-level can be counted toward the MS-ACMS.

Total credit hours required: 30

Name: _____ ND ID#: _____

Department (primary): _____ Phone: _____

1. By applying to the program, you are committing to fulfill all of the requirements of the MS-ACMS degree, including the coursework described below, the written examination and the oral examination.

2. Please attach your undergrad transcript (does not need to be official), or other proof of preparation for ACMS courses.

3. Courses*

| Subject | Number | Title | Semester/Year | Double Counted? (9 credits max) Y(es) or N(o) | ACMS Credit Hours (no less than 21) | Interdisciplinary Credit Hours |
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**Directed Readings requires a note from your instructor agreeing to teach the course and sketching the syllabus of the course.*

Total credit hours: _____

Signature: _____ Date: _____

Advisor, Cooperating Department Name: _____

Signature: _____ Date: _____

Advisor, ACMS Department Name: _____

Signature: _____ Date: _____

Director of Graduate Studies, Cooperating Department

Signature: _____ Date: _____

Director of Graduate Studies, ACMS Department

Signature: _____ Date: _____

Associate Dean of the Graduate School (or other authorized officer)