

ATMOSPHERIC AND OCEANIC SCIENCES - MASTER OF SCIENCE (MS)

The Department of Atmospheric and Oceanic Sciences (ATOC) is an interdisciplinary program that provides an educational and research environment to examine the dynamical, physical and chemical processes in the atmosphere, ocean and land surface, and the manner in which they interact. A major theme is the establishment of a physical basis for understanding, observing and modeling climate and global change.

Students can earn a master's degree with either a thesis or an exam. Students considering master's study in atmospheric and oceanic sciences should carefully read the Master's Degree Requirements (<https://catalog.colorado.edu/graduate/degree-requirements/masters-degree-requirements/>) section of this catalog, as well as the department's Prospective Graduate Students (<http://www.colorado.edu/atoc/academics/prospective-graduate-students/>) and Current Graduate Students (<http://www.colorado.edu/atoc/academics/current-graduate-students/>) webpages.

Requirements

Course Requirements

Students must complete at least 30 credit hours of coursework, of which 24 must be from courses numbered 5000 or above, and at least 15 must be from ATOC graduate courses, including the four ATOC core courses.

- Up to 6 credit hours of approved 3000- and 4000-level coursework from engineering, math, physics, chemistry or biology may be applied toward the MS degree. No credit will be given toward the MS degree for ATOC coursework below the 5000 level.
- A minimum of 15 credit hours from regular ATOC courses (independent study courses cannot be used to satisfy this requirement).
- All MS students are required to take the following four ATOC core courses or their equivalent.

| Code | Title | Credit Hours |
|---------------------------|---|--------------|
| Core Courses | | |
| ATOC 5050 | Atmospheric Thermodynamics and Dynamics | 3 |
| ATOC 5051 | Introduction to Physical Oceanography | 3 |
| ATOC 5060 | Dynamics of the Atmosphere and Oceans | 3 |
| ATOC 5235 | Introduction to Atmospheric Radiative Transfer and Remote Sensing | 3 |
| Total Credit Hours | | 12 |

- Up to 3 credit hours of Independent Study (ATOC 5900), Weather Forecasting and Discussion (ATOC 6700) and/or Seminar in Atmospheric and Oceanic Sciences (ATOC 6020) may be used toward the 30 hours of regular coursework in the degree requirements.
- Up to 9 credit hours may be transferred from another accredited institution and applied toward an MS degree. Transfer credit for ATOC core coursework must be approved by the graduate advisor.
- A student is required to maintain at least a 3.00 (B) average in all work attempted while enrolled in the Graduate School. For the MS, a

course mark below C is unsatisfactory and will not be counted toward fulfilling requirements for the degree.

Degree Plans

The master's degree will be a Master of Science in atmospheric and oceanic sciences. The master's thesis is not constrained by choice of track.

Plan I: Thesis Option

Students must complete a minimum of 4 (but no more than 6) thesis hours, which can be counted toward the total 30 hours of coursework and the 15 hours of ATOC coursework requirements. Students must successfully complete an MS thesis and oral final examination based on the thesis.

Note: Students planning to pursue a PhD degree may elect to obtain the MS degree, but this is not requirement for advancement to the PhD program.

Thesis Guidelines

The MS thesis must consist of original and independent research conducted by the graduate student under the supervision of the research advisor. The thesis topic must be related to the major field, and:

- Represent the equivalent of 4 to 6 credit hours of coursework.
- Receive the approval of the major department at least 30 days before commencement at which the degree is to be conferred.
- Be completed at the time the final examination is held.
- Comply with the University of Colorado Graduate School Thesis and Dissertation Specifications.
- Be filed with the Graduate School by posted deadlines for the semester for which the degree is to be conferred.

Thesis Exam Committee

The examination committee for the MS thesis final exam will consist of three graduate faculty members, at least two of whom must be ATOC core faculty members. The examination consists of a 30-minute oral presentation given by the candidate on the thesis subject, followed by a period of questions for the candidate by the committee. The oral presentation is open to anyone who wishes to attend. The full examination typically does not exceed two hours in duration.

Any student with a research advisor outside of ATOC (e.g., an advisor who is from another department or is a full-time employee at NCAR, NOAA, etc.), must also have an academic advisor who is an ATOC core faculty member. The academic advisor should be identified by the student in collaboration with their research advisor as soon as possible, and no later than one month after research begins. Once an ATOC faculty member agrees to act as academic advisor, it is their responsibility to communicate ATOC policies and requirements to the research advisor, and to ensure that the student is meeting all ATOC requirements and making good academic progress toward the degree.

Plan II: Non-Thesis/Final Exam Option

The requirements for an MS degree non-thesis/final exam option include the following:

- 30 semester hours of coursework, of which 24 must be from courses numbered 5000 or above, and at least 15 must be from ATOC graduate courses, including four of the core ATOC courses.

- Successful completion of a written final examination based on ATOC regular coursework. The ATOC Comprehensive Exam I is typically used to satisfy this requirement.

Note: Students planning to pursue a PhD degree may elect to obtain the MS degree, but this is not a requirement for advancement to the PhD program.

Time Limit

Students are expected to complete all degree requirements within four years of the date of commencing coursework, but normally in two years. Students may petition the Graduate School for extension(s).

Learning Outcomes

By the completion of the program, students will be able to:

- Demonstrate an advanced understanding of core ATOC topics.
- For thesis option, demonstrate ability to carry out ATOC related research and report results in writing and orally.