

# M.S. IN ATMOSPHERIC SCIENCES

## Overview

The Atmospheric Sciences (ATM) program is designed to prepare students with the tools, training, and education necessary to tackle critical research problems in the atmospheric sciences today. Our faculty are experts in a wide range of research areas, including tropical meteorology, climate dynamics, cloud and aerosol processes, and atmospheric chemistry. Their expertise and guidance and our world-class facilities prepare our students for successful careers in the atmospheric sciences and related fields.

## Admission Requirements

The most competitive ATM applicants have a strong foundation in the physical sciences and a bachelor's and/or master's degree in physics, mathematics, chemistry, meteorology, atmospheric science, or other related sciences. The GRE score is not required for admission. You may optionally submit your GRE score. Individual faculty members may consider GRE scores as part of a holistic evaluation of the candidates. Applicants whose first language is not English must pass the Test of English as a Foreign Language (TOEFL) with a score of at least 550. A background in scientific programming is preferred though not required. All application requirements are available here (<https://graduate.earth.miami.edu/admissions/application-information/>).

## Program Requirements

The applicable requirements will be those in effect during that academic year when the student first registered in the Program, unless stated otherwise in the Handbook or by the Program Director.

All Rosenstiel School courses are listed on the website. All courses taken by students should be approved by their advisors. Students are recommended to consult with their advisors and the ATM Program Director regarding their choices of courses. Deviations from the requirements must be approved by the advisor and the ATM Program Director.

ATM students have a common set of required core courses. Elective courses are chosen from offerings in ATM as well as other units of the Rosenstiel School and UM.

## Curriculum Requirements

Code	Title	Credit Hours
The ATM M.S. degree requires 30 total credits. <sup>1</sup>		
<b>Core Courses</b>		<b>9</b>
ATM 634	Introduction to Atmospheric Chemistry	
ATM 651	Introduction to Atmospheric Dynamics	
ATM 652	Introduction to Atmospheric Physics	
<b>Electives <sup>2</sup></b>		<b>15</b>
<b>Thesis Research</b>		<b>6</b>
ATM 810	Master's Thesis	
<b>Additional Requirements</b>		
RSM 700	Research Ethics	
Comprehensive Examination <sup>3</sup>		
COMPASS Seminars <sup>4</sup>		
ATM 770	Seminar in Atmospheric Science	
<b>Total Credit Hours</b>		<b>30</b>

<sup>1</sup> Minimum of 24 course credits and 6 thesis credits.

<sup>2</sup> The remaining course credits can be obtained by taking other graduate courses offered by ATM, Rosenstiel School, or UM.

<sup>3</sup>

- Material from the required core courses will appear on the comprehensive examination (along with material from other courses from the first year).
- Grade of **Master's Pass**, **Pass** or **High Pass** needed to fulfill requirement.
- For full-time students, the comprehensive examination should be taken near the end of their first year of graduate studies at the Rosenstiel School. This examination will be arranged by a Comprehensive Examination Committee which comprises the ATM Graduate Program Director and the instructors (or assignees) of the first year courses taken by the students.
- The purpose of this examination is to evaluate students' understanding of materials in the courses completed up to the time of the examination and their capability of integrating these materials, and to determine whether the students are permitted to proceed in the program.

- The comprehensive examination will consist of an oral part and a written part. The written part, which lasts no longer than 8 hours, consists of closed-book questions in the courses taken in the first year by each individual student. Each student must choose to answer four questions from those submitted, with a minimum of 1 question per course (up to the maximum of 4 questions). The oral part is administered by the ATM Graduate Program Director and one or more of the course instructors (or assignees), and may include questions from all the courses taken by the student. The oral exam lasts no longer than 2 hours for each student. The GPA comprises 20% of the comprehensive exam grade, and the written and oral parts of the comprehensive exams comprise 40% each.
  - A student's performance in this examination, together with their cumulative grade point average, will determine whether the grade of **High Pass, Pass, Master's Pass** or **Fail** is given by the Comprehensive Exam Committee. The examining board consists of faculty whose questions are answered by the student and any other Rosenstiel School faculty who wish to participate.
    - **High Pass:** For students with no identifiable relevant weaknesses.
    - **Pass:** Students and advisors will receive feedback from the Comprehensive Exam Committee on the strengths and weaknesses of the student, and possible recommendations of how to address those. This information can be used to help plan the next steps in the student's academic career.
    - **Master's Pass:** Students with this result will be required to defend a master's thesis before considering whether to pursue a Ph.D. Students and advisors will receive feedback from the Comprehensive Exam Committee on the strengths and weaknesses of the student, and possible recommendations of how to address those.
    - **Fail:** Students with this result will have an opportunity to re-take the exam once.
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- Attendance to the COMPASS seminars (Combined ATM, MPO, OCE Seminar Series) is required every semester.
  - ATM M.S. students must give at least one 15-minute presentation each year after the comprehensive examination.

## Sample Plan of Study

Year One		Credit Hours
<b>Fall</b>		
ATM 651	Introduction to Atmospheric Dynamics	3
ATM 652	Introduction to Atmospheric Physics	3
Approved Elective		3
RSM 700	Research Ethics	0
<b>Credit Hours</b>		<b>9</b>
<b>Spring</b>		
ATM 634	Introduction to Atmospheric Chemistry	3
ATM 765	General Circulation of the Atmosphere	3
Approved Elective		3
<b>Credit Hours</b>		<b>9</b>
<b>Year Two</b>		
<b>Fall</b>		
Approved Elective		3
Approved Elective		3
<b>Credit Hours</b>		<b>6</b>
<b>Spring</b>		
ATM 810	Master's Thesis	3
<b>Credit Hours</b>		<b>3</b>
<b>Summer</b>		
ATM 810	Master's Thesis	3
<b>Credit Hours</b>		<b>3</b>
<b>Total Credit Hours</b>		<b>30</b>

## Mission

The Department of Atmospheric Sciences (ATM), started in 2016, seeks to advance knowledge and understanding of the physical, chemical, and dynamical processes that determine our weather, our climate, and their interactions with the oceans and the continents. We train graduate students and young scientists to be leaders in the atmospheric sciences and related fields. Through our distinct strengths in climate dynamics, tropical meteorology, and cloud and aerosol processes, we strive to achieve excellence in research and education that will better inform the public and policymakers on how to prepare for hazards and changes in the weather-climate system.

## Goals

To train young scientists in methods used in the atmospheric sciences and related fields.

## Student Learning Outcomes

- Students will demonstrate a broad understanding of atmospheric science and how scientific research in their topical areas relates to societal issues.
- Students will demonstrate the ability to conduct high-quality atmospheric science research as evidenced by their thesis research.
- Students will demonstrate oral and written communication skills commensurate with employment as a research scientist or equivalent professional level scientist.