

# M.S. IN METEOROLOGY AND PHYSICAL OCEANOGRAPHY

## Overview

The Meteorology and Physical Oceanography (MPO) graduate program provides a collegial, inclusive, and welcoming interdisciplinary environment to study the dynamics of the ocean, the atmosphere, and their coupled interactions. The MPO M.S. degree is rooted in a curriculum covering the physical forces and energy processes of the intertwined system, with a view toward how these affect life and climate on Earth. Students will learn the gamut of scientific tools used to unravel nature's mysteries, including observations, laboratory measurements, modeling, and theory.

## Admission Requirements

Students wishing to pursue a graduate degree in MPO must have strong quantitative skills and a solid foundation in one of the physical, mathematical or computational sciences. A bachelor's or master's degree in one of the science disciplines - such as physics, mathematics, or engineering - usually provide the requisite background. In addition to good academic training, applicants should bring an unbridled enthusiasm and intense curiosity for the natural world in order to succeed and enjoy their experience at the Rosenstiel School. All application requirements are available here (<https://graduate.earth.miami.edu/admissions/application-information/>).

## Curriculum 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 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 MPO Program Director regarding their choices of courses. Deviations from the requirements must be approved by the advisor and the MPO Academic Committee.

Code	Title	Credit Hours
The MPO M.S. degree requires 30 total credits. <sup>1</sup>		
<b>Core Courses</b>		<b>12</b>
All MPO M.S. students are required to take the following courses:		
MPO 603	Physical Oceanography	
MPO 611	Geophysical Fluid Dynamics I	
MPO 651	Introduction to Atmospheric Dynamics	
and choose one of the following:		
MPO 712	Large Scale Ocean Circulation: Models and Observations	
or MPO 765	General Circulation of the Atmosphere	
<b>Electives <sup>2</sup></b>		<b>12</b>
<b>Thesis Research</b>		<b>6</b>
MPO 810	Master's Thesis	
<b>Additional Requirements</b>		
RSM 700	Research Ethics	
Comprehensive Examination <sup>3</sup>		
COMPASS Seminars <sup>4</sup>		
<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 12 course credits can be obtained by taking other graduate courses offered by MPO, Rosenstiel School, or UM.
- MPO M.S. candidates are not required to take a class outside MPO.

<sup>3</sup>

- All M.S. and Ph.D. students are required to take the comprehensive examination. For full-time students, the comprehensive examination should be before 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 MPO Graduate Program Director and the instructors (or their 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 to the M.S. or Ph.D. program.
- The comprehensive examination will consist of an oral part and a written part. MPO M.S. students are responsible to know material from the required core courses and their other courses from the first year. A grade of **Master's Pass**, **Pass**, or **High Pass** is needed to fulfill requirement.

- 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; at least one of the questions from GFD I and II must be answered.
- The oral part, which lasts no longer than 2 hours for each student, may include questions from all the courses taken by the 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.
    - *NOTE: This is a new category where a student is NOT required to defend a master's thesis as was the case previously, but the student and advisor may of course still decide that a masters is the appropriate next step.*
  - **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.
  - MPO 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>		
MPO 603	Physical Oceanography	3
MPO 611	Geophysical Fluid Dynamics I	3
MPO 651	Introduction to Atmospheric Dynamics	3
<b>Credit Hours</b>		<b>9</b>
<b>Spring</b>		
MPO 712 or 765	Large Scale Ocean Circulation: Models and Observations or General Circulation of the Atmosphere	3
Approved Elective		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>		
MPO 810	Master's Thesis	3
<b>Credit Hours</b>		<b>3</b>
<b>Summer</b>		
MPO 810	Master's Thesis	3
<b>Credit Hours</b>		<b>3</b>
<b>Total Credit Hours</b>		<b>30</b>

## Mission

The Meteorology and Physical Oceanography (MPO) program prepares students to conduct and communicate research in meteorology and physical oceanography. It seeks to advance students' knowledge and understanding of the physical and dynamical processes in the atmosphere and ocean. Our graduates contribute to advancing knowledge and better informing the public and policy makers on how to prepare for hazards and changes in the Earth's atmosphere and oceans.

## Goals

To advance students' knowledge and understanding of the physical and dynamical processes in the atmosphere and ocean.

## Student Learning Outcomes

- Students will demonstrate knowledge in meteorology and physical oceanography.
- Students will demonstrate their ability to conduct research in meteorology and physical oceanography.
- Students will demonstrate knowledge of the discipline, critical thinking, and application of knowledge and methodology, as well as effective written and oral communication.