ATMOSPHERIC AND OCEANIC SCIENCES: RESEARCH PROGRAM, MS

This is a named option within the Atmospheric and Oceanic Sciences MS. (https://guide.wisc.edu/graduate/atmospheric-oceanic-sciences/atmospheric-oceanic-sciences-ms/)

For the MS Research named option, students will work with faculty, students, and staff engaged in research across the entire spectrum of topics in the Atmospheric and Oceanic Sciences.

SYNOPTIC METEOROLOGY (HTTPS:// WWW.AOS.WISC.EDU/RESEARCH/ SYNOPTIC/)

Understanding the synoptic and mesoscale behavior of tropical and extra-tropical cyclones requires a wide range of techniques. We are investigating tropical cyclone initiation and developing an idealized model of the cyclone life cycle. Other projects include work in forecast sensitivity, targeted observations, 4-D assimilation of satellite winds into numerical forecast models, and the nature of the mid-latitude occlusion process and cyclone decay.

CLIMATE AND CLIMATE CHANGE (HTTPS:// WWW.AOS.WISC.EDU/RESEARCH/CLIMATE/)

Climate research involves defining the physical, chemical, and biological behavior of many components of the climate, modeling these components in an interactive system, and obtaining appropriate observational information to define the climate and its changes. We have ongoing studies on paleoclimate and recent climate observations and use these in conjunction with comprehensive climate system models to try to understand the characteristics and physics of climate variations on many time scales.

LARGE SCALE DYNAMICS (HTTPS:// WWW.AOS.WISC.EDU/RESEARCH/ DYNAMICS/)

Substantive forcing and nonlinear processes are important for large-scale dynamics of both the atmosphere and ocean circulations. The challenge remains to define and study the interactions of circulations with many time and spatial scales to understand the observed lifecycles of atmospheric and oceanic systems and the dominant variability of time and spatial scales. Our studies include atmospheric intraseasonal and interannual variability and oceanic decadal variability.

RADIATION AND REMOTE SENSING (HTTPS://WWW.AOS.WISC.EDU/RESEARCH/ RADIATION/)

Radiation emitted and absorbed by the Earth's system drives the largescale circulations of the atmosphere and ocean. We are working to understand the flow of radiant energy through clear and cloudy skies and to use measurements of radiation to remotely sense properties of the atmosphere and surface.

CLOUD AND ATMOSPHERIC PHYSICS (HTTPS://WWW.AOS.WISC.EDU/RESEARCH/ PHYSICS/)

Clouds are the most visible part of weather phenomena and influence the larger-scale environment through the release of latent heat. We study the physical and chemical processes related to the formation and growth of cloud and precipitation particles (cloud and raindrops, graupel, hail, and snow crystals) and the interaction between clouds and their dynamic environments. Other projects center on processes such as atmospheric electricity, aerosol physics, and air pollution problems.

OCEANOGRAPHY (HTTPS:// WWW.AOS.WISC.EDU/RESEARCH/ OCEANOGRAPHY/)

The ocean acts as the flywheel of the climate system because of its huge thermal inertia and ability to regulate the atmospheric carbon content. The ocean plays a critical role in short-term climate variability (including phenomena like El Nino) and long-term climate change. Research at the University of Wisconsin focuses on the fundamental physical and geochemical processes that drive ocean circulations, and on the climatic impacts that result.

ADMISSIONS

ADMISSIONS

Please consult the table below for key information about this degree program's admissions requirements. The program may have more detailed admissions requirements, which can be found below the table or on the program's website.

Graduate admissions is a two-step process between academic programs and the Graduate School. *Applicants must meet the minimum* requirements (https://grad.wisc.edu/apply/requirements/) of the *Graduate School as well as the program(s).* Once you have researched the graduate program(s) you are interested in, apply online (https:// grad.wisc.edu/apply/).

Requirements	Detail	
Fall Deadline	January 1	
Spring Deadline	October 12	
Summer Deadline	January 1	
GRE (Graduate Record Examinations)	Not required but may be considered if available.	
English Proficiency Test	Every applicant whose native language is not English, or whose undergraduate instruction was not exclusively in English, must provide an English proficiency test score earned within two years of the anticipated term of enrollment. Refer to the Graduate School: Minimum Requirements for Admission policy: https://policy.wisc.edu/library/ UW-1241 (https://policy.wisc.edu/library/UW-1241/).	
Other Test(s) (e.g., GMAT, MCAT)	n/a	
Letters of Recommendation Required	3	

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Supplemental form indicating research areas and advisor preferences required.

Overall, our criteria for admissions is holistic and we generally favor high quality applicants who have:

- Evidence of interest in meteorological, climate, ocean, and/or remote sensing research
- Sufficient background in prerequisite courses to be successful in ATM OCN courses and research, regardless of academic major
- · Interests that match interests of current faculty seeking students
- Prior experience in research through thesis work, practicum courses, internships, summer research experiences, presentation/publication, etc...
- Received nationally competitive or University-wide awards or fellowships (e.g., NSF GFRP)
- Evidence of solid written and oral English and scientific communication skills
- GPA, GRE, and English proficiency test scores reflective of academic strength
- Ability to enhance the academic, geographic, gender, ethnic, economic, or cultural diversity of our department, especially for underrepresented groups

Applications submitted by the above deadline are given highest consideration for fall semester admission. Spring semester admission is also possible, but less common. All applicants are assessed and ranked by an admissions committee chaired by the Graduate Program Chair. Admission priority is given to the highest ranked applicants who best meet our application criteria (usually ~25-30% for domestic applicants). International applications are not admitted without a source of funding (assistantship, fellowship, or personal) and advisor directly identified.

An offer of admission for fall, typically made in February or early March, does not guarantee funding. Assistantship and internal fellowship decisions are made jointly by the admissions committee and the faculty or group providing the funding in a separate process, with decisions made typically by March-April. You will be notified if funding for you becomes available. Typically, we are able to fund approximately 8-10 students a year, primarily by research assistantship. We do not typically provide teaching assistantships to incoming students. The department discourages selffunding of PhD degrees, but will allow it for MS. For fall admission, you will have until April 15 to accept or reject any offers of admission or funding.

FUNDING

FUNDING GRADUATE SCHOOL RESOURCES

The Bursar's Office provides information about tuition and fees associated with being a graduate student. Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information is available from the Graduate School. Be sure to check with your program for individual policies and restrictions related to funding.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (https:// guide.wisc.edu/graduate/#requirementstext) and policies (https:// guide.wisc.edu/graduate/#policiestext), in addition to the program requirements listed below.

NAMED OPTION REQUIREMENTS MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

Evening/Weekend: Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW-Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

Requirement Detail				
Minimum Credit Requirement	30 credits			
Minimum Residence Credit Requirement	16 credits			
Minimum Graduate Coursework Requirement	15 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: https://policy.wisc.edu/library/ UW-1244 (https://policy.wisc.edu/library/UW-1244/).			
Overall Graduate GPA Requirement	3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: https://policy.wisc.edu/library/ UW-1203 (https://policy.wisc.edu/library/UW-1203/).			
Other Grade Requirements	A grade of B or greater is required for the 12 credits of lecture courses in the department numbered 400 or above.			

AssessmentsA master's thesis is required, and must be approved by the
major professor and two additional faculty members. AExaminationspublic oral presentation of the thesis research is required.LanguageNo language requirements.

Requirements

REQUIRED COURSES

There is a set of five core courses which are highly recommended as a good foundation for graduate degrees in the Department of Atmospheric and Oceanic Sciences. A GPA of 3.0 must be maintained for both options.

The following is a listing of the core courses:

Code	Title	Credits
ATM OCN 610	Geophysical Fluid Dynamics I	3
ATM OCN 611	Geophysical Fluid Dynamics II	3
ATM OCN 630	Introduction to Atmospheric and Oceanic Physics	3
ATM OCN 640	Radiation in the Atmosphere and Ocean	3
ATM OCN 660	Introduction to Physical Oceanography	3

In consultation with their advisor, every student seeking a MS degree, will design a curriculum that must be approved by their advisor.

- 12 of the credits must be taken in the department as lecture courses numbered 400 or above. Seminars, research, independent study or directed reading courses do not satisfy this requirement. A grade of B or greater is required for these 12 credits.
- An additional 12 (at least) credits may be taken in or out of the department. These credits can include seminars, core courses, and other courses taken as a graduate student. Research credits do not count toward this requirement.
- Up to 6 research credits in the department can be counted (but are not required) toward the 30 credit requirement.

POLICIES

GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (https:// grad.wisc.edu/acadpolicy/) serve as the official document of record for Graduate School academic and administrative policies and procedures and are updated continuously. Note some policies redirect to entries in the official UW-Madison Policy Library (https://policy.wisc.edu/). Programs may set more stringent policies than the Graduate School. Policies set by the academic degree program can be found below.

NAMED OPTION-SPECIFIC POLICIES PRIOR COURSEWORK

Graduate Credits Earned at Other Institutions

With program approval, students are allowed to transfer no more than 14 credits of graduate coursework from other institutions. Coursework earned ten or more years prior to admission to a master's degree is not allowed to satisfy requirements.

Undergraduate Credits Earned at Other Institutions or UW-Madison

With program approval, students are allowed to transfer no more than 7 credits of graduate coursework taken as an undergraduate at UW-Madison, as long as those credits were not applied toward an undergraduate degree. Coursework earned ten or more years prior to admission to a master's degree is not allowed to satisfy requirements.

Credits Earned as a Professional Student at UW-Madison (Law, Medicine, Pharmacy, and Veterinary careers)

Refer to the Graduate School: Transfer Credits for Prior Coursework (https://policy.wisc.edu/library/UW-1216/) policy.

Credits Earned as a University Special Student at UW– Madison

With program approval, students are allowed to transfer no more than 15 credits of coursework numbered 300 or above taken as a UW–Madison University Special student. Coursework earned ten or more years prior to admission to a master's is not allowed to satisfy requirements.

PROBATION

Refer to the Graduate School: Probation (https://policy.wisc.edu/library/ UW-1217/) policy.

ADVISOR / COMMITTEE

All students are required to conduct a yearly progress report meeting with their advisor, scheduled by December 31 and completed by April 30. Failure to do so may result in a hold being placed on the student's registration.

CREDITS PER TERM ALLOWED

15 credits

TIME LIMITS

The MS degree should be completed within three years.

GRIEVANCES AND APPEALS

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting (https://doso.students.wisc.edu/bias-or-hatereporting/)
- Graduate Assistantship Policies and Procedures (https://hr.wisc.edu/ policies/gapp/#grievance-procedure)
- Hostile and Intimidating Behavior Policies and Procedures (https:// hr.wisc.edu/hib/)
 - Office of the Provost for Faculty and Staff Affairs (https:// facstaff.provost.wisc.edu/)
- Employee Assistance (http://www.eao.wisc.edu/) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, postdoctoral students, faculty and staff)
- Employee Disability Resource Office (https:// employeedisabilities.wisc.edu/) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (https://grad.wisc.edu/) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)
- Office of Compliance (https://compliance.wisc.edu/) (for class harassment and discrimination, including sexual harassment and sexual violence)

- Office Student Assistance and Support (OSAS) (https:// osas.wisc.edu/) (for all students to seek grievance assistance and support)
- Office of Student Conduct and Community Standards (https:// conduct.students.wisc.edu/) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (http://www.ombuds.wisc.edu/) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX (https://compliance.wisc.edu/titleix/) (for concerns about discrimination)

L&S POLICY FOR GRADUATE STUDENT ACADEMIC APPEALS

Graduate students have the right to appeal an academic decision related to an L&S graduate program if the student believes that the decision is inconsistent with published policy.

Academic decisions that may be appealed include:

- Dismissal from the graduate program
- · Failure to pass a qualifying or preliminary examination
- · Failure to achieve satisfactory academic progress
- Academic disciplinary action related to failure to meet professional conduct standards

Issues such as the following cannot be appealed using this process:

- A faculty member declining to serve as a graduate student's advisor.
- Decisions regarding the student's disciplinary knowledge, evaluation of the quality of work, or similar judgements. These are the domain of the department faculty.
- Course grades. These can be appealed instead using the L&S Policy for Grade Appeal (https://kb.wisc.edu/ls/22258/).
- Incidents of bias or hate, hostile and intimidating behavior (https://hr.wisc.edu/hib/), or discrimination (Title IX (https:// compliance.wisc.edu/titleix/), Office of Compliance (https:// compliance.wisc.edu/eo-complaint/formal-investigations/)). Direct these to the linked campus offices appropriate for the incident(s).

Appeal Process for Graduate Students

A graduate student wishing to appeal an academic decision must follow the process in the order listed below. Note time limits within each step.

- The student should first seek informal resolution, if possible, by discussing the concern with their academic advisor, the department's Director of Graduate Studies, and/or the department chair.
- 2. If the program has an appeal policy listed in their graduate program handbook, the student should follow the policy as written, including adhering to any indicated deadlines. In the absence of a specific departmental process, the chair or designee will be the reviewer and decision maker, and the student should submit a written appeal to the chair within 15 business days of the academic decision. The chair or designee will notify the student in writing of their decision.
- 3. If the departmental process upholds the original decision, the graduate student may next initiate an appeal to L&S. To do so, the student must submit a written appeal to the L&S Assistant Dean for Graduate Student Academic Affairs within 15 business days of notification of the department's decision.
 - a. To the fullest extent possible, the written appeal should include, in a single document: a clear and concise statement of the academic decision being appealed, any relevant background on what led to

the decision, the specific policies involved, the relief sought, any relevant documentation related to the departmental appeal, and the names and titles of any individuals contributing to or involved in the decision.

- b. The Assistant Dean will work with the Academic Associate Dean of the appropriate division to consider the appeal. They may seek additional information and/or meetings related to the case.
- c. The Assistant Dean and Academic Associate Dean will provide a written decision within 20 business days.
- 4. If L&S upholds the original decision, the graduate student may appeal to the Graduate School. More information can be found on their website: Grievances and Appeals (https://grad.wisc.edu/documents/ grievances-and-appeals/) (see: Graduate School Appeal Process).

OTHER

n/a

PROFESSIONAL DEVELOPMENT

PROFESSIONAL DEVELOPMENT GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School's professional development resources (https://grad.wisc.edu/pd/) to build skills, thrive academically, and launch your career.