AES – Preliminary Exam Policies and Guidelines

PhD Preliminary Exam Process and Guidelines for Atmospheric and Earth Science

Updated: September 14, 2021

Overview

All students in the PhD program are required to pass the preliminary exam. The goal of the preliminary exam is to test the student on the core courses and the breadth of topics in Atmospheric and Earth Science. Students enrolled in the MS program who wish to continue towards their PhD typically take the exam during the last semester of the MS program. Students who are enrolled in the PhD program typically take the preliminary exam during their first year, or very soon after they have taken all courses they will use in their preliminary exam. The preliminary exam is offered twice a year (summer/June and winter/December). Typically, the exam is conducted over a 3-day period – Monday, Wednesday, and Friday – with one set of course-based questions (i.e. a "topic exam") in the morning and one in the afternoon on each day. Each topic exam should be completed within 150 minutes.

1. Each student is required to pass questions from the three core course exams: a) AES 541-Atmospheric Thermodynamics & Cloud Physics, b) AES 551-Atmospheric Fluid Dynamics, and c) AES 561-Atmospheric Radiation. The passing grade for these mandatory questions is 60/100.
2. Students must also pass topic exams from three other graduate level "elective" courses from three topic options out of five options. Only one topic course from each option may be selected. The available options are listed in the table below. Special topics courses are precluded unless approved in advance by the Preliminary Exam Committee. To be considered by the committee, special topics courses should have been taught more than once and should be in the administrative process of becoming a regularly offered class.
3. The passing grade for both core and elective topic exams is 60/100.
4. The student has two attempts to pass all six topic exams. If the student fails the first attempt, they must try the second attempt the next time the exam is offered. They only need to retake topic exams that they have failed during the first attempt.
5. If the student does not pass the preliminary exam in the second attempt, they will be terminated from the PhD program.
6. This is a closed book exam and no computers or cell phone devices are allowed. Please bring your calculators without any pre-programmed notes or equations. The exams will be moderated by the Department Staff Assistant or a faculty member.

Process

1. There will be two graders for each topic exam. The first grader will write the questions and answer key, and the second grader must approve the questions and answer key. The second grader can also contribute to the questions and answer key. The graders will be selected by the Department Chair from the faculty members.
2. There will be a Preliminary Exam Committee meeting to review and approve all the preliminary exam questions based on their clarity, scope and completeness. The committee will work with the graders to adjust questions as needed based on their review. The committee will be selected by the Department Chair.
3. Each topic exam responses will be evaluated by the two graders. They will provide a written evaluation of the questions on a separate sheet of paper, and not on the exam itself. Note that the graders will not know the name of the student taking the exam (i.e. a numerical identifier is assigned to each student).
4. The graders will turn the scores in to the Department Chair. The Chair will then determine if a third grader is needed to resolve differences in the two scores. A third grader would be assigned if the first two grades differ by a significant amount, especially if one grade is a pass and the other is a fail.

5. The graduate faculty will then meet to evaluate the scores of all the preliminary exam questions during a Faculty Meeting or through email. The graduate faculty will discuss as needed and then vote on a pass/fail per topic exam for all students. The role of the faculty discussion is to verify that the exam process was conducted fairly, correctly and completely. The faculty vote is to certify the exam outcomes according to the policies and guidelines set forth in this document.
6. The Department Chair will notify the student of the exam outcome, including grades on individual topic tests and overall pass/fail results, in a timely fashion. For students who have completed the preliminary exam process, the Department Chair will generate a formal letter confirming the final grade for each topic exam and summarizing the final pass/fail outcome of the overall preliminary exam. An appointment to discuss the grades or overall outcome with the Chair can be set, if necessary. Students are welcome to overview exams during both pass and fail scenarios, but under no circumstance is the student allowed to remove the exam from the Department Chair offices, or take cell phone or other pictures of the exams. All completed exams will subsequently be filed in the Staff Assistant's Office.

The three elective courses must be chosen from one of the options in the table below. Only one topic from each option may be selected. Note that the course topics may be updated in the future depending on students' need and curriculum development.

CHEMISTRY Option	**CLIMATE Option**	**MET. Option**	**PROCESS Option**	**SATELLITE Option**
520 Introduction Chemistry	630 Physical Climatology	656 Tropical Meteorology	655 Boundary Layer	670 Satellite Rem. Sen. I
	603 Climate Dynamics	680 Num Mod Appl in ESS	671 Ground Remote Sensing	761 Radiation II
		681 Num Modeling	672 Dual Polar. Radar	
		652 Adv. Synoptic Meteorology	673 Lightning	
		651 Dynamics II	740 Cloud Processes	
		657 Nowcasting	642 Precipitation Physics	

Paperwork

1. The student must send an email to the Department Chair and his/her Advisor on or before February 1 (for the summer exam) and on or before October 1 (for the winter exam) specifying when they intend to take the exam and the three elective courses that they will take. The student should consult their Advisor and make this decision carefully before sending this email to the Department Chair. At this point, the student cannot withdraw from taking the exam.
2. The Staff Assistant and Department Chair notify the graduate faculty members for the need to develop topic exam questions as requested by the students. This notification is typically done at least 6 weeks prior to the Preliminary Exam to allow ample time for test development, and exam review/correction by the Preliminary Exam Committee.
3. A student who passes the preliminary exam could receive a pay raise if they are supported by a GRA. Some students on fellowships may not be eligible for the pay raise due to conditions stipulated in the award. For students taking the summer exam the pay raise is typically effective during the upcoming fall semester and for students taking the winter preliminary exam the pay raise will typically be effective during the upcoming summer semester.