



Doctoral Qualifying Examination
(Effective Spring Quarter 2024)

The purpose of the Doctoral Qualifying Examination is to evaluate a student's overall academic preparation for the PhD program, including:

- Understanding of and ability to apply fundamental concepts of the discipline,
- Capacity for independent thought, critical analysis, and creative problem solving,
- Ability to communicate orally including responding to questions and comments, and
- Overall readiness to engage in independent research and complete the PhD program.

Timeline & Eligibility

Students are expected to take the Qualifying Exam during their second year in the PhD program. Doctoral students who do not pass the qualifying exam by the end of their third year of graduate study will be subject to unsatisfactory progress policies.

The doctoral Qualifying Examination is held twice per academic year, during the Autumn and Spring Quarters. To be eligible to take the Qualifying Exam, a student must:

- Be enrolled in the PhD program,
- Have a minimum cumulative GPA of 3.4, and
- Identify a faculty member who has agreed to serve as their doctoral supervisor.

Taking the Qualifying Exam does not preclude a PhD student from later completing an MSAA en route to the PhD.

Continuing to PhD from MSAA

Students admitted to the MSAA program are eligible to take the qualifying exam only *after* completing the MSAA and meeting all other eligibility requirements. MSAA students seeking to continue toward the PhD are expected to take the qualifying exam during the first examination cycle following completion of the MSAA.

Examination Committee

- A Qualifying Exam Committee includes at least four members of the UW Graduate Faculty – three “core area” members and one “breadth” member.
- While the student's faculty advisor may be a Committee Member, the Committee Chair must be someone other than the student's faculty advisor.
- The Committee Chair and at least two other committee members must hold appointments in the Aeronautics & Astronautics Department.
- The Committee Chair is not required to be in the same research area as the student being examined.



It is the student's responsibility to identify all committee members (in consultation with their faculty advisor). Students will submit their full committee membership when they submit their request to take the exam.

In preparation for the oral portion of the exam, the student will self-select 4 UW courses (3 depth courses and 1 breadth course) that they have completed (or will have completed by the end of the current academic quarter) to be discussed during the oral exam. Courses by default are to be selected from within the range of AA 500 to AA 597. If a course outside of the 500 to 597 range is proposed, it must be pre-approved by the chair of the Qual Exam Committee and is limited to a maximum of one course from the 400 level. If a course from another institution is proposed (limited to "Post Masters Status" Students), it is required that an equivalent UW course first be identified, and then must also be pre-approved by the chair of the Qual Exam Committee. It is the student's responsibility to deliver this list of courses to their committee once approved by the Qual Exam Chair.

After the student has notified their committee of the courses selected for evaluation, each committee member will prepare one question related to the content covered in one of the courses. To ensure coverage of all selected courses, committee members will decide amongst themselves which member will generate the question from each identified course. Questions will not be provided to the student in advance of the oral exam but should be identified and communicated amongst committee members in advance to ensure appropriate overall topical coverage is obtained.

Examination Format

The Qualifying Exam consists of two parts – written and oral.

Written Exam

On the second Friday of the quarter, the Exam Committee will assign the student one journal article¹. The student has four weeks (plus one additional weekend) to analyze and respond to the article, including additional literature review. Students must work entirely independently during the written portion of the exam.

On the fifth Monday following the delivery of the written assignment, the student must submit a written report approximately 7-10 pages in length. The report will be submitted electronically to the entire committee and cc'd to the staff Graduate Adviser.

Reports will be assessed on the demonstration of technical knowledge, critical analysis, and the quality of the writing – all of which should convey consistently high-quality, graduate-level work. A complete report will demonstrate the student's understanding of the article's content and its relevance to the broader field. This includes:

- A literature review on the topic covered in the article,
- A brief summary of the article,
- A discussion of the relevance and impact of the article's findings,
- A discussion of potential future directions, and
- Any appropriate criticism.

¹ Best practice recommends against assigning tutorial or review articles for the written exam since they can limit the student's opportunity to independently determine context. Additionally, to avoid any conflict of interest, no one on the students' committees shall have authored, or co-authored the research reported in the article(s).



Within two weeks (14 days) the Committee Chair will notify the student of the outcome of the written exam. There are three possible outcomes to the written exam.

PASS: Student proceeds to Oral Exam

REVISE: Student has ten days to revise and resubmit the written exam in response to committee feedback.

REEXAMINE: Student may not proceed to oral exam. Student is advised to retake the exam, beginning with the written exam, during the next examination cycle. Only one reexamination will be permitted.

Oral Exam

After successfully passing the written exam, students must proceed to the oral exam.

Oral examinations should be completed on/before the last day of instruction of the current quarter (no later than the last day of finals). It is the student's responsibility to identify a time/date for the exam and submit that information to the Graduate Program Adviser. All members of the Exam Committee are expected to attend the oral exam. However, an exam may proceed with at least three members – including the Chair, one “core area” member and one “breadth” member. Oral Exams are open to all members of the Aeronautics & Astronautics faculty.

Unlike the written portion of the exam, students are permitted to prepare for the oral examination collaboratively with other students. This may include practice presentations as well as practice Q&A sessions with peers.

Oral exams last two hours, maximum. This includes:

- Opening Presentation on assigned journal article and written report (20 mins maximum, open to all AA faculty)
- Committee questions based on assigned journal article and oral presentation (10 mins maximum, open to all AA Faculty)
- Pre-Defined Coursework Based Questions (60 mins maximum (15mins for each faculty/question), open to all AA Faculty)
- Discussion (20 mins, open only to committee and student being examined)
- Faculty deliberation (10 mins, open only to committee members)

The oral exam will begin with the student providing a brief presentation of their written exam (20 mins max). This presentation and the related questioning/discussion period are strictly limited to 30 minutes total. To ensure time limits are observed, one member of the committee must be designated as the Timekeeper for the various portions of the exam.

The exam will then move into the Pre-Defined Coursework Based Questions portion. This questioning/discussion period is strictly limited to 60 minutes total. The student will be expected to respond to these questions orally and demonstrate their work at the board as needed. The Timekeeper is responsible for ensuring that general questioning does not exceed one hour (60 minutes) and make

sure that each question does not exceed a max of 15 mins. A best practice is to provide each committee member 10-15 minutes (adjusted in cases where committee is larger than four members) to present and receive a response to their question, including any follow-up or clarifying questions that may be needed.

Immediately following the general questioning, the committee may take an additional 30 minutes for closed discussion. The student may be asked to stay for part of the discussion if desired by the committee (20 mins max). There will be discussion for 10 mins maximum attended by the committee members only for deliberation on the exam. During discussion, the committee will assess the student's exam performance and their readiness for continued doctoral study.

Students will be evaluated on:

- Overall quality of the written report,
- Command of disciplinary fundamentals,
- Ability to communicate clearly when presenting technical content and responding to questions,
- Ability to establish context and connections to other discipline areas.

The committee will notify the student of the outcome of the oral exam immediately following its discussion. There are three possible outcomes following the oral exam.

PASS: Student may proceed with doctoral studies, including the formation of a Doctoral Supervisory Committee. Students are expected to form the Doctoral Supervisory Committee within six months of passing the qualifying exam.

REEXAMINE: Student may retake the oral portion of the qualifying exam during the next exam cycle. Reexamination follows the same format as the first exam, including the opening presentation. However, the only possible recommendations from a second exam are: PASS or NOT PASS. Multiple reexaminations will not be permitted.

NOT PASS: If the Exam Committee returns a "not pass" outcome, the student will not be eligible to continue in the doctoral program. Students who do not pass the qualifying exam are eligible to complete an MSAA, in which case the student will be formally transferred to the MSAA program.

A student may appeal a "not pass" outcome and request permission for reexamination. Petitions must be submitted in writing and must include a formal letter of support from the student's faculty adviser. The Graduate Committee will review and take final action on petitions. The Graduate Committee will consider only one such petition per student.