

Ph.D. AE Qualifying Examination Procedure

Purpose of Qualifying Exams

Prior to being formally admitted to candidacy for the PhD AE degree, the student must demonstrate knowledge of aerospace engineering fundamentals by satisfying the qualifying requirement or passing a qualifying exam (QE) in the relevant area of concentration. The purposes of the qualifying requirement or qualifying exams are:

- To motivate students to review coursework that lays foundations for doctoral research
- To determine the student's ability to understand fundamental concepts and potential to pursue doctoral research
- To identify areas that need to be strengthened for the student to be successful in doctoral research

Subject Areas of Qualifying Exams

The qualifying exams cover core areas of aerospace engineering. A student is required to satisfy the qualifying requirement or take a qualifying exam in their area of concentration. The qualifying requirement is to earn an A in two of the core courses in the relevant area of concentration. Students who do not meet this requirement will need to take the qualifying exam.

The qualifying exams will be offered annually in all three areas of concentration: a.) Aerodynamics and Propulsion, b.) Structures & Materials, and c.) Dynamics & Control.

Qualifying Subject Exam in Aerodynamics & Propulsion

This exam is based on three graduate core courses in the concentration:

1. Advanced Compressible Flow (AERO 504)
2. Advanced Incompressible Aerodynamics (AERO 528)
3. Viscous Flow (AERO 521)

A student is required to select two out of the three topics.

Reference Courses for Qualifying Exam Preparation in Aerodynamics & Propulsion

Compressible Flow	AERO 504
Incompressible Aerodynamics	AERO 528
Viscous Flow	AERO 521

Qualifying Subject Exam in Structures & Materials

This exam is based on three graduate core courses in the concentration:

1. Introduction to Continuum Mechanics (MECH 548)
2. Introduction to the Finite Element Method (AERO 515)
3. Analysis of Aircraft Composite Materials (AERO 522)

A student is required to select two out of the three topics.

Reference Courses for Qualifying Exam Preparation in Structures & Materials

Continuum Mechanics	MECH 548
Finite Element Method	AERO 515
Composite Materials	AERO 522

Qualifying Subject Exam in Dynamics & Control

This exam is based on three graduate core courses in the concentration:

1. Linear Systems (AERO 523)
2. Modern Control Systems (AERO 527)
3. Analytical Dynamics (AERO 544)
4. Orbital Mechanics (AERO 531)

A student is required to select two out of the three topics.

Reference Courses for Qualifying Exam Preparation in Dynamics & Control

Linear Systems	AERO 523
Modern Control Systems	AERO 527
Analytical Dynamics	AERO 544
Orbital Mechanics	AERO 531

Qualifying Exam Schedule

The qualifying exams are offered in May, usually the week following the spring semester's final exam period.

A student must satisfy the qualifying requirement or take the concentration QE within two years of being admitted to PhD AE program, including those admitted to the program with a BS degree. A student who plans to take the qualifying exam must file a request form at least one month before the exams. The request form must be signed by the student's dissertation advisor.

Grading of Qualifying Exam

One of the following grades will be assigned to a student for the QE:

- Pass
- Pass with conditions
- Fail

Since the qualifying exam is considered a retest after a student has not satisfied the qualifying requirement, if a student fails the concentration QE, the student will be dismissed from the PhD AE program.

If a student receives "Pass with Conditions" for the exam, the QE committee may decide to prescribe conditions (e.g., taking an additional course) for a passing grade. After the conditions are satisfied, the grade becomes a "Pass".