Doctor of Philosophy

Engineering with a Concentration in Aerospace Engineering (PhD)

The Doctor of Philosophy programs in Mechanical or Aerospace Engineering are advanced research degrees requiring a written dissertation offering new and unique contributions of a fundamental nature. Graduates are prepared for leadership roles in the many facets of engineering including teaching, research and development, design, and consulting. Doctoral students may select specializations in such technical areas as:

- aerodynamics and fluids
- thermodynamics and energy
- dynamics and controls
- materials and structures
- design and manufacturing

Students are also encouraged to select complementary courses in other engineering or science disciplines. The University's close associations with area industries, consulting firms, government agencies, and research laboratories create a stimulating environment for the pursuit of graduate studies.

Doctor of Philosophy Admission Requirements

To qualify for admission to a Doctor of Philosophy degree in Mechanical or Aerospace Engineering, a student must have earned a master's degree from an accredited institution of higher learning in engineering, physics, or mathematics, including graduate-level course work equivalent to the corresponding master's programs in Mechanical and Aerospace Engineering. Applicants with an overall grade point average (GPA) of 3.5 on a 4.0 scale at the master's level are eligible for regular admission. Applicants with a GPA below 3.5 who present evidence and potential for improvement may be eligible for provisional admission. Students are typically required to submit their Graduate Record Examination (GRE) scores, although the Graduate Program Director (GPD) may waive the GRE requirement for applicants with excellent academic credentials.

Curriculum Requirements

Doctor of Philosophy Degree Requirements

A minimum of 24 credit hours of course work beyond the master's degree and a minimum of 24 semester credit hours of dissertation research must be included in the doctoral degree program. At least 60% of the course work for the doctoral degree should be at the 800-level and the student should maintain at least a B (3.0) average. All doctoral students should satisfy either a foreign language or research skill requirement.

Additional Requirements

Preliminary Diagnostic Examination

Ph.D. students must take the diagnostic exam no later than the end of their first academic year. Diagnostic exams are scheduled annually in October and February and the exam dates are announced by the Graduate Program Director (GPD). Students who received their Master of Science degrees from ODU with a GPA of 3.5 or above are exempt from the diagnostic exam.

Students must fill the Ph.D. Diagnostic Exam form to notify the GPD of their desire to take the diagnostic exam. The form must be approved by the student's advisor. The diagnostic exam is a three hour long written exam containing four equally weighted questions from the core courses. It is conducted without any reference books or notes. Use of electronic devices with internet connection is not permitted. Only non-programmable scientific calculators are allowed. The questions might contain useful formulae to guide the students. Diagnostic exam questions will be prepared and graded by the faculty who taught these courses in the past five years. Students must pass each core topic area with a minimum passing grade of B. Students who pass at least two of the four subject areas in their first attempt can take the exam for a second time, where they will be tested on the failed areas. Students who fail their diagnostic exam can consider pursuing other MAE degrees. Students who fail their first attempt do not receive priority for departmental support as graduate teaching assistants or graders until they pass their diagnostic exam. However support as a graduate research assistant is within the discretion of the student's advisor. Part time or special status students attending ODU for joint foreign-institution/ODU degrees must also take their diagnostic exam within the first year of their Ph.D. studies at ODU.

Candidacy Examination

The candidacy exam is taken once the students finish their course work. The exam consists of written and oral parts. Written part of the exam can consist of a critical review report on a subject area determined by the student's advising committee. Written candidacy exam will be reviewed by the student's committee members for its technical content as well as for evaluation of the student's writing proficiency and research skills. Oral part of the candidacy exam is based on the defense of the written part, and will include extensive examination of the student's fundamental knowledge in his/her research area.

Dissertation Proposal

After the student passes the written and oral candidacy examinations, for advancement to candidacy, he/she must pass the dissertation proposal stage, which is an oral presentation of the student's work containing literature survey and preliminary results sections to demonstrate feasibility of the proposed work.

Dissertation

Ph.D. candidates are expected to work with their dissertation advisors to form their Dissertation Committees. A Dissertation Committee should be composed of individuals with significant knowledge related to the candidate's dissertation research. The majority of whom must be full-time faculty members of the department.

Ph.D. candidates must submit their written dissertation to the committee members at least two weeks prior to the dissertation defense. The dissertation should be formatted in accordance with guidelines established by the college.

The dissertation defense consists of two parts; an open presentation to the general public and a closed examination conducted by the dissertation committee. The dissertation must be approved by the majority of the dissertation committee and must constitute a significant original contribution to the field. Students are permitted only two attempts to successfully complete the dissertation defense.