Mechanical Engineering (PhD)

The department proposes that up to a maximum of 12 credits out of the 33 required credits of coursework be waived for a student who is entering the PhD Program with a previously awarded Master’s degree in Mechanical Engineering or a relevant field. The relevance of a Master’s degree is determined by the Graduate Curriculum Committee (GCC) and the student's advisor after the student enrolls in the PhD program. To consider a Master’s degree relevant, evidence must be provided regarding graduate coursework and/or research experience that is sufficiently similar to the Master's degree requirements at UD.

**Degree Requirements:**

### I. Course Requirements:

* 1. [Before]

a. At least five courses (15 credits) at the 600 or higher level in Mechanical Engineering (MEEG). At least three of these courses shall be selected from the following list:

* 1. MEEG 610 Intermediate Solid Mechanics (3cr.)
  2. MEEG 620 Intermediate Dynamics (3cr.)
  3. MEEG 621 Linear Systems (3cr.)
  4. MEEG 630 Intermediate Fluid Mechanics (3cr.)
  5. MEEG 640 Intermediate Heat Transfer (3cr.)
  6. MEEG 683 Orthopedic Biomechanics (3cr.)
  7. MEEG 690 Intermediate Engineering Mathematics (3cr.)
  8. [After]

b. Five graduate level courses (15 credits) in engineering, mathematics, or science of  
  
which at least three courses (9 credits) must be at the 800 level

c. At least one course (3 credits) in mathematics (other than MEEG 690).

d. At least three semesters of MEEG 600, Seminar, (0 credits). Special arrangements can be made for part-time students to fulfill this requirement.

e. 9 credits of MEEG 969 - Doctoral Dissertation (1 to 12cr.).

### Note:

An individual course can be used to meet more than one of the requirements provided the total number of credits is at least 33. Requirements a and c may be fully or partially waived for a student who has been awarded a Master's degree in Mechanical Engineering (up to a maximum of 12 credits). In recognition of graduate degree experience, up to a maximum of 12 credits out of the 33 required credits can be waived for a student who is entering the PhD Program with a previously awarded Master's degree in Mechanical Engineering or a relevant field.

### II. Dissertation Requirements:

A dissertation is required which demonstrates the student's ability to conduct independent research. A Dissertation Committee is selected by the advisor and approved by the Department Chairperson. This committee will also serve as the student's Candidacy Examination Committee. The Committee will be chaired by the research advisor. During the course of the research, the student will periodically review progress with the Committee.

### III. Qualifying Examination:

The purpose of the qualifying examination is to assess the aptitude of a doctoral student in the early stages of the program.

The qualifying exam will consist of three parts:

* 1. Research aptitude exam based on the student's research interest area
  2. One math exam (based on the content in MEEG 690)
  3. One mechanical engineering topic exam (based on undergraduate-level mechanical engineering and the content in one of the core courses: MEEG 610, MEEG 620, MEEG 630, MEEG 640)

### IV. Candidacy Examination:

The Ph.D. Candidacy Examination must be taken within one and a half years of successful completion of the Qualifying Examination and at least one year prior to the dissertation defense. The student will prepare a comprehensive, written research proposal and defend it orally before the Candidacy Examination Committee. The Candidacy Examination is intended to test the student's ability to synthesize knowledge in the formulation of an independent research proposal.

### V. Teaching Requirement:

The ability to communicate effectively is an essential skill for all PhD graduates. Therefore, all PhD students are required to fulfill a teaching requirement, which consists of serving as a Teaching Assistant (TA) for one or two semesters, depending on the assignment. Students are expected to continue to be actively involved in their research while serving as a TA.

### Last Revised 2020-2021 Academic Year