

# MECHANICAL ENGINEERING, PH.D.

The Doctor of Philosophy in mechanical engineering (Ph.D.) is designed for students who are interested in engineering careers that require education beyond the Master of Science degree. Examples of those include engineers performing industrial research, research at national laboratories, or careers in engineering academics.

## Admission and Financial Aid

All applicants accepted into the Mechanical Engineering (ME) doctoral program must have received a Bachelor of Science degree in mechanical engineering or closely related fields. The GRE exam is required of all applicants.

## Credit Hours

The program requirements include a minimum of seventy-two (72) semester hours of approved course work and research hours. A maximum of thirty (30) semester hours of approved graduate coursework from a master's in Mechanical Engineering or closely related field may be transferred to the Ph.D. program. Broad latitude is granted in the selection of courses, but all courses must be approved by the student's graduate committee. The semester hours for the Ph.D. must meet the following criteria:

1. **At least forty-two (42) semester hours of coursework, subject to the following criteria:**

Requirement	Hours
A minimum of twenty-four (24) semester hours of 5000 or 6000 graduate level course work within ME	24
A minimum of six (6) semester hours of 5000 or 6000 graduate level course work outside of ME <sup>1</sup>	6
A maximum of six (6) semester hours of 4000 level course work	6
A minimum of three (3) semester hours of course work in Ethics, Religion, Philosophy, or related area <sup>2</sup>	3

2. **At least twenty-four (24) hours of Doctoral Research:**

Requirement	Hours
A minimum of twelve (12) semester hours of ME Doctoral Research ME 6V99 taken after the preliminary exam	12
A maximum of twelve (12) semester hours of Engineering Research ME 6V97 taken prior to the preliminary exam	12

<sup>1</sup> Engineering is inherently cross-disciplinary, and oftentimes students may benefit from courses in non-ME disciplines to broaden their understanding of particular applications or knowledge domains. Supportive graduate course hours outside of ME can be selected from areas that include, but are not limited to: electrical and computer engineering, biomedical engineering, computer science, mathematics, statistics, the physical sciences, the social sciences, education or business.

<sup>2</sup> Engineering is a values-based discipline that benefits from Christian worldview and faith perspectives. Therefore, students are required to take select supportive course in areas that touch on these perspectives. Among the courses accepted for this requirement are one-credit-hour seminars taught by ME faculty on Research Ethics, or on Technology and Society.

## Foreign Language Requirement

The ME doctoral program does not have a foreign language requirement. However, competency in a collateral field will be cultivated in students through the requirement of course work outside of ME.

## Student's Graduate Committee

The Graduate Committee for a Ph.D. candidate shall consist of at least five members of the Baylor graduate faculty, at least three members from within ME, and at least one member from outside of ME. A researcher from outside of Baylor may serve as a committee member if approved by the ME graduate director and the Baylor members of the committee. The committee chair must be a tenured or tenure-track member of the ME faculty and a member of the Graduate Faculty.

If deemed appropriate, a graduate faculty member outside of ME may supervise and mentor the student, in the capacity of a co-chair of the committee. The committee's activities and structure will otherwise be governed by the appropriate sections of the Graduate Catalog.

## Qualifying Examination

Students must pass a qualifying exam that covers subject areas selected by the student's graduate committee. The qualifying exam format will be at the discretion of the ME graduate faculty. A student may petition the graduate faculty to retake the qualifying exam once, no sooner than four months after the first examination.

## Preliminary Examination

Students must pass a preliminary exam (Ph.D. proposal) to be admitted to candidacy, and to enroll in Dissertation Research 6V99. The preliminary exam must be submitted in a semester following the semester during which the qualifying exam was passed. The preliminary exam format will be at the discretion of the student's graduate committee but may typically include a formal written proposal along with a formal presentation providing the committee an opportunity to ask questions about the scope and nature of the proposed research.

## Dissertation

Candidates for the Ph.D. in mechanical engineering degree must complete an acceptable dissertation on a research topic in the ME discipline or closely related field. The dissertation must provide evidence that the candidate has pursued a program of research, the results of which reveal scholarly competence and a significant contribution to knowledge.

## Teaching Opportunities

Doctoral students considering an academic career may benefit from serving as undergraduate course instructors with a title of Teaching Fellow. To be eligible to serve as a Teaching Fellow a student must have passed the qualifying exam, be approved by the ME department chair, and have completed training through the Graduate School. A Baylor ME

faculty member will be assigned to supervise and guide each Teaching Fellow.