Overview

The objective of the Bachelor of Science degree program in Mechanical Engineering is to produce Mechanical Engineering graduates who will be capable of undertaking challenging projects that require knowledge of the fundamentals and design of mechanical and thermal systems. The program seeks to build Mechanical Engineers to meet the needs of analysis, design, and development in industry, as well as to educate them to be innovators and policy makers. The BS degree program will provide the necessary training and education for future engineers who will effectively identify new problems and develop innovative solutions, including new manufacturing and fabrication technologies.

Mechanical Engineering (BS)

Program Educational Objectives for Mechanical Engineering

One broad goal for the Erik Jonsson School is to provide an excellent education for our students. Within a few years after graduation, graduates of the Mechanical Engineering Program should:

- Have a successful, long-lived engineering-based career path.
- Meet the needs of industry.
- Contribute to, and lead, engineering-based teams.
- Actively pursue life-long learning.

High School Preparation

Engineering education requires a strong high school preparation. Pre-engineering students should have high school preparation of at least one-half year in trigonometry and at least one year in elementary algebra, intermediate and advanced algebra, geometry, pre-calculus, chemistry, and physics, thus developing their competencies to
the highest possible levels and preparing to move immediately into demanding college
courses in calculus, calculus-based physics, and chemistry for science majors. It is also
essential that pre-engineering students have the competence of reading
comprehension, and to write logically, clearly and correctly.

ABET Accreditation

The BS program in Mechanical Engineering is accredited by the Engineering

Lower-Division Study

All lower-division students in Mechanical Engineering concentrate on mathematics,
science, and introductory engineering courses, building competence in these
cornerstone areas for future application in upper-division engineering courses. The
following requirements apply both to students seeking to transfer to UT Dallas from
other institutions as well as to those currently enrolled at UT Dallas, whether in another
school or in the Erik Jonsson School of Engineering and Computer Science.

Academic Progress in Mechanical Engineering

In order to make satisfactory academic progress as a Mechanical Engineering major, a
student must meet all university requirements for academic progress, and must earn a
grade of C- or better in each of the "major requirements" courses. No "Major
Requirements" course may be taken until the student has obtained a grade of C- or
better in each of the prerequisites. If a higher grade requirement is stated for a specific
class, the higher requirement applies.

Bachelor of Science in Mechanical Engineering

Degree Requirements (127 semester credit hours)¹

I. Core Curriculum Requirements: 42 semester credit hours²

**Communication: 6 semester credit hours**

- RHET 1302 Rhetoric
- ECS 3390 Professional and Technical Communication³

**Mathematics: 3 semester credit hours**

- MATH 2417 Calculus I⁴

**Life and Physical Sciences: 6 semester credit hours⁵**

- PHYS 2325 Mechanics
- PHYS 2326 Electromagnetism and Waves

**Language, Philosophy and Culture: 3 semester credit hours**

Select any 3 semester credit hours from Language, Philosophy and Culture core

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¹ https://catalog.utdallas.edu/2014/undergraduate/programs/ecs/mechanical-engineering
Creative Arts: 3 semester credit hours
Select any 3 semester credit hours from Creative Arts core courses (see advisor)

American History: 6 semester credit hours
Select any 6 semester credit hours from American History core courses (see advisor)

Government / Political Science: 6 semester credit hours

- **GOVT 2305** American National Government
- **GOVT 2306** State and Local Government

Social and Behavioral Sciences: 3 semester credit hours

- **ECS 3361** Social Issues and Ethics in Computer Science and Engineering

Component Area Option: 6 semester credit hours

- **MATH 2417** Calculus I
- **MATH 2419** Calculus II
- **PHYS 2125** Physics Laboratory

II. Major Requirements: 79 semester credit hours

Major Preparatory Courses: 29 semester credit hours beyond Core Curriculum Requirements

- **CHEM 1111** General Chemistry Laboratory I
- **CHEM 1311** General Chemistry I
- **CS 1325** Introduction to Programming
- **ECS 1200** Introduction to Engineering and Computer Science
- **MATH 2417** Calculus I
- **MATH 2419** Calculus II
- **MATH 2420** Differential Equations with Applications
- **MECH 1208** Introduction to Mechanical Engineering
- **MECH 2120** Mechanical Measurements Laboratory
- **ENGR 2300** Linear Algebra for Engineers
- **MECH 2310** Statics
- **MECH 2320** Mechanics of Materials
- **MECH 2330** Dynamics
Major Core Courses: 38 hours beyond Core Curriculum Requirements

- PHYS 2125 Physics Laboratory I
- PHYS 2126 Physics Laboratory II
- PHYS 2325 Mechanics
- PHYS 2326 Electromagnetism and Waves

Prescribed Electives: 12 semester credit hours

Students pursuing the general program take 12 semester credit hours from the list below:

- ECS 3310 Introduction to Materials Science
- MECH 4301 Intermediate Mechanics of Materials
- MECH 4320 Applications of Computational Tools in Thermal Fluid Science
- MECH 4330 Intermediate Fluid Mechanics
- MECH 4340 Mechanical Vibrations
- MECH 4350 Applied Heat Transfer
III. Elective Requirements: 6 semester credit hours

Free Electives: 6 semester credit hours

Both lower- and upper-division courses may count as free electives but students must complete at least 51 semester credit hours of upper-division courses to qualify for graduation.

Degree programs in the Erik Jonsson School of Engineering and Computer Science are governed by various accreditation boards that place restrictions on classes used to meet the curricular requirements of degrees they certify. For this reason, not all classes offered by the university can be used to meet elective requirements. Please check with your academic advisor before enrolling in classes you hope to use as free electives.

Fast Track Baccalaureate/Master’s Degrees

In response to the need for advanced education in Mechanical Engineering, a Fast Track program is available to well-qualified UT Dallas undergraduate students. The Fast Track program is designed to accelerate a student’s education so that both a BS and an MS degree can be earned in five years of full-time study. This is accomplished by (1) taking courses (typically electives) during one or more summer semesters, and (2) beginning graduate coursework during the senior year. Details are available from the Associate Dean for Undergraduate Education.

Honors Program

The Department of Mechanical Engineering offers upper-division Honors for outstanding students in the BS Mechanical Engineering degree program. This program offers special sections of designated classes and other activities designed to enhance the educational experience of exceptional students. Admission to the Honors programs requires a 3.500 or better GPA (grade point average) in at least 30 semester credit hours of coursework. Graduation with Honors requires a 3.500 or better GPA and completion of at least 6 honors classes. These honors classes must include either Senior Honors (MECH 4399) or Undergraduate Research in Mechanical Engineering (MECH 4V98) and a Senior Honors Thesis must be completed within one of those two classes. While the topics may be related, the Senior Thesis does not replace the need for the student to complete a regular Senior Design Project. The other 5 honors classes can come from a mixture of Graduate level (up to a count of 4) classes and special honor sections of regular undergraduate MECH classes (up to a count of 2).

Departmental Honors with Distinction may be awarded to students whose Senior Honors Thesis is judged by a faculty committee to be of exemplary quality. Only students graduating with Departmental Honors are eligible. Thesis/projects must be submitted by the deadline that applies to MS Theses in the graduating semester to allow for proper evaluation. Students interested in Honors with Distinction are encouraged to start working on their thesis/project a year prior to graduation.

Minors

The Department of Mechanical Engineering does not offer minors at this time.
1. Incoming freshmen must complete and pass UNIV 1010 Freshman Seminar and the corresponding school-related freshman seminar course. Erik Jonsson School of Engineering and Computer Science majors must enroll and receive credit for ECS 1200 which will satisfy the UNIV 1010 graduation requirement. Students, including transfer students, who complete their core curriculum at UT Dallas must take UNIV 2020.

2. Curriculum Requirements can be fulfilled by other approved courses. The courses listed are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at UT Dallas.

3. Semester credit hours fulfill the communication component of the Core Curriculum.

4. Three semester credit hours of Calculus are counted under Mathematics Core, and five semester credit hours of Calculus are counted as Component Area Option Core.

5. Six semester credit hours of Physics are counted under Science core, and one semester credit hour of Physics (PHYS 2125) is counted as Component Area Option Core.

6. Semester credit hours contribute to the Social and Behavioral Sciences component of the Core Curriculum.

7. Students must pass each of the "Major Requirements" courses listed in this degree plan and each of their prerequisites, with a grade of C- or better.

8. Transfer students with sufficient background may petition to substitute upper-division semester credit hours in the major for this class.

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