

of materials science and engineering courses, plus MFET 3450, Engineering Materials (4 hours). At least 6 of the 15 hours in materials science and engineering should be from any two of the four core courses: MTSE 3010, MTSE 3030, MTSE 3050 and MTSE 3070. The remaining 9 hours can be from any other 3000- or 4000-level materials science engineering courses.

**Note:** The prerequisite of MFET 2100 for MFET 3450 is waived for students registering for a minor in materials science and engineering; however, the other prerequisites for MFET 3450 (CHEM 1410/1430 and MATH 1710) must be completed by students registering for the minor in materials sciences and engineering.

## Courses of Instruction

All Courses of Instruction are located in one section at the back of this catalog.

### Course and Subject Guide

The “Course and Subject Guide,” found in the Courses of Instruction section of this book, serves as a table of contents and provides quick access to subject areas and prefixes.

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# Department of Mechanical and Energy Engineering

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**Efstathios E. (Stathis) Michaelides, Chair**

## Faculty

*Professor* Michaelides. *Assistant Professors* Boetcher, Choi, Feng.

## Introduction

The Department of Mechanical and Energy Engineering at the University of North Texas is committed to academic excellence in undergraduate and graduate education and research in all areas

pertinent to the discipline of mechanical engineering and in particular in subjects related to energy production and conservation and thermal engineering. The goals of the Department and its faculty are: (1) to provide high quality and innovative educational programs at the undergraduate and graduate levels; (2) to foster lifelong learning; to promote professionalism and ethical standards; and to help students develop leadership qualities; (3) to pursue excellence in scholarly research in areas of mechanical and energy engineering; and (4) to collaborate with engineers in industry, national laboratories and government agencies in the solution of national and global problems related to energy use and its environmental impacts.

## Mission and Vision

The mission of the Department of Mechanical and Energy Engineering is to harness the power of ideas by fostering a strong culture of learning, high quality scholarly activities and service to the engineering profession and society. We seek to accomplish this mission by:

- Offering high quality and innovative educational programs at the undergraduate and graduate level.
- Pursuing innovation and excellence in scholarly activities.
- Serving the engineering profession and humanity with faculty and student expertise.

The vision of the Department of Mechanical and Energy Engineering is to create an outstanding, innovative and interdisciplinary academic program that emphasizes the fundamentals of mechanical engineering, modern applications pertaining to energy production, management and distribution, and life-long learning skills, within a research-and-project oriented environment.

## Programs of Study

The department currently offers programs in the following areas:

- Bachelor of Science, and
- Master of Science, both with a major in mechanical and energy engineering.

## Bachelor of Science with a Major in Mechanical and Energy Engineering

The Bachelor of Science degree with a major in mechanical and energy engineering follows an interdisciplinary and innovative curriculum that combines the essentials of the classical discipline of mechanical engineering with the deeper knowledge of the dynamic field of energy studies. Thus, the BS degree combines the fundamentals of mechanical engineering with

a broad specialization on subjects related to energy production, management and distribution. The goal of the mechanical and energy engineering department is to provide a curriculum and course of training that will prepare today's undergraduate not only for today's challenges, but also for future challenges in a fast-paced, global, and diverse society. As a consequence, this program emphasizes the fundamentals of engineering and modern methods, processes and technologies and also gives students the tools to learn by themselves and to pursue lifelong learning.

The mechanical and energy engineering curriculum is very broad. It is similar to the traditional mechanical engineering curriculum with the notable addition of several required energy-related courses and elective courses that emphasize energy applications and materials. In their first year, students in this program will take preparatory courses in mathematics and the basic sciences, including physics, computer science and chemistry. The required engineering courses are in the broad areas of: thermal science, fluid flow and energy; mechanics and materials; dynamics, design and controls; environmental impact of energy production and use. Technical elective courses range from alternative energy sources to entrepreneurship. The program also emphasizes studies in the humanities and social sciences, artistic ingenuity, professionalism and engineering ethics.

The BS degree with a major in mechanical and energy engineering is a new program at the University of North Texas. The curriculum of this program has been designed to meet the ABET criteria for accreditation in the general category of "Mechanical Engineering." According to the ABET procedures, accreditation for this program will be sought as soon as the program graduates its first class of students, which is expected to happen in spring 2010.

### Degree Requirements

1. **Hours Required and General/College Requirements:** A minimum of 131 semester hours, of which 42 must be advanced, and fulfillment of degree requirements for the Bachelor of Science degree as specified in the "General University Requirements" in the Academics section of this catalog and the College of Engineering requirements.

2. **Major Requirements:** A minimum of 43 semester hours, including MEEN 1110, 1210, 2210, 2250, 3110, 3120, 3125, 3130, 3210, 3230, 3240, 4110, 4112, 4150, 4250 and ENGR 2303; plus 9 hours of MEEN technical electives.

3. **Other Required Courses:**

- a. MATH 1710, 1720, 2730 and 3310.
- b. CHEM 1410/1430, PHYS 1710/1730, PHYS 2220
- c. CSCE 1020; EENG 1910, 2610; ENGR 2303, 2060, 2332; MEEN 3245

- d. MGMT 3850 (or another approved elective)
- e. GEOG 1170 (may be used to satisfy the Social and Behavioral Sciences requirement of the University Core Curriculum).
- f. PHIL 2500 (may be used to satisfy the Humanities requirement of the University Core Curriculum).

4. **Minor:** Optional

5. **Electives:** See four-year plan.

6. **Other Requirements:** A grade point average of at least 2.5 is required for all mechanical and energy engineering courses.

### BS with a Major in Mechanical and Energy Engineering

*Following is one suggested four-year degree plan. Students are encouraged to see their adviser each semester for help with program decisions and enrollment. Students are responsible for meeting all course prerequisites.*

#### FRESHMAN YEAR

FALL	HOURS
CSCE 1020, Program Development	4
EENG 1910, Project I (Learning to Learn)	2
ENGL 1310, College Writing I or ENGL 1313, Computer Assisted College Writing I*	3
MATH 1710, Calculus I	4
MEEN 1110, Mechanical and Energy Engineering Practice I	1
Wellness*	<u>3</u>
Total	17

SPRING	HOURS
CHEM 1410, General Chemistry for Science Majors**	3
CHEM 1430, Laboratory Sequence for General Chemistry**	1
ENGL 2700, Technical Writing*	3
MATH 1720, Calculus II	3
MEEN 1210, Mechanical and Energy Engineering Practice II	1
PHYS 1710, Mechanics	3
PHYS 1730, Laboratory in Mechanics	<u>1</u>
Total	15

#### SOPHOMORE YEAR

FALL	HOURS
ENGR 2060, Professional Presentations	3
ENGR 2303, Statics and Dynamics	4
GEOG 1170, Culture, Environment and Society (may be used to satisfy Social and Behavioral Sciences requirement*)	3
MATH 2700, Linear Algebra and Vector Geometry	3
PHYS 2220, Electricity and Magnetism	<u>3</u>
Total	17

SPRING	HOURS
ENGR 2332, Mechanics of Materials	4
HIST 2610, United States History to 1865*	3
MATH 3310, Differential Equations for Engineering Majors	3
MEEN 2210, Thermodynamics	3
MEEN 2250, Computer Aided Engineering	3
Cross-Cultural, Diversity and Global Studies*	<u>3</u>
Total	19

**JUNIOR YEAR**

FALL	HOURS
EENG 2610, Circuit Analysis	3
MEEN 3110, Thermomechanical Energy Conversion	2
MEEN 3120, Fluid Mechanics and Convection	3
MEEN 3130, Machine Elements	3
MEEN 3210, Conduction and Radiation	2
PHIL 2500, Introduction to Contemporary Environmental Issues (may be used to satisfy Humanities requirement*)	<u>3</u>
Total	16

SPRING	HOURS
MEEN 3125, Thermal Engineering Projects	2
MEEN 3230, Dynamics, Vibrations and Control	3
MEEN 3240, Mechanical and Energy Engineering Laboratory and Instrumentation	3
MEEN 3245, Engineering Materials	3
PSCI 1040, American Government*	3
Visual and Performing Arts*	<u>3</u>
Total	17

**SENIOR YEAR**

FALL	HOURS
HIST 2320, United States History Since 1865*	3
MEEN 4150, Mechanical and Energy Engineering Design I	3
MEEN 4112, Nuclear Energy	3
MEEN 4110, Alternative Energy Sources	3
Technical Elective	<u>3</u>
Total	15

SPRING	HOURS
PSCI 1050, American Government*	3
MEEN 4250, Mechanical and Energy Engineering Design II	3
MGMT 3850, Entrepreneurship***	3
Technical Elective	3
Technical Elective	<u>3</u>
Total	15

*\*See the University Core Curriculum section of this catalog for approved list of course options.*

*\*\* See College of Engineering degree requirements section of this catalog for approved list of course options.*

*\*\*\* May substitute a Technical Elective.*

*Actual degree plans may vary depending on availability of courses in a given semester.*

*Some courses may require prerequisites not listed.*

**Graduate Degrees**

The Department of Mechanical and Energy Engineering offers a degree program leading to the Master of Science. For information, consult the *Graduate Catalog*.

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