FINANCIAL AID
A major source of Financial Aid is through Research Assistantships. These are competitive positions that are funded by research based grants and contracts. A limited number of Teaching Assistantships is also available. Send your resume to the Mechanical Engineering Department to be contacted about open opportunities.
Additional financial support opportunities include:
- Scholarships, training stipends, and fellowships
- Need-based assistance of Texas residents or U.S. citizens and permanent residents
- Employment opportunities through the Cooperative Education Program
- On-campus and off-campus positions for some students
- Resident tuition to citizens of Mexico demonstrating financial need

APPLICATION DEADLINES:
Domestic Applicants
Fall Semester: August 1st
(Mexican Nationals: July 1st)
Spring Semester: November 1st
Summer Semester: May 1st

International Applicants
Fall Semester: March 1st
Spring Semester: September 1st

HOW TO APPLY
The UTEP Graduate School accepts applications year round, and the deadlines depend on the semester in which applicants wish to begin their coursework. The online application (https://apply.embark.com/grad/UTEP19/) asks for detailed information the candidate’s academic background. Before scrolling down to start the application process candidates should have the necessary documents to complete the application process. For more information, visit the Graduate School at http://academics.utep.edu/graduate.

CONTACT:
Department of Mechanical Engineering
College of Engineering, Suite 126
500 W. University Avenue
El Paso, Texas 79968
915.747.5450
http://me.utep.edu
Energy Research Demands for the 21st Century

ABOUT THE DEPARTMENT

The Department of Mechanical Engineering at The University of Texas at El Paso offers a Bachelor of Science in Mechanical Engineering, a Master of Science in Mechanical Engineering, and a Doctor of Philosophy track in Energy Science and Engineering within the interdisciplinary Environmental Science and Engineering doctoral program.

Major areas of expertise within the department include energy and sustainability engineering, aerospace and defense engineering, and biomedical and manufacturing engineering. Mechanical Engineering’s major research themes include low carbon energy sciences, advanced propulsion, 3D manufacturing, and tissue engineering. Research projects are sponsored by the National Aeronautics and Space Administration (NASA), Department of Energy, Department of Defense, National Science Foundation, National Institutes of Health, and various industrial partners.

The Department boasts several major research facilities including the NASA Center for Space Exploration and Technology Research, W. M. Keck Center for 3D Innovation, Biomedical Engineering research facilities and a new design studio for design innovation and entrepreneurship.

REQUIRED COURSEWORK

Specific course requirements for each student will be determined by the student’s Doctoral Advisory Committee; however, each student must complete at least 60 hours beyond the Master’s degree. At least 30 hours are organized coursework. The ENSE doctoral track requires the student to complete a minimum 12 hours (4 courses) of energy core courses. The balance of the required 30 semester hours of organized coursework will be fulfilled by a selection of general ESE core courses and elective courses. The candidate’s enrollment in research and dissertation courses will complete the remainder of the 60 semester hours.

RESEARCH THEMES

The research areas in the ENSE program include (but are not limited to):

Fossil Fuel Power Generation Efficiency Improvement
- Advanced turbine technologies
- High temperature materials
- Sensors and control

Fossil Energy Carbon Capture and Storage Solution
- Advanced oxy-fuel and chemical looping combustion
- Pore-scale modeling for CO2 storage

High Capacity Factor Renewable Power Generation
- Concentrating solar power systems

Aerospace Propulsion
- Hydrocarbon and green propellants
- In-situ propellant and resource utilizations
- High temperature materials
# Curriculum

<table>
<thead>
<tr>
<th>Core Course</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment and Energy Projects</td>
<td>6</td>
</tr>
<tr>
<td>Elective Courses</td>
<td>6-12</td>
</tr>
<tr>
<td>Research</td>
<td>18-24</td>
</tr>
<tr>
<td>Dissertation</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
</tr>
</tbody>
</table>

## Core Courses

Select **six** of these (a minimum of **four** should be from Energy Core Courses)

### Energy Core Courses

- ESE 6312 Energy Policy Analysis and Economic Modeling
- ESE 6314 Energy Systems Engineering
- ESE 6316 Sustainable Energy
- ESE 6318 Energy Use and Climate Change
- ESE 6320 Advanced Topics in Energy Engineering

### General ESE Core Courses

- ESE 6107 Graduate Seminar
- ESE 6301 Environmental Law and Policy
- ESE 6303 Transport, Fate & Treatment of Contaminants in the Environment
- ESE 6402 Environmental Chemistry
- ESE 6404 Environmental Biology
- ESE 6405 Environmental Geosciences

### Environment and Energy Projects

- ESE 6306 Principles of Experimental & Engineering Design
- ESE 6307 Interdisciplinary Environmental and Energy Problem-solving

## Elective Courses

Select **two-four** of these or suitable alternatives with approval of the graduate coordinator

**Note:** All students will take elective classes to fulfill the 60 semester hour requirement for this doctoral degree program. Only elective classes approved by the student's committee qualify for this requirement. The list below is only a sample of course offerings.

- MECH 5302 Advanced Mechanics of Materials
- MECH 5303 Advanced Heat Transfer
- MECH 5306 Advanced Fluid Mechanics
- MECH 5310 Advanced Thermodynamics
- MECH 5318 Advanced Dynamics

## Research and Dissertation

- ESE 6396 Doctoral Research
- ESE 6398 Dissertation
- ESE 6399 Dissertation
APPLICATION REQUIREMENTS

In addition to Graduate School and ESE admission requirements, students entering the ENSE doctoral track must have

- A Master of Science degree, or equivalent, in an energy related engineering field. Students from chemistry, physics, and other science fields with strong energy related academic background and professional experiences are also encouraged to apply.
- A Superior Academic Record (Graduate GPA ≥ 3.5)
- A GRE percentile score 670 or higher in the quantitative section
- A minimum TOEFL score of 550 (IBT 79; CBT 213) for international applicants
- At least two letters of reference from individuals qualified to judge their capability to do doctoral-level work.

Students who do not meet the above requirements may also apply with additional justifications

HOW TO APPLY

The UTEP Graduate School accepts applications year round and the deadlines depend on the semester in which applicants wish to begin their course work. The online application (https://apply.embark.com/grad/UTEP/19/) asks for detailed information on the candidate’s academic background. Before starting the application process, candidates should have the following documents at hand:

- Transcripts of all universities and colleges attended prior to application
- Entry test scores for GRE /TOEFL
- Records of any completed certification and non-degree programs
- Proof of citizenship or permanent resident status
- Records of resident history for last two years (military spouses may contact the registrar’s office to establish residency)

The Graduate School needs official copies of the following documents to successfully process applications into the Graduate School:

- Official Transcripts
- Application fee payment
- Test scores
- Reference letters

Please send required official documents and fees to:

UTEP Graduate School
Academic Services Bldg., Room 223
500 West University Ave.
El Paso, TX 79968-0566