MS Integrated Engineering
Student Handbook

Program Overview

The Master of Science in Integrated Engineering (MS-IENG) degree is a customizable 33-hour multidisciplinary program that enables students to tailor their engineering coursework to align with their interests. The Integrated Engineering MS is designed to give students the skills needed to integrate engineering with knowledge from other disciplines to solve complex, socio-technical challenges that are difficult to address from a single disciplinary perspective. Students, therefore, combine an integrated engineering core with a concentration in another field, either in or outside engineering. Possible concentrations include education, leadership, business administration, computer science, information technology, and many other fields in the sciences, liberal arts, and health sciences.

Engineering Education and Leadership Department

The MS-E program is administered by the Department of Engineering Education and Leadership (EEL) for the College of Engineering at UT El Paso. The EEL Department was established in 2015 and seeks to develop deep and varied technical knowledge as well as leadership capacity amongst engineers by:

- Providing an open learning experience centered on project-based learning and student autonomy.

- Developing a community-based culture where students can feel comfortable interacting with each other and their professors, both in and out of the classroom.

- Providing students with the opportunity to participate in experiences that transcend academics and develop skills, knowledge, and attitudes that are not taught within the classroom.

- Conducting research that improves and advances engineering education.

Program Educational Objectives

The MS-IENG program strives to graduate engineers of the highest quality and to conduct state-of-the-art research for diverse sociotechnical enterprises. As described in detail below, our program has four primary educational outcomes:

- To make a high-quality, personalized advanced engineering education accessible to all engineers of the El Paso Del Norte region and beyond.

- To provide students with a set of skills, knowledge, and attitudes that will permit our graduates to succeed and thrive as engineers in a wide variety of leadership roles and disciplines.

- To prepare our graduates to pursue life-long learning, serve the engineering profession, and meet intellectual, ethical, and career challenges.

- To maintain a vital, state-of-the-art research endeavor to provide our students, staff, and faculty with opportunities to create, interpret, apply, and disseminate knowledge for the engineering and other sociotechnical enterprises.

Diversity Drives Innovation

As an interdisciplinary program, our goal is to remain adaptable to students' interests, passions, and future career goals. Therefore, our degree is highly customizable, allowing students to integrate their engineering knowledge with various other disciplinary fields. Moreover, students can tailor their final capstone/exam to their professional needs, research projects for those interested in academia and research careers, and design projects for those pursuing industry. We also welcome students from various engineering backgrounds, seeking to help them build diverse perspectives.

Advancing Discovery

Much of the ongoing advancement in engineering research and product development results from innovation at the intersections of disciplines. In fact, most of the technological challenges of the future are not purely technical but sociotechnical. Therefore, this program focuses on advancing discovery at those intersections to address the necessary sociotechnical and interdisciplinary innovations of the future.

Community Engagement & Interdisciplinary Collaboration Creates Opportunities

The program seeks to extend educational access to a region that has been geographically isolated with limited economic and educational opportunities for many of its people. The graduate program will ensure that its graduates obtain the best education possible, one which is equal, and in some respects superior, to that of other institutions, so that UTEP's graduates will be competitive in the global marketplace. The program capitalizes on its bi-national location to create and maintain multicultural, inter-American educational and research collaborations among students, faculty, institutions, and industries, especially in northern Mexico.

Shape the Future of Higher Education

The MS-IENG program seeks to inspire, influence, and innovate engineering education broadly. Like UTEP's vision and mission, the MS-IENG program is dedicated to advancing the El Paso region through education; creative and entrepreneurial production; the generation, interpretation, application, and commercialization of technology; and the dissemination of engineering education knowledge. The program embraces its role as an intellectual, cultural, and socioeconomic asset to the region, offering engineering education programs to meet human resource needs and contribute to the quality of life. The program prepares students to contribute significantly to their professions, communities, and the world.

Program History

The MS-IENG, launched in Fall 2025, is a rebranding of the interdisciplinary Master of Science in Engineering (MS-E) program, which was the oldest graduate program in the College of Engineering at UTEP, having commenced in 1963. During the 2010s, the interdisciplinary program graduated over 100 students in tracks appropriate to current innovations in engineering, including biomedical engineering, software engineering, and systems engineering. Originally, the College of

Engineering Dean's office administered the MS-E degree program and had multiple tracks (i.e., biomedical engineering, systems engineering, software engineering, and engineering education).

In practice, the program was decentralized, and each track was effectively coordinated by the corresponding programs. These tracks have since become master's programs. The biomedical engineering track has since been superseded by an M.S. in Biomedical Engineering, reviewed and coordinated by the Department of Metallurgical, Materials, and Biomedical Engineering. The software engineering track was also superseded by an M.S. in Software Engineering, reviewed and coordinated in the Department of Computer Science. The systems engineering track was similarly superseded by an M.S. in Systems Engineering, reviewed and coordinated by the Department of Industrial, Manufacturing, and Systems Engineering. Consequently, the MS-E program has constantly evolved in response to 1) emerging industrial needs, 2) feedback from the program's industry partners who have sponsored internships and have later employed graduates, and 3) the quality of the program implemented by the faculty.

Since 2015, the Department of Engineering Education and Leadership (EEL) has administered the interdisciplinary degree. In this department, the program has evolved yet again into the MS-IENG in response to changing demands. This latest evolution has recognized that many MS-E students are working professionals looking for opportunities to advance their careers in niche interdisciplinary areas of engineering.

Admissions Requirements

Application Process and Eligibility

In addition to completing the Graduate School application, students must submit:

- **Official transcripts of all previous academic work.** An undergraduate degree in Engineering or a related field from an accredited institution in the United States, or proof of equivalent education from an international institution, is expected. Students interested in the MS-IENG who wish to apply but do not have a background in engineering should consult with the program director for guidance on demonstrating adequate preparation outside of traditional engineering coursework. Depending upon the selected area of concentration, students may need to complete additional undergraduate leveling coursework. GPAs below 2.5 out of 4 are unlikely to be recommended for admission. GRE scores are not required but can be submitted if additional evidence of academic readiness is warranted.

- A written **statement of intent** describing their career goals and vision for achieving those goals (including a summary of previous preparation and rationale for pursuing this graduate program).

- **Two or more letters of recommendation** describing the applicant's background, knowledge, research, or work experience in engineering.

- A **CV or resume** summarizing professional and academic experience and any other evidence of background, knowledge, research, or work experience in engineering that may help demonstrate their professional experience.

- **Official scores on the Test of English as a Foreign Language (TOEFL),** if required. Applicants from countries where English is not the first language are required to demonstrate English proficiency. Please consult the graduate school website for the required scores.

All materials must be submitted through the Graduate School application website.

Fast Track Requirements

A Fast Track (FT) option is available for undergraduate students pursuing the Bachelor of Science in Engineering Innovation and Leadership. This program is essentially a dual credit program where the student is enrolled in both the graduate and undergraduate programs. Because students in this FT program are automatically accepted into the MS-IENG graduate program upon acceptance to the FT program, students must apply via the graduate school application and select the "fast-track" as their degree program (MS-IENG is part of the general program and, therefore, does not have a separate engineering fast-track program).

To be eligible, students must have successfully completed 90 hours toward their undergraduate degree, at least 24 of those hours at UTEP. Currently, this FT is only available to BSEIL students. All BSEIL concentrations are eligible, but Innovation Concentration students may find it easiest to fit into their undergraduate degree plan. Students must have and maintain an undergraduate GPA equal to or greater than 3.30/4.00. Fast-track students are not required to submit letters of recommendation or statements of purpose.

Students in the Fast Track may take up to 15 graduate credit hours from the Integrated Engineering Core courses: EEL 5330, EEL 5334, EEL 5340, EEL 5341, and EEL 5390 (see *Integrated Engineering Core Coursework* below). Students must be advised **each semester** at the departmental level by both the undergraduate and graduate advisors and cleared for registration in graduate courses by the Graduate School (see *Advising for Fast Track Students*)

Undergraduate students must earn a B or better in the graduate course for the course to count as graduate credit. If the grade is a C, it will not count toward the graduate degree, but the credit hours will still count toward the undergraduate degree. The earned grade will not be calculated in the undergraduate GPA and will show on the undergraduate transcript as a transfer. When the student graduates with the bachelor's degree, the graduate courses will be shown in the undergraduate transcript, and if a grade of C or better is attained, it counts toward the undergraduate degree. The courses will also show on the graduate transcript as graduate courses, but in these cases, they will be calculated into the graduate GPA.

NOTE: Tuition will be based on the level of the course, not on the level of the student. Financial aid may be adjusted.

Deadlines

Application submission deadlines vary based on whether applicants are international students, Mexican nationals, or domestic students. These deadlines are set based on processing timelines and to ensure students have sufficient time to make plans to attend. If you are concerned about the application timeline or are considering applying after the deadline has passed, please reach out to the graduate program director via email. Annual application deadlines for students wishing to enroll in the:

Fall Semester

- International Student: March 1
- Mexican Nationals: July 1
- Domestic: August 1
- Fast-Track: Fall census date (However, students are encouraged to apply in the spring or summer in advance of taking fast-track courses in fall.)

Spring Semester

- International Student: September 1
- Mexican Nationals: November 1
- Domestic: November 1
- Fast-Track: Spring census date (However, students are encouraged to apply in the Fall in advance of taking fast-track courses in spring.)

Summer

- International Student: Not eligible
- Mexican Nationals: Not eligible
- Domestic: May 1
- Fast-Track: Not applicable at this time.

Review Process

The MS-IENG reviews applications on a rolling basis as they are received. Each application is reviewed holistically by the Graduate Program Director in consultation with the Graduate Program Committee. Candidates are evaluated based on 1) their readiness for academic research, 2) their engineering knowledge and experience, and 3) the alignment of their career goals with the program's mission of integrating engineering with other knowledge and skills to address sociotechnical challenges.

Reviews will result in one of three recommended outcomes:

(I)   Admit
(II)   Admit with conditions (see *Conditionally Admitted Students*)

(III)   Do not admit

Students will be notified by the graduate school of the outcome of their application based on this recommendation from the graduate program. Students wishing to enroll will then meet with the Graduate Program Director to prepare their initial degree plan and register for courses.

NOTE: Students should know that additional leveling courses may be required to complete the degree. These courses will be determined in consultation with the Graduate Program Director based on the concentration and elective courses the student is interested in completing.

Conditionally Admitted Students

If a student does not meet all admissions criteria but shows promise of being able to complete graduate study successfully, the program may opt to offer a conditional admission. Students who are admitted with conditions will be required to meet particular conditions set by the Graduate Program Director by the end of their first semester. These could include requirements to maintain a particular GPA, complete leveling courses, or attend specific workshops or seminars. The conditions are set on a case-by-case basis and subject to the approval of the Dean of the Graduate School. International students and Fast-track students are not eligible for conditional admission.

Degree Requirements

Degree Plan

The MS in Integrated Engineering is a 33-semester-hour program. Coursework includes:

- Eighteen (18) semester hours in the Integrated Engineering Core.
- Nine (9) - twelve (12) semester hours in a concentration field, depending on the selected capstone experience.
- Three (3) - six (6) semester hours of a capstone experience: graduate design project (3 hrs), research capstone (3 hrs), or thesis (6 hrs).

No more than six (6) hours of upper-division undergraduate coursework can be counted toward the degree requirements.

Concentration fields include:

- Computer Science and Aerospace, Biomedical, Civil, Computer, Electrical, Environmental, Engineering Education and Leadership, Industrial, Manufacturing, Mechanical, Metallurgical and Materials Engineering, and Systems Engineering.
- Other areas of concentration from established graduate programs at UTEP, such as Business Administration, Economics, Information Technology, Mathematics, Physics, Chemistry, Biology, Geology, or others approved by the Graduate Advisor.
- A coherent set of courses that relate to a single interdisciplinary theme, subject to the approval of the Graduate Program Director.

MS-IENG Degree Process Outline

Prior to Start of First Term

- Apply to program (see *Admissions Requirements*)
- Admitted to program
- First advising meeting with Graduate Program Director (GPD)
- Identify concentration and elective courses
- Register for courses

During First Term

- Complete *New Graduate Student Orientation* modules on Blackboard
- Complete 1st term courses
- Decide on Project vs. Thesis option
- Identify potential Project/Thesis Advisor
- Submit proposed plan of study and Project/Thesis Advisor's name to GPD for approval
  - If a Project/Thesis Advisor has been approved, meet with Advisor to review proposed plan of study prior to meeting with GPD.
- Second advising meeting with GPD to have advising hold removed for registration

During Second Term

- Complete 2nd term courses
- Draft an Individual Development Plan (IDP) with Project/Thesis advisor
- Identify potential project or thesis topic
- Submit thesis topic proposal to GPD in consultation with Thesis Advisor (If pursuing thesis option)
  - Submit thesis proposal form to graduate school once approved by GPD and Thesis Advisor.
- Meet with Project/Thesis Advisor to review your current plan of study before meeting with GPD.
- Third advising meeting with GPD to have advising hold removed for registration

During Third Term

- Complete 3rd term courses
  - Thesis students will complete Thesis I
- Update IDP with Project/Thesis advisor
- Submit project proposal to GPD in consultation with Project Advisor (If pursuing project option)
- Meet with Project/Thesis Advisor to review your current plan of study before meeting with GPD.
- Fourth advising meeting with GPD to have advising hold removed for registration

During Fourth Term

- Complete 4th term courses
  - Thesis students will complete Thesis II
  - Project students will complete Graduate Project or Research Capstone Course
- Update IDP with Project/Thesis advisor
- Apply for graduation
- Submit project/thesis report to GDP and Graduate School
- Defend project/thesis (defense presentation)
- Submit the completion/defense form to the Graduate School
- Attend graduation!

Plan of Study

During their first term, students will finalize their plan of study with the GPD and their Project/Thesis Advisor, if identified. Changes to this plan can be made, but require approval from the GPD. This plan of study should be submitted prior to advising each semester using the departmental template (see Appendix or request copy from GPD) and include:

- Project/Thesis title or topic area
- Name of Project or Thesis Advisor and committee members (see *Capstone Supervisory Committee*)
- Integrated Engineering Core
- Engineering Elective Courses
- Concentration Courses
- Any necessary leveling courses
- Intended Capstone Experience (Research Capstone, Graduate Project, or Thesis)

Details for each element of the plan of study are available in the following sections.

Integrated Engineering Core Coursework

The following four courses are required in the Integrated Engineering Core:

EEL 5330 Sustainable Engineering Innovation in Technology

This course develops design skills for graduate students in engineering and computer science, building on students' technical knowledge to help them identify and find novel solutions for difficult design problems. To do this, the course enables students to improve their innovation skills and to understand the role of innovation in technology-based enterprises. Working with the innovation techniques of Liberating Structures as a central theme, the course Integrates improvisation and story-telling to build creativity.

EEL 5334 Engineering Law and Ethics

This course introduces graduate engineering students to the concepts, theory, and practice of engineering law and ethics. Engineers must act professionally, ethically, and socially responsibly in diverse contexts. They must apply codes of ethics and understand how the legal system influences their practice. Students will study real-world case studies to learn about the legal and ethical responsibilities of engineers. This course will provide an introductory understanding of the legal framework under which engineers work, topics such as contracts, torts, and intellectual property.

EEL 5340 Engineering Leadership Development

This course is divided into two main components. The first deals with individual leadership development by providing a framework for understanding the elements of an organization's leader development system. The second part focuses on collective leadership capacity in organizations. This course ties together and integrates many initiatives stemming from different areas of expertise with the primary goal to be to present knowledge in a way that students can use in their efforts to create leadership development experiences.

EEL 5341 Advanced Finance Management for Engineers

Learning to evaluate financial performance through interpretation of income statements, balance sheets, cash flow statements, and project reports is critical to an engineering project manager's success as well as the success of a business. This course teaches the engineering design professional how to read and interpret the income statement, including such components as gross revenue, net revenue, direct and reimbursable expenses, indirect expenses, net profit before taxes, depreciation, gross profit, and net profit after taxes. It examines the primary benchmarks of performance.

Engineering Elective Coursework

To complete the 18-credit-hour Integrated Engineering Core, students must select 6 hours of graduate-level engineering elective courses. These courses can come from any graduate program in the College of Engineering and should support the focus of the students' intended final capstone experience. The selected courses must be approved by the Graduate Program Director.

Concentration Coursework

Depending on the selected capstone experience, students will have the opportunity to select nine to twelve credit hours of coursework in a concentration area. Regardless of discipline, a concentration consists of a coherent set of courses that relate to a single disciplinary or interdisciplinary theme, subject to the approval of the Graduate Program Director. Students can pursue a concentration in any discipline of engineering or any other established graduate program at UTEP. Students must get approval from the Graduate Program Director for their selected concentration courses. **Prerequisites and other program requirements still apply** (see also *Leveling Courses for New Disciplinary Focus*). Therefore, students should consult with the related program to confirm whether they have met the requirements to enroll in desired concentration courses.

Graduate Certificate as Concentration

To help with the selection of concentration courses, students are encouraged to select a set of courses from an existing MS or Graduate Certificate. In some circumstances, students may be able to combine the engineering electives with the concentration courses to complete all required courses in a Graduate Certificate from the College of Engineering. In this scenario, the student may be eligible for both the Certificate and the MS of Integrated Engineering. Students are responsible for registering in both the Certificate and MS, if choosing this option. Examples of Certificates that could be used toward the Concentration are:

- https://catalog.utep.edu/grad/college-of-engineering/mechanical-engineering/grcertificate-3dam/
- https://catalog.utep.edu/grad/college-of-engineering/civil-engineering/construction-management-graduate-certificate/
- https://catalog.utep.edu/grad/college-of-engineering/computer-science/cyber-security-graduate-certificate/
- https://catalog.utep.edu/grad/college-of-engineering/electrical-computer-engineering/electric-power-energy-systems-graduate-certificate/
- https://catalog.utep.edu/grad/college-of-engineering/industrial-manufacturing-systems-engineering/smart-manufacturing-graduate-certificate/
- https://catalog.utep.edu/grad/college-of-engineering/metallurgical-materials-engineering/grad_cert_nanotechnology_materials_development/

Business Concentration

If a student is interested in pursuing a business concentration, they will need to contact the College of Business to request approval to register. The list of graduate business courses open to non-MBA students in the College of Business can vary each semester, so students should contact the College of Business for the updated list each term. Students should be aware that business courses are often offered in different part-of-terms from those in the College of Engineering. The College of Business also offers Graduate Certificates. However, students would need to complete additional coursework beyond the 9-12 credit hours of the concentration to complete the certificate.

Engineering Education Concentration

The engineering education concentration prepares students for doctoral Engineering Education degree programs, such as those at Purdue University and Virginia Tech. If pursuing this concentration, students are strongly encouraged to complete the Thesis or Research Capstone options based on recommendations from their Project/Thesis Advisor. Students pursuing the engineering education concentration should select 9-12 hours of coursework from the following topics. Courses can come from the EEL department or the College of Education. Suggested courses are listed for each required topic area:

- Foundations of Teaching and Learning in Engineering/STEM (EEL 5310 Foundations, TED 5301 Learning Contexts & Curriculum, or EEL 5390 Advanced Topics, as topic is relevant)

- Research Topics and Methods in Engineering/STEM Education (EEL 5320 Research Methods, MTED 5318 Current Topics in Math Ed, or EEL 5390 Advanced Topics, as topic is relevant)
- Quantitative and/or Qualitative Research Methods as appropriate for Thesis/Project (MATM 5364 Quant Research Methods in Math Ed, EDRS 5306 Qualitative Research, TED 6320 Quantitative research methods, TED 6322 qualitative research methods, EEL 5390 Advanced Topics, as topic is relevant

Project or Thesis Coursework

Students have the option to pick from three capstone experiences: graduate design project (3 hrs), research capstone (3 hrs), or thesis (6 hrs). The student's Thesis/Project Advisor will be the instructor of record for the corresponding course. Course options include:

- Graduate Projects (complete one): CE 5396/5397; CS 5396/5397; ECE 5396/5397; EEL 5396/5397; MECH 5396/5397
- Research Capstone: EEL 5394
- Thesis (complete both): EEL 5398 & EEL 5399

Additional details on the differences between types of projects and scope are available in the *Final Capstone Experience* section.

Leveling Courses for New Disciplinary Focus

If students are pursuing engineering electives or concentration courses from a discipline different from their undergraduate degree, they may need to complete leveling courses to meet pre-requisite requirements. If the pre-requisites are graduate-level courses, the leveling courses may be considered as electives or concentration courses themselves. If the necessary prerequisite is an undergraduate-level course, up to 6 hours of upper-level undergraduate coursework can be credited towards the degree. All leveling courses should be discussed and approved by the Graduate Program Director.

NOTE: Not all leveling courses are covered by financial aid, therefore, students should meet with the Financial Aid Department as soon as they are notified that they require leveling courses in order to determine whether the courses will be eligible for financial aid.

Fast Track Student Course Requirements

Undergraduate students must earn a B or better in the graduate course for the course to count as graduate credit. If the grade is a C, it will not count toward the graduate degree, but the credit hours will still count toward the undergraduate degree. The earned grade will not be calculated in the undergraduate GPA and will show on the undergraduate transcript as a transfer. When the student graduates with the bachelor's degree, the graduate courses will be shown in the undergraduate transcript, and if a grade of C or better is attained, it counts toward the

undergraduate degree. The courses will also show on the graduate transcript as graduate courses, but in these cases, they will be calculated into the graduate GPA.

Final Capstone Experience

Students have the option to pick from three capstone experiences: graduate design project (3 hrs), research capstone (3 hrs), or thesis (6 hrs). Students are encouraged to consider the benefit of each type of final capstone experience on their future career goals. The thesis/report and its successful defense constitute the final evaluation for the degree.

The student's Thesis/Project Advisor will be the instructor of record for the corresponding course. The Thesis/Project Advisor will chair the student's Supervisory Committee (see *Capstone Supervisory Committee)*.

Project Proposal

To be approved to register in the required Project or Thesis course(s), students must submit a project proposal.

This proposal must include:

- Project or Thesis working title
- List of Supervisory Committee Members (see *Capstone Supervisory Committee)*
- 250-500 word abstract summarizing motivation for and goal of the project, background, and methods.

Approval Process:

- Students must submit their proposal via email to the GPD and their Project Advisor for approval.
- Once approved, the GPD will remove the advising hold, allowing the student to register in the appropriate Project, Capstone, or Thesis course.
- Students pursuing the Thesis option must submit their proposal via the UTEP Thesis Proposal Form.
    - NOTE: Thesis students are not required to defend their thesis topic formally. Therefore, record the date upon which you received approval from the GPD and your advisor as your Proposal Defense Date on the form.

Design Project Option

For students intending to pursue a career in the industry, the Design Project offers students an opportunity to apply their integrated engineering expertise to an engineering design problem. This design project should focus on an opportunity to address a pressing need in society. Students may

identify their project in partnership with their employer, a community partner, their Project Advisor, or based on a need they have personally documented. The scope of this project should be scaled to be appropriate for an individual graduate student to complete in one semester.

Successful completion of the project will require that students submit a project report documenting:

- the motivation for their project
- the project goals (including user needs, design requirements and constraints, specifications, and key technical content)
- the context of the project within the state-of-the-art
- an overview of the implemented design process
- the final design results
- an evaluation of the design outcome

There is no expected length for the project report, and students may use a professional report template and citation format of their choosing. Students may use a modified version of the UTEP Thesis template. Once complete, students will submit their report to their committee and the GPD. Students pursuing the Design Project option are not required to submit their report to the Graduate School.

NOTE: Additional requirements may be added at the discretion of the Project Advisor, with the approval of the Graduate Program Director.

Example projects:

- Development of an Affordable 5-Link Mechanism Prosthetic Knee Joint
- Agent-Based Simulation for Pedestrians Crossing the Border from Juarez To El Paso

Research Capstone Option
For students interested in a career that leverages research and evaluation, but are not intending to pursue a PhD, the Research Capstone option gives students the opportunity to investigate a research question of interest. Students may identify their research project in partnership with their employer, a community partner, their Project Advisor, or based on a question they have personally identified. The scope of this research capstone should be scaled to be appropriate for an individual graduate student to complete in one semester. Unlike a thesis, students are expected to contribute to an ongoing project that is primarily scoped by the Project Advisor.

Successful completion of the project will require that students submit a project report documenting:

- the motivation for their project
- the project research or evaluation goal

- the context of the project within the literature
- an overview of the implemented research method
- the research results
- a discussion of the implications and relevance of the results

There is no expected length for the project report, and students may use a professional report template and citation format of their choosing. Students may use a modified version of the UTEP [Thesis template](#). Once complete, students will submit their reports to their committees and the GPD. Students are not required to submit their report to the Graduate School.

NOTE: Additional requirements may be added at the discretion of the Project Advisor, with the approval of the Graduate Program Director.

Example projects:

- Assessment of the Czech Republic's Crash Data Collection Through a Case Study
- Evaluation of Dental Product Performance: Chemical and Mechanical
- Exploring Departmental Cultures of Engineering Instructional Faculty Members at Hispanic Serving Institutions

Thesis Option

For students intending to pursue a research-focused career via a PhD, the Thesis Option provides students with a foundational research experience across two semesters. The thesis project is similar to the research capstone, however, students are expected to take a larger role in defining the scope of the project. Students may identify their research project in partnership with their employer, a community partner, their Thesis Advisor, or based on a question they have personally identified. The scope of the Thesis project should be scaled to be appropriate for an individual graduate student to complete in two semesters.

Successful completion of the research will require that students submit a thesis documenting:

- the motivation for their project
- the project research or evaluation goal
- the context of the project within the literature
- an overview of the implemented research method
- the research results
- a discussion of the implications and relevance of the results

Students must use the UTEP [Thesis template](#), have the Graduate School approve their formatting, and upload their thesis to ProQuest.

NOTE: Additional requirements may be added at the discretion of the Project Advisor, with the approval of the Graduate Program Director.

Example Thesis Projects:

- Sense of Belonging of Latinas in Engineering
- Fatigue Endurance of ALSI10MG Post Hip Heat Treatment with High Duration Thermal Aging
- Experimental Characterization of Electron Heat Flux from Thermionic Emission

Oral Defense of Thesis or Project

Upon completion of the Design Project, Research Capstone, or Thesis, students will present their work for examination by their Supervisory Committee during an oral defense. The thesis/report and its successful defense constitute the final evaluation for the degree. Students are responsible for coordinating a date for their oral defense with their committee and reserving a space for an in-person presentation. Virtual defense presentations are not preferred but can be arranged if the student or a committee member cannot attend in person due to extenuating circumstances. Students should schedule a 1.5 hr meeting with their committee for the defense. Generally, students are expected to distribute a copy of their thesis/report to their committee at least two weeks in advance of their intended defense presentation date. Students may create a slide deck to use during their 30-45 min presentation of their project. Unless restricted due to the proprietary nature of the project, oral defense presentations are open to the public. However, audience members who are not on the student's committee will be dismissed prior to the final Q&A and review of the student's project by the committee. Upon successful defense of their project, the student's committee will sign an oral defense/completion form for submission to the Graduate School.

Failure to Complete Project or Thesis

Students must successfully complete their final examination to receive their degree. Therefore, in the rare event that a student does not pass their final examination, they should meet with the GPD and their Project/Thesis Advisor to discuss their options for proceeding. Some common options include:

For thesis students:

- If the student is making reasonable progress and needs more time to complete their project or thesis, students may receive a Progressing (P) grade for the semester, taking the course again in the next term.
- If the student cannot make progress due to a medical emergency for themselves or a close family member, students may opt to withdraw from the course or request a complete withdrawal.

- If the student does not wish to continue on their thesis, they can choose to not complete their degree or explore whether they can transfer their credits to another program.
- Incomplete grades are not an option for Thesis courses.

For project or capstone students:

- If the student cannot make progress due to a medical emergency for themselves or a close family member, the student may opt to withdraw from the course or request a complete withdrawal.
- If the student is making reasonable progress and needs more time, at the discretion of the faculty member, an incomplete grade may also be assigned to give the student additional time to complete the project.
- If the student has not made satisfactory progress, the faculty member will assign a letter grade consistent with the quality of the work. If the letter grade is insufficient to receive credit for the course towards graduation, the student will need to retake the course. Grades for each attempt are included in GPA calculations.

Advising

Throughout their time in the MS-IENG, students will be advised and mentored by a team of faculty dedicated to their success and progress in the degree. Advising in this program includes academic advising by the Graduate Program Director and project/thesis advising by a Capstone Supervisory Committee led by the student's Thesis/Project Advisor.

Academic Advising

All students will receive academic advising from the Graduate Program Director. The GDP's role is to ensure students are making adequate progress toward graduation, confirm that the proposed coursework on students' plans of study are in compliance with the degree requirements, and help connect students with thesis/project advisors and other university resources.

After admission and again each semester, students will meet with the Graduate Program Director to review their progress, address any issues they may have encountered, and have their departmental advising hold removed. In preparation for this advising meeting, students must submit their updated plan of study (see *Plan of Study*) and request an appointment with the GDP. Once students have identified a thesis/project advisor, they are expected to meet with their thesis/project advisor first, then sign up for advising with the GDP. After advising, the GPD will copy the thesis/project advisor and the student on an email with the approved plan of study and recommended next steps.

Advising for Fast Track Students

Each semester, students who would like to take courses from the approved fast-track courses list (see *Fast Track Requirements*) must meet with the Graduate Program Director and their undergraduate advisor. During these meetings, students will complete and submit the Fast-Track Program Student Registration Form.

Capstone Supervisory Committee

Each student is required to identify a committee to supervise their capstone project or thesis. This committee is responsible for recommending coursework and directing the overall capstone experience.

Committee Membership Eligibility

This committee should consist of no less than three graduate faculty members with expertise related to the student's project topic of interest. The chair of the committee should be a member of the graduate Engineering faculty, but the other committee members can come from outside the College of Engineering. At least one committee member should be external to the department of the Project/Thesis Advisor. A committee member is considered external if they are from another institution, organization, or another department or college at UTEP. Committee members external to UTEP must apply for temporary membership to the Graduate Faculty.

NOTE: If the student would like to include someone on their supervisory committee who is ineligible for temporary membership to the graduate faculty, they may serve as a non-voting fourth committee member.

Project or Thesis Advisor Eligibility

The role of the Project/Thesis Advisor is to serve as chair of the student's supervisory committee. They should be a member of the graduate Engineering faculty. A Project/Thesis Advisor must be willing to support the student as they prepare their project or thesis proposal, select courses, identify committee members, prepare for the oral defense, and provide career mentorship.

MS-IENG Graduate Program Committee

The MS-IENG Graduate Program Committee is Chaired by the Graduate Program Director. The Committee is responsible for approving changes to the student handbook, modifications to the curriculum, mediating student concerns or grievances, and supporting the annual evaluation and program accreditation. Membership on this committee is by approval of the departmental graduate faculty and chair. Membership as of the 2025-2026 school year:

- **Meagan R. Kendall, PhD** Associate Professor, Graduate Program Director
- **Lori Houghtalen, PhD** Assistant Professor
- **Nichole Ramirez, PhD** Assistant Professor

Professionalism and Honor Code

Expectations and Rights of Students

Students are responsible for the following:

- discussing Plan of Study with their Project/Thesis advisor and the GPD each term
- register for and complete courses and other requirements in the degree program
- consult with Project/Thesis advisor to define the thesis/project topic
- submit project proposal to GPD
- making regular progress on their project/thesis (once enrolled)
- set agreed-upon working hours and professional communication expectations with advisors and committee members
- regularly consulting with Project/Thesis advisor and committee members on project progress
- graciously receive and act on constructive feedback
- seeking opportunities for funding (if applicable)
- submit their thesis/report for review at least two weeks before the defense date
- schedule their oral defense
- apply for graduation

Students have the right to expect respectful and professional treatment from all committee members and advisors. This may look like:

- Providing constructive feedback rather than demeaning criticism
- Being available to meet on a regular, agreed-upon basis
- Encouraging a healthy work-life balance and respecting work hours
- Recommending tasks and professional development opportunities that are beneficial to the student's professional growth and progress on their degree

All students have the right to discontinue working with and to identify new supervisory committee members, if the relationship(s) do not work as anticipated. The recommended course of action in such cases where a transition is desired is to discuss the situation with the GPD, who will work with the student to facilitate the transition.

Expectations and Rights of Project/Thesis Advisors

A faculty member who agrees to advise an MS-IENG student's project or thesis assumes responsibility for overseeing that student's progress on their project or thesis and professional mentorship. Aspects of this responsibility may include, but are not limited to:

- assisting the student in the identification of funding opportunities

- providing guidance on and approving the Plan of Study
- assistance in scoping and drafting the project proposal
- providing guidance on committee member selection
- providing detailed, regular feedback and input on thesis/project work
- serving as a reference for letters of recommendation; however, faculty may decline to provide a letter of recommendation if they do not feel that they can provide a favorable recommendation
- making introductions to colleagues in professional networks as appropriate based on the student's career trajectory
- communicating effectively and frequently with the student and their supervisory committee
- coordinating with committee members the oral defense
- assessing the student's thesis/project report and oral defense
- bringing required paperwork from the graduate college to oral defense
- recording and sharing with the student any revisions required by the committee following the oral defense

Faculty who are funding student researchers may require their student to complete a thesis. Faculty may also require their students to tailor their report or thesis for submission to a conference or for a journal publication.

All Project/Thesis Advisors have the right to discontinue working with a student if the relationship does not work as anticipated. Possible reasons for discontinuing advising relationships may include:

- extended periods of no contact or lack of response by the student
- disruptive or unprofessional treatment from a student
- lack of capacity to fulfill above expectations within expectations of faculty member's appointment

The recommended course of action in such cases is to discuss the situation with the GPD, who will work with the student to facilitate the transition.

Academic Integrity
The following is a reproduction of the Graduate Catalog guidance on Academic Integrity:

All graduate students must understand and abide by UTEP's academic integrity policies outlined in the Student Conduct and Discipline section of the Handbook for Operating Procedures (section 1.2.3(a)). This policy accounts for the following:

- Cheating: copying or seeking help from another person during a test, assignment, or assessment; using unauthorized materials during test, assignment, or assessment;

substituting for another person or permitting another person to substitute for oneself; or submitting work from one class that is the same or substantially similar to that used for another class without citation or acknowledgment.

- Plagiarism: presenting another person's work as one's own.
- Collusion: unauthorized collaboration with another person on an academic assignment.
- Misrepresentation of facts for academic advantage: providing false or misleading information for academic or financial benefit of oneself or another individual, or conversely, providing false or misleading information to undermine or damage another person academically or financially.

Students Engaged in Research

Students doing research must also understand and abide by the UTEP's Research Integrity Policy. This policy defines research misconduct, with particular emphasis on fabrication, falsification, and plagiarism. The UTEP Research Integrity Policy (section 6.2) specifies the following actions as research misconduct:

- Fabrication: making up data or results and recording or reporting them. For example,
    - Generating data that are not based on any observations,
    - Adding false observations to existing data, or
    - Reporting findings of studies that were not conducted.
- Falsification: manipulating research materials, equipment or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
    - Misrepresenting or omitting procedures in a research study
    - Removing data from a study without reporting them to be removed and providing the reasons for removing them
    - Using false or misleading statements when describing the findings of a study
- Plagiarism: the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.
    - Paraphrasing and failing to acknowledge the source of information
    - Using images, graphs, or data generated by others without acknowledging them
    - Not acknowledging contributions of co-authors or research collaborators

University Resources

The Graduate school maintains a website full of resources that graduate students are encouraged to review and leverage. Here are a couple that may be particularly useful to MS-IENG students.

Funding

Graduate students can fund their education in a variety of ways. The most common approach for students in the MS-IENG is: 1) employer payment programs, 2) financial aid, 3) employment as a

research assistant or teaching assistant, or 4) external scholarships or grants. More details about each of these approaches are available on the Graduate School's website.

Currently, MS students are not eligible for the Tuition Remission program, which is limited to Doctoral students. Additionally, the EEL department does not have dedicated RA or TA positions or scholarships available for MS-IENG students. However, individual faculty members may have RA positions available. If you are being funded by an RA position, the faculty member funding the position will likely require those in an RA position to complete the Thesis option under their supervision.

Students should be aware that not all leveling courses are covered by financial aid, therefore, students should meet with the Financial Aid Department as soon as they are notified that they require leveling courses in order to determine whether the courses will be eligible for financial aid.

Students who are pursuing the Fast Track should also be aware that tuition for courses will be based on the level of the course, not on the level of the student. Financial aid may need to be adjusted.

International Students
The graduate school has compiled a list of helpful resources for international students interested in studying at UTEP, from how to request visas to whom to contact for a social security number. In particular, international students will want to connect with UTEP's Office of International Programs (OIP) as they are your main point of contact for the PASE tuition discount program for Mexican nationals, they organize international student recruitment fairs, and they provide cross-cultural engagement for international and domestic students. OIP uses *Sunapsis* to manage profiles, review and update information about F-1/J-1 data and respond to student requests.

Graduation

Students should refer to the graduate school's website and the UTEP catalog for official guidance on graduation requirements. Summarized here is some key information relevant to the MS-IENG program.

Timeline
Deadlines change each semester, therefore students will want to watch the graduate school website for updates to the graduation timeline and deadlines for when forms are due.

Forms
Most forms required for graduation are now digital, making routing of the forms to the GPD, your Advisor, and the Graduate School much easier. All forms are available here. In particular, MS-IENG students will need to submit:

- Graduate Certificate Application
    - Students who are also eligible for receiving a Graduate Certificate should also submit this application form to receive their certificate.
- Graduate Degree Application
    - The graduate application is your official request for UTEP to issue your diploma. Details on how to complete the form are available in this video.
- Defense/Completion Form
    - This form is required for all MS-IENG students to notify the graduate school that you have passed your final examination, regardless of whether you are on the Thesis or a non-thesis track.

Appendix

MS in Integrated Engineering Advising Form

Name:
Student ID:
Project Advisor:
Project Topic/Title:
Committee Members:
Expected Graduation Date:

Semester:		
Course Number	Course Name	

Project Milestones
1. Select concentration and select courses for plan of study
2. Identify your Project Advisor and Topic

Semester:		
Course Number	Course Name	

3. Complete an Individual Development Plan (IDP) with your Project Advisor.
4. Complete project proposal (1-2 pgs)
5. Select project committee members

Semester:		
Course Number	Course Name	
Concentration Course/Thesis II		

6. Complete project/thesis

Semester:		
Course Number	Course Name	
Project/Thesis II		

7. Write and present project report or thesis
8. Apply for graduation
   Templates and guidelines for degree completion are available here:
   https://www.utep.edu/graduate/current-students/completion.html
   Non-Thesis projects require only the submission of the completion/defense form.

Add additional semester(s) as needed...

Semester:		
Course Number	Course Name	

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MS of Integrated Engineering Plan of Study (33 credit hrs)

	Course Number	Name	Semester Completed
Integrated Engineering Core (12 hrs):			
1	EELS 330	Sustain Engr Innovation in Tech	
2	EELS 340	Engr Leadership Development	
3	EELS 334	Engr Law & Ethics	
4	EELS 341	Adv Finance Mgmt for Engr	
Engineering Electives (6 hrs):			
5			
6			
Concentration (9-12 hrs):			
1			
2			
3			
4			
Final Examination (3-6 hrs):			
Project Option (3 hrs)	EELS 394/5396*	Graduate Projects/Research Capstone	
OR			
Thesis Option (6 hrs)	EEL 5398	Thesis I	
	EEL 5399	Thesis II	

*May substitute: CE 5396/5397, CS 5396/5397, EE 5396/5397, or MECH 5396/5397

Notes:

Concentration fields include:
Computer Science and Biomedical, Civil, Computer, Electrical, Environmental, Engineering Education and Leadership, Industrial, Manufacturing, Mechanical, Metallurgical and Materials Engineering, and Systems

OR: Other areas of concentration such as Business Administration, Economics, Engineering Education, Engineering Leadership, Information Technology, Mathematics, Physics, STEM (Science, Technology, Engineering and Math)

OR: A coherent set of courses in the College of Engineering that relate to a single interdisciplinary theme, such as Smart Cities, subject to the approval of the Graduate Advisor and the Dean of the College of Engineering.