COLLEGE OF ENGINEERING

Overview

Departments: Dan F. Smith Chemical and Biomolecular Engineering, Civil and Environmental Engineering, Phillip M. Drayer Electrical and Computer Engineering, Industrial and Systems Engineering, and Mechanical Engineering

Dr. Tracy Benson, Dean, Cherry 2016, (409) 880-8741 Dr. Jenny Zhou, Associate Dean, Cherry 2014, (409) 880-7830 Carrie Masson, Business Manager, Cherry 2010, (409) 880-8741 Karli Padia, Director of Operations, Cherry 2008, (409) 880-8426 Ashlyn Elliot, Sr. Administrative Coordinator, Cherry 2000, (409) 880-8713 Jessica Paulsen, Program Coordinator, Cherry 2000, (409) 880-7400 Mary Givan, Director of Admission, Graduate Programs, Cherry 2105, (409) 880-8736

Anna Price, Associate Director For Academic Student Success Kristen Baker, Marketing Coordinator

Paula Dunigan, Senior Academic Advisor of Undergraduate Programs, Cherry 2300, (409) 880-7442

Cynthia Lute, Senior Academic Advisor of Undergraduate Programs, Cherry 2300, (409) 880-8063

Mukunda Khanal, Laboratory Manager, (409) 880-1859

Engineering Endowed Chair Professors

Brian Craig, Charles and Eleanor Garrett Chair

Mansour Karkoub, *Michael E. and Patricia P. Aldredge Chair of Engineering* Venkatesh Uddameri, William B. and Mary G. Mitchell Chair of Engineering

Tracy Benson, Jack M. Gill Endowed Chair

Abelnasser Eldek, Don M. Lyle Distinguished Professor of Electrical Engineering

College of Engineering Mission

Vision: To establish Lamar University College of Engineering as a first choice for tomorrow's engineering and technology leaders and career professionals in Texas.

Mission: Lamar University College of Engineering strives to educate leaders, demonstrate excellence in engineering and technology student learning and career readiness, and pursue research with relevance.

- Dan F. Smith Department of Chemical and Biomolecular Engineering (https://catalog.lamar.edu/college-engineering/dan-f-smithdepartment-chemical-biomolecular-engineering/)
 - Chemical and Biomolecular Engineering (B.S.) (https:// catalog.lamar.edu/college-engineering/dan-f-smith-departmentchemical-biomolecular-engineering/chemical-engineering-bs/)
 - Chemical Engineering (Ph.D.) (https://catalog.lamar.edu/collegeengineering/dan-f-smith-department-chemical-biomolecularengineering/engineering-phd/)
 - Fermentation Science and Engineering Graduate Certificate (https://catalog.lamar.edu/college-engineering/dan-f-smithdepartment-chemical-biomolecular-engineering/fermentationscience-engineering-graduate-certificate/)
 - Master of Engineering Chemical (M.E.) (https:// catalog.lamar.edu/college-engineering/dan-f-smith-departmentchemical-biomolecular-engineering/engineering-me/)

- Master of Engineering Science Chemical (MES) (https:// catalog.lamar.edu/college-engineering/dan-f-smith-departmentchemical-biomolecular-engineering/engineering-science-mes/)
- Department of Civil and Environmental Engineering (https:// catalog.lamar.edu/college-engineering/civil-environmentalengineering/)
 - Engineering (M.E.) (https://catalog.lamar.edu/collegeengineering/civil-environmental-engineering/engineering-me/)
 - Certificate in Engineering with Nature (https://catalog.lamar.edu/ college-engineering/civil-environmental-engineering/engineeringwith-nature/)
 - Civil Engineering (B.S.) (https://catalog.lamar.edu/collegeengineering/civil-environmental-engineering/civil-engineering-bs/)
 - Engineering (D.E.) (https://catalog.lamar.edu/collegeengineering/civil-environmental-engineering/engineering-de/)
 - Engineering (MES) (https://catalog.lamar.edu/collegeengineering/civil-environmental-engineering/engineering-mes/)
 - Environmental Engineering (M.S.) (https://catalog.lamar.edu/ college-engineering/civil-environmental-engineering/ environmental-engineering-ms/)
 - Environmental Studies (M.S.) (https://catalog.lamar.edu/collegeengineering/civil-environmental-engineering/environmentalstudies-ms/)
- Department of Industrial and Systems Engineering (https:// catalog.lamar.edu/college-engineering/industrial-systemsengineering/)
 - Engineering (D.E.) (https://catalog.lamar.edu/collegeengineering/industrial-systems-engineering/engineering/deng/)
 - Engineering (M.E.) (https://catalog.lamar.edu/collegeengineering/industrial-systems-engineering/engineering-me/)
 - Engineering (MES) (https://catalog.lamar.edu/collegeengineering/industrial-systems-engineering/engineering-mes/)
 - Engineering Management (MEM) (https://catalog.lamar.edu/ college-engineering/industrial-systems-engineering/engineeringmanagement-mem/)
 - Industrial Automation and Robotics Certificate (https:// catalog.lamar.edu/college-engineering/industrial-systemsengineering/industrial-automation-robotics-certificate/)
 - Industrial Engineering (B.S.) (https://catalog.lamar.edu/ college-engineering/industrial-systems-engineering/industrialengineering-bs/)
 - Industrial Engineering (B.S.) Online (2+2) Option (https:// catalog.lamar.edu/college-engineering/industrial-systemsengineering/industrial-engineering-bs-online-2-2-option/)
 - Industrial Technology (B.S.) (https://catalog.lamar.edu/ college-engineering/industrial-systems-engineering/industrialtechnology-bs/)
 - Machine Learning Certificate (https://catalog.lamar.edu/collegeengineering/industrial-systems-engineering/machine-learningcertificate/)
 - Management of Ports and Marine Terminals Certificate (https:// catalog.lamar.edu/college-engineering/industrial-systemsengineering/management-ports-marine-terminals-certificate/)
 - Port and Marine Terminal Development and Operations Certificate (https://catalog.lamar.edu/college-engineering/industrialsystems-engineering/port-marine-terminal-developmentoperations-certificate/)

- Port and Terminal Management (M.S.) (https:// catalog.lamar.edu/college-engineering/industrial-systemsengineering/port-terminal-management-ms/)
- Ports, Trade and Global Logistics Certificate (https:// catalog.lamar.edu/college-engineering/industrial-systemsengineering/ports-trade-global-logistics-certificate/)
- Department of Mechanical Engineering (https://catalog.lamar.edu/ college-engineering/mechanical-engineering/)
 - Mechanical Engineering (B.S.) (https://catalog.lamar.edu/collegeengineering/mechanical-engineering/mechanical-engineeringbs/)
 - Mechanical Engineering (D.E.) (https://catalog.lamar.edu/collegeengineering/mechanical-engineering/mechanical-engineeringde/)
 - Mechanical Engineering (M.E.) (https://catalog.lamar.edu/ college-engineering/mechanical-engineering/mechanicalengineering-me/)
 - Mechanical Engineering (MES) (https://catalog.lamar.edu/ college-engineering/mechanical-engineering/mechanicalengineering-mes/)
- Phillip M. Drayer Department of Electrical and Computer Engineering (https://catalog.lamar.edu/college-engineering/phillip-m-drayer-department-electrical-engineering/)
 - Computer Engineering (B.S.) (https://catalog.lamar.edu/collegeengineering/phillip-m-drayer-department-electrical-engineering/ computer-engineering-bs/)
 - Electrical Engineering (B.S.) (https://catalog.lamar.edu/collegeengineering/phillip-m-drayer-department-electrical-engineering/ electrical-engineering-bs/)
 - Electrical Engineering (D.E.) (https://catalog.lamar.edu/collegeengineering/phillip-m-drayer-department-electrical-engineering/ electrical-engineering-de/)
 - Electrical Engineering (M.E.) (https://catalog.lamar.edu/collegeengineering/phillip-m-drayer-department-electrical-engineering/ electrical-engineering-me/)
 - Electrical Engineering (MES) (https://catalog.lamar.edu/collegeengineering/phillip-m-drayer-department-electrical-engineering/ electrical-engineering-mes/)
 - Instrumentation and Control Certificate (https:// catalog.lamar.edu/college-engineering/phillip-m-drayerdepartment-electrical-engineering/instrumentation-controlcertificate/)
 - Power and Energy Engineering Certificate (https:// catalog.lamar.edu/college-engineering/phillip-m-drayerdepartment-electrical-engineering/power-energy-engineeringcertificate/)

College of Engineering Standards

In addition to the university requirements, the College of Engineering enforces the following standards:

- a. Students are required to take courses in the sequence shown in the Lamar University General Catalog for each degree program.
- b. Engineering students are required to maintain a GPA of 2.0 to remain in the program. Students who fall below the required GPA of 2.0 will be placed on probation and given two long semesters to raise their GPA to a 2.0 or better (maximum load of 13 semester hours). Students who fail to meet this requirement will be suspended from their Engineering Major for one long term. Students returning from

suspension must prepare a performance contract in consultation with their academic advisor. A minimum term of the contract requires the student to remove deficiencies every semester of enrollment. Students who fail to meet the terms of their contract will be permanently suspended.

- c. Engineering students must make a 'C' or better in all STEM (Science, Technology, Engineering & Math) courses in order to satisfy degree plan/prerequisite requirements.
- d. A course may be repeated for additional credit toward a degree only as specified by the official course description in the General Catalog. Excluding courses that may be taken for additional credit toward a degree, a student may not register for any course more than three times. Any student who wishes to repeat a course must do so before completing a more advanced course in the same subject matter field.
- e. Upon the completion of the first two years of the specific degree plan with a GPA of 2.0 (Civil, Electrical, Industrial and Mechanical) or 2.25 (Chemical) or higher on all required courses, will be considered for admission to their professional engineering program. For all engineering programs, it is required that at least 45 semester hours (at least 25 semester hours in engineering at the 3000 and 4000 level) be earned after admission to the professional program.
- f. The student's advisor and/or department chair must approve all electives.

The Dean of Engineering may require students to meet the current degree requirements or program standards.

Please see each department's four-year suggested program of study.

Graduate Programs

The objectives of the graduate programs in Engineering, Environmental Science and Studies, and Engineering Management are:

- a. Advance the state-of-the-art of the practice of engineering.
- b. Advance the state-of-the-art of the teaching/learning process in engineering.
- c. Contribute to the economic well-being of the residents of Southeast Texas, the entire state, and nation.
- d. Improve the safety, health, and environment of Southeast Texas, the entire state, and nation.

Admission Requirements for Masters Programs

Master of Engineering Science

The Master of Engineering Science is a thesis option program that prepares students to independently develop solution in their selected engineering disciplines. In this program, students will deepen the knowledge on various aspects of engineering and have the opportunity to conduct advanced research contributing to engineering knowledge. The program has five concentrations, which are Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering.

See: Graduate Admissions (https://catalog.lamar.edu/graduate-admissions/)

In addition to the General Requirement in the College of Graduate Studies, the College of Engineering sets the following minimum admission requirements:

- a. A bachelor's degree in field of engineering or related discipline with credit substantially equivalent to that required for bachelor's degrees at Lamar University.
- b. Official transcripts from higher education institutions where degrees were earned and most recently attended institutions (if different from the institutions where degrees were earned).
- c. A GRE score is optional but encouraged.
- d. Resume is optional but encouraged.
- e. Personal statement of educational goals is optional but encouraged.
- f. Transcripts, GRE, educational goals, and resume are considered holistically in the admissions process.
- g. Engineering departments may have additional admission requirements and guidance on their website. International students should review the current international student admissions requirements and procedures.

Master of Engineering

The Master of Engineering degree is a non-thesis program that requires a minimum of 30 semester hours to complete. The program is designed to suit the needs of practicing engineers in one of the engineering disciplines in he college: Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering.

See: Graduate Admissions (https://catalog.lamar.edu/graduate-admissions/)

In addition to the General Requirement in the College of Graduate Studies, the College of Engineering sets the following minimum admission requirements:

- a. A bachelor's degree in field of engineering or related discipline with credit substantially equivalent to that required for bachelor's degrees at Lamar University.
- b. Official transcripts from higher education institutions where degrees were earned and most recently attended institutions (if different from the institutions where degrees were earned).
- c. A GRE score is optional but encouraged.
- d. Resume is optional but encouraged.
- e. Personal statement of educational goals is optional but encouraged.
- f. Transcripts, GRE, educational goals, and resume are considered holistically in the admissions process.
- g. Engineering departments may have additional admission requirements and guidance on their website. International students should review the current international student admissions requirements and procedures.

Admission Requirements for Doctoral Programs

The Doctor of Engineering degree is designed to prepare engineers to study engineering problems of a complex nature and to develop solutions that address the most pressing issues of the future. The program has five concentrations, which are Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering.

Competitive scholarships and assistantships are available for highly qualified students with research interests compatible with those of Engineering faculty.

See: Graduate Admissions (https://catalog.lamar.edu/graduate-admissions/)

In addition to the General Requirement in the College of Graduate Studies, the College of Engineering sets the following minimum admission requirements:

- a. A master's degree in engineering (or related field) or a bachelor's degree in engineering (ore related field). Students who enter the program without a master's degree are required to take 18 hours of additional coursework.
- b. Official transcripts from higher education institutions where degrees were earned and most recently attended institutions (if different from the institutions where degrees were earned).
- c. GRE score (students graduated from ABET-accredited engineering programs may waive the GRE requirement).
- d. Three reference letters (optional, but highly encouraged)
- e. Resume (optional, but highly encouraged)
- f. Personal statement of educational goals (optional, but highly encourage)
- g. For applicants with undergraduate degrees different than the DE area of study, the graduate committee may include additional coursework, independent study, or other means to enhance the student's knowledge of key elements of their new field.
- h. Transcripts, GRE, letter of recommendation, educational goals, and resume are considered holistically in the admissions process and in determining funding offers.
- i. Engineering departments may have additional admission requirements on their website. International students should review the current international student admissions page for additional requirements.

Admission Requirements for PhD in Chemical Engineering

Admission standards are designed to ensure that you are a qualified professional serving in a leadership role in your engineering discipline.

The requirements are as follows:

- a. The general requirements for admission to the College of Graduate Studies.
- b. A bachelor's degree in an engineering related discipline equivalent to a 4-year engineering program in the United States; or a Master's degree after a bachelor degree equivalent to a 4-year engineering degree program in the United States.
- c. Official transcripts from higher education institutions where degrees were earned and most recently attended institutions (if different from the institutions where degrees were earned).
- d. Personal statement of educational goals and why you are a strong candidate for admission.
- e. Research Record List of projects, publications, and presentations.
- f. Recommendation Letters (no more than 3 will be considered)
- g. Optional: Graduate Record Examination (GRE)

Applicants who are not citizens or permanent residents of the U.S. (International Students) must submit the following as part of the application:

a. TOEFL or IELTS score (waived if the student has completed a bachelor's or master's degree from a regionally accredited university

located in the United States or in another country in which English is both the language of instruction and the only official language of the country. All years of the degree must be completed in the qualifying country.)

b. Proof that the applicant has the financial resources to attend Lamar University. As part of the application process, international students must submit a written Confirmation of Financial Resources form that contains personal, family, and/or sponsor financial information and a bank verification of financial holdings. All international students are required to have health and accident insurance for themselves and all their dependent family members in the United States. Insurance may be purchased at the university during the registration period.

Note: For applicants without a degree in the appropriate discipline, the department advisor will determine a plan of study that will facilitate successful completion of all requirements for the doctoral degree. This may include additional coursework, independent study, or other means to enhance the student's knowledge of key elements in this field.

4+1 Pathways to Graduate School

The 4+1 pathway provides a clear pathway for continuing your studies at Lamar. You can apply to graduate school during your junior year and take up to 2 graduate classes (6 hours) that count towards both your bachelor's and master's degree. Lamar University offers the following 4+1 programs:

- Master of Engineering (non-thesis) with concentrations in Chemical, Civil, Electrical, Industrial and Mechanical
- Master of Engineering Science (thesis) with concentrations in Chemical, Civil, Electrical, Industrial and Mechanical
- · Master of Science in Environmental Engineering
- · Master of Science in Environmental Studies
- Master of Engineering Management
- BSIE MBA and BSEE MBA

Full-time students can complete the master's degree within one year (24 credit hours). The Master of Engineering Management is offered online (and on-campus) allowing students to work while completing their degrees. Please contact your undergraduate advisor for more information.

Requirements

- a. 3.0 GPA or permission from the department chair
- b. Senior standing to take graduate coursework
- c. Meeting with the graduate advisor and undergraduate advisor to determine coursework each semester
- d. Apply to Graduate School

Program Outcomes

- a. Ability to explain, discuss and describe the principles and theories related to basic process control instrumentation. Read and analyze instrumentation diagrams and documents. Design instrumentation and automation systems.
- b. Ability to devise control algorithms for automation systems. To that end, the students will learn to design relay logic and ladder logic diagrams. Ladder logic diagrams are the foundation for modern programmable logic controllers (PLCs).
- c. Develop an understanding of advanced industrial measurement and control systems including detailed measurement and control

strategies, advanced control systems and elementary process modeling.

d. Ability to design control schemes and analyze their closed-loop stability of the control processes using the theory of control and software tools such as MATLAB.