

# PHILLIP M. DRAYER DEPARTMENT OF ELECTRICAL ENGINEERING

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Chair: Dr. Abdelnasser Eldek

The undergraduate program in electrical engineering at Lamar University enjoys a long history of academic excellence. The program prepares graduates for a wide range of opportunities by providing a curriculum strongly based in mathematics and physics and the latest state-of-the-art material in electrical engineering, including photonics, image and signal processing, instrumentation, and computer and network systems design. The interested student has ready access to faculty and lab facilities for research.

The bachelor's program in electrical engineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

## Mission

We are a diverse and accessible department of Electrical Engineering for life-long learners, with a passion for the broad-based industry and community engagement and scholarly research. As a vital contributor to the socioeconomic well-being and resilience of the Gulf Coast region, our expertise is well recognized both locally and beyond.

## Program Educational Objectives

Constituents: Current students, alumni, employers, and faculty

The electrical engineering program's educational objectives are to produce exceptional graduates who within a few years after graduation:

- Advance professionally with increasing leadership and responsibility beyond entry-level in an industry relevant to electrical engineering.
- Contribute to organizational objectives with significant societal benefits in an ethically responsible manner.
- Engage in life-long learning through professional activities, training, and networking, the pursuit of higher educational degrees, and individual professional development.

## Program Criteria

The Electrical Engineering Program criterion as listed in the ABET "Criteria for Accrediting Engineering Programs" is as follows:

### Curriculum

The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program.

The curriculum must include probability and statistics, including applications appropriate to the program name; mathematics through differential and integral calculus; sciences (defined as biological, chemical, or physical science); and engineering topics (including computing science) necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components.

## Bachelor of Science – Electrical Engineering Digital eLearning Content Delivery

The Department of Electrical Engineering offers a Bachelor of Science degree in Electrical Engineering (BSEE) featuring a Digital eLearning Content Delivery learning community. This means that all course content is available online with multiple collaborative and interactive features. This is not what is normally thought of as an online program, although a student can complete the BSEE without coming to campus. Resident and local area students have the option of in classroom sessions with our faculty. The BSEE degree earned with this delivery system is ABET accredited and our students often leverage the instruction scheduling freedom that the system provides to co-op and engage in employment at companies throughout the US and abroad.

Three special features of the learning community are the LUFF (LUee Field Flow) collaborative system, the LUEEneest makerspace and Hardware-in-Homework. LUFF permits students across the entire undergraduate cohort suite (Fr,So,Jr,Sr) to interact with each other and with faculty in a social media-style environment. The LUEEneest makerspace is where interdisciplinary and multiple experience level project ideas can come into reality and possibly spin-off into entrepreneurial ventures. Lastly, Hardware-in-Homework puts hands-on laboratory work into every course offering within the BSEE program.

## Programs

- Electrical Engineering (B.S.) (<https://catalog.lamar.edu/college-engineering/phillip-m-drayer-department-electrical-engineering/electrical-engineering-bs/>)
- Electrical Engineering (D.E.) (<https://catalog.lamar.edu/college-engineering/phillip-m-drayer-department-electrical-engineering/electrical-engineering-de/>)
- Electrical Engineering (M.E.) (<https://catalog.lamar.edu/college-engineering/phillip-m-drayer-department-electrical-engineering/electrical-engineering-me/>)
- Electrical Engineering (MES) (<https://catalog.lamar.edu/college-engineering/phillip-m-drayer-department-electrical-engineering/electrical-engineering-mes/>)
- Instrumentation and Control Certificate (<https://catalog.lamar.edu/college-engineering/phillip-m-drayer-department-electrical-engineering/instrumentation-control-certificate/>)
- Power and Energy Engineering Certificate (<https://catalog.lamar.edu/college-engineering/phillip-m-drayer-department-electrical-engineering/power-energy-engineering-certificate/>)

## Student Outcomes

The student outcomes used by the electrical engineering program are those published in the ABET "Criteria for Accrediting Engineering Programs" document. Those outcomes are as follows:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.

- d. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- e. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- f. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- g. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.