

# B.S.E.E. in Electrical Engineering

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## Description

The Bachelor of Science in Electrical Engineering program provides broad knowledge in basic and engineering sciences. The curriculum provides thorough knowledge of the field of electrical engineering. A manufacturing emphasis within BSEE is available to students admitted to the Center for Manufacturing Excellence (CME) Program. All other BSEE students follow the general program.

**Minimum Total Credit Hours: 128**

## Goals/Mission Statement

### Mission Statement

The mission of the electrical and computer engineering department is to provide quality education to the students of the department.

### Statement of Goals

- To provide high quality instruction and intellectual stimulation for the students
- To provide opportunity for undergraduate students to participate in research pursued by faculty
- To instill in our graduates the need for life-long learning
- To enable graduate students to pursue high quality research so that they will emerge as future technological leaders and academics
- To establish strong partnerships and lasting relationships with industry, government, professional societies, alumni and academia. These goals are consistent with the University of Mississippi Vision, Mission, and Core Values Statement and the flagship 2020 goals of UM/2020 Strategic Plan which focuses resources in the areas of instruction, research, and service.

### Undergraduate Program Philosophy

The electrical engineering undergraduate program is founded on basic sciences, mathematics, and engineering science fundamentals. The program emphasizes theoretical foundation as well as the application of scientific knowledge to the solution of engineering problems. This focus is intended to lead students to develop analysis and design skills, and original thought processes that will serve them throughout their careers in a rapidly changing world.

The electrical engineering program is a broad-based program with an emphasis on the fundamentals of electrical engineering. The curriculum consists of background courses in science and mathematics; courses in the humanities, social sciences, and fine arts that foster an appreciation of the interrelationship of basic sciences, technological advances, and society; and major multi- course sequences in engineering. Multi-course sequence areas are:

1. Core topics common to many areas of engineering
2. Circuits, electronics, and systems
3. Digital Logic, computer architecture
4. Technical elective courses
5. Engineering design

The BSEE degree program can be pursued with the manufacturing emphasis or no emphasis (general). In the manufacturing emphasis, a specific set of courses are required. For general, a broad choice of technical elective courses is available.

### Program Educational Objectives

Based on our philosophy and goals the Faculty of the Department of Electrical and Computer Engineering have adopted the following Undergraduate Program Educational Objectives for graduates of the Bachelor of Science in Electrical Engineering (BSEE) undergraduate program. The graduates of the program, within 3-5 years after graduation, will:

- Demonstrate professional engineering competence by holding positions of increasing responsibility in industry and/or government;
- Continue to improve their technical skills, knowledge and understanding through research and development activities, continuing education credits and pursuit of professional certificates;
- Attain advanced degrees and work in academia, government agencies or high-tech companies;
- Generate professional publications, develop patents and foster entrepreneurship.

### Student Outcomes

Students of the Bachelor of Science in Electrical Engineering program will demonstrate achievement of the following student outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. 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
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. 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
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies



## General Education Requirements

Students must complete at least 18 semester hours of general education requirements: 3 hours in humanities, 3 hours in fine arts, 3 hours in humanities, languages (modern, Greek, or Latin), or fine arts, 6 hours in social science (including the required Econ 310), and the remaining 3 hours can be in any of the humanities, languages (modern, Greek, or Latin), fine arts, social science, or general education courses as specified by the School of Engineering.

## Course Requirements

### Major Coursework Requirements:

Specific requirements for the B.S.E.E. include: Writ 100, Writ 101, or Hon 101; Writ 102, Liba 102, or Hon 102; Math 261-264, Math 353; Chem 105, 115; Phys 211, 212, 221, 222; two Csci programming courses Csci 256, 356; ECE 361, Engr 309, 310, 360, 361; EI E 235, 236, 237, 322, 331, 340, 341, 351, 352, 353, 385, 386, 391, 431, 447, 461, 462, 485, 486.

### Coursework for General Emphasis:

Specific requirements for the General Emphasis include EI E 100; ENGR 321; 14 credit hours of Technical Electives (BME 313, 314, 413; EL E 415, 425, 433, 441, 443, 451, 453, 482, 487, 523, 525, 533, 534, 535, 586; CSci 361, 423, 521, 530, 551, 561) for a total of 18 credit hours.

### Coursework for Manufacturing Emphasis:

Specific requirements for the Manufacturing Emphasis include MANF 150, 152, 251, 252, 253, 255, 351, 353, 355, 455; 6 credit hours of Technical Electives (BME 313, 314, 413; EL E 415, 425, 433, 441, 443, 451, 453, 482, 487, 523, 525, 533, 534, 535, 586; CSci 361, 423, 521, 530, 551, 561) for a total of 24 credit hours.

## Specializations

- [Emphasis - General Program](#)
- [Emphasis - Manufacturing](#)

