

## Emphasis - Manufacturing

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

## Emphasis - Manufacturing Description

The B.S.E.E. with emphasis in manufacturing provides broad training in basic and engineering sciences and fundamental knowledge of electrical engineering, with a focus on manufacturing.

## Degree Requirements

The academic regulations for this degree program, as entered in the University of Mississippi Catalog, are in effect for the current or selected academic year and semester. The University of Mississippi reserves the right to 1) change or withdraw courses; 2) change rules for registration, instruction, and graduation; and 3) change other regulations affecting the student body at any time.

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

### General Education

REQUIREMENT	HOURS	DESCRIPTION
First Year Writing I	3	Complete <a href="#">Hon 101</a> , <a href="#">Writ 100</a> or <a href="#">Writ 101</a> with a passing grade.
First Year Writing II	3	Complete one of the following courses with a passing grade: <a href="#">Liba 102</a> , <a href="#">Writ 102</a> or <a href="#">Hon 102</a> .
3 hrs fine arts	3	Complete 3 hrs of fine arts with a passing grade chosen from art history, music, dance, and theatre arts. Studio and workshop courses cannot be used to satisfy this requirement. Courses that satisfy this requirement are any Art History (AH); <a href="#">Liba 130</a> , <a href="#">204</a> , <a href="#">314</a> ; <a href="#">Mus 101</a> , <a href="#">102</a> , <a href="#">103</a> , <a href="#">104</a> , <a href="#">105</a> ; <a href="#">Danc 200</a> ; <a href="#">Thea 201</a> , <a href="#">202</a> .
3 hrs humanities	3	Successfully complete 3 hrs of humanities with a passing grade chosen from the following: African American studies ( <a href="#">Aas 201</a> , <a href="#">202</a> ), classics (Clc), environmental studies ( <a href="#">Envs 101</a> ), gender studies ( <a href="#">G St 201</a> , <a href="#">202</a> ), history (Hst), liberal arts ( <a href="#">Liba 202</a> , <a href="#">305</a> , <a href="#">312</a> ), literature ( <a href="#">Eng 103</a> , <a href="#">220-226</a> ), philosophy (Phil), religion (Rel), Southern studies 100-level, and either <a href="#">Hon 101</a> or <a href="#">102</a> (if not being used to fulfill composition requirements).
3 hrs social sciences	3	Successfully complete 3 hrs of social science with a passing grade chosen from anthropology (Anth), economics (Econ), political science (Pol), psychology (Psy), sociology (Soc), <a href="#">Liba 203</a> , <a href="#">313</a> , or <a href="#">Hon 101</a> , <a href="#">102</a>
<a href="#">Econ 310</a>	3	Complete <a href="#">Econ 310</a> with a passing grade.
3 hrs FA/Lang/Hum	3	Successfully complete 3 hrs of Fine Arts, Humanities, or Modern language with a passing grade. Modern Language include courses in courses in Ancient Greek (Gr), Arabic (Arab) nd Swahili (Swa). (Japn), Korean (Kor), Latin (Lat), Portuguese (Port), Russian (Russ), Spanish
3 hrs gen ed, lang, or SS/H/FA	3	Complete 3 additional hours with a passing grade of humanities, languages (modern, Greek, or Latin), social science, or a general education course as defined by the School of Engineering

### General Education II

REQUIREMENT	HOURS	DESCRIPTION
<a href="#">Math 261</a>	3	Complete <a href="#">Math 261</a> with a passing grade.
<a href="#">Math 262</a>	3	Complete <a href="#">Math 262</a> with a passing grade.
<a href="#">Math 263</a>	3	Complete <a href="#">Math 263</a> with a passing grade.
<a href="#">Math 264</a>	3	Complete <a href="#">Math 264</a> with a passing grade.
<a href="#">Math 353</a>	3	Complete <a href="#">Math 353</a> with a passing grade.
<a href="#">Chem 105</a>	3	Complete <a href="#">Chem 105</a> with a passing grade.



REQUIREMENT	HOURS	DESCRIPTION
<a href="#">Chem 115</a>	1	Complete <a href="#">Chem 115</a> with a passing grade.
<a href="#">Phys 211</a>	3	Complete <a href="#">Phys 211</a> with a passing grade.
<a href="#">Phys 212</a>	3	Complete <a href="#">Phys 212</a> with a passing grade.
<a href="#">Phys 221</a>	1	Complete <a href="#">Phys 221</a> with a passing grade.
<a href="#">Phys 222</a>	1	Complete <a href="#">Phys 222</a> with a passing grade.

### Major Requirements

REQUIREMENT	HOURS	DESCRIPTION
<a href="#">ECE 361</a>	1	Complete <a href="#">ECE 361</a> with a passing grade.
<a href="#">El E 235</a>	3	Complete <a href="#">El E 235</a> with a passing grade.
<a href="#">El E 236</a>	1	Complete <a href="#">El E 236</a> with a passing grade.
<a href="#">El E 237</a>	1	Complete <a href="#">EE 237</a> with a passing grade.
<a href="#">El E 331</a>	3	Complete <a href="#">El E 331</a> with a passing grade.
<a href="#">El E 322</a>	1	Complete <a href="#">El E 322</a> with a passing grade.
<a href="#">El E 340</a>	3	Complete <a href="#">El E 340</a> with a passing grade.
<a href="#">El E 341</a>	3	Complete <a href="#">El E 341</a> with a passing grade.
<a href="#">El E 351</a>	3	Complete <a href="#">El E 351</a> with a passing grade.
<a href="#">El E 352</a>	3	Complete <a href="#">El E 352</a> with a passing grade.
<a href="#">El E 353</a>	1	Complete <a href="#">El E 353</a> with a passing grade.
<a href="#">El E 385</a>	3	Complete <a href="#">El E 385</a> with a passing grade.
<a href="#">El E 386</a>	1	Complete <a href="#">El E 386</a> with a passing grade.
<a href="#">El E 391</a>	3	Complete <a href="#">El E 391</a> with a passing grade.
<a href="#">El E 431</a>	3	Complete <a href="#">El E 431</a> with a passing grade.
<a href="#">El E 447</a>	3	Complete <a href="#">El E 447</a> with a passing grade.
<a href="#">El E 461</a>	1	Complete <a href="#">El E 461</a> with a passing grade.
<a href="#">El E 462</a>	3	Complete <a href="#">El E 462</a> with a passing grade.
<a href="#">Engr 309</a>	3	Complete <a href="#">Engr 309</a> with a passing grade.
<a href="#">Engr 310</a>	3	Complete <a href="#">Engr 310</a> with a passing grade.
<a href="#">Engr 360</a>	3	Complete <a href="#">Engr 360</a> with a passing grade.
<a href="#">Engr 361</a>	1	Complete <a href="#">Engr 361</a> with a passing grade.
School of Engineering GPA		Must be at least a 2.0
Enroll in a BSEE emphasis		Enroll in an emphasis within the BSEE program.

### Emphasis - Manufacturing

REQUIREMENT	HOURS	DESCRIPTION
<a href="#">Csci 256</a>	3	Complete <a href="#">Csci 256</a> with a passing grade.
<a href="#">Csci 356</a>	3	Complete <a href="#">Csci 356</a> with a passing grade.
<a href="#">El E 485</a>	2	Complete <a href="#">El E 485</a> with a passing grade.
<a href="#">El E 486</a>	1	Complete <a href="#">El E 486</a> with a passing grade.
<a href="#">Manf 150</a>	1	Complete <a href="#">Manf 150</a> with a passing grade.
<a href="#">Manf 152</a>	1	Complete <a href="#">Manf 152</a> with a passing grade.
<a href="#">Manf 251</a>	3	

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REQUIREMENT	HOURS	DESCRIPTION
<a href="#">Manf 252</a>	1	Complete <a href="#">Manf 252</a> with a passing grade.
<a href="#">Manf 253</a>	3	Complete <a href="#">Manf 253</a> with a passing grade.
<a href="#">Manf 255</a>	1	Complete <a href="#">Manf 255</a> with a passing grade.
<a href="#">Manf 351</a>	1	Complete <a href="#">Manf 351</a> with a passing grade.
<a href="#">Manf 353</a>	3	Complete <a href="#">Manf 353</a> with a passing grade.
<a href="#">Manf 355</a>	1	Complete <a href="#">Manf 355</a> with a passing grade.
<a href="#">Manf 455</a>	3	Complete <a href="#">Manf 455</a> with a passing grade.
6 hrs of tech elective courses	6	Complete 6 hours of technical elective courses, with a passing grade, to be chosen from <a href="#">EI E 415</a> , <a href="#">425</a> , <a href="#">433</a> , <a href="#">441</a> , <a href="#">443</a> , <a href="#">451</a> , <a href="#">453</a> , <a href="#">481</a> , <a href="#">482</a> , <a href="#">487</a> , <a href="#">523</a> , <a href="#">525</a> , <a href="#">533</a> , <a href="#">534</a> , <a href="#">535</a> , <a href="#">536</a> , <a href="#">586</a> .

