

## Emphasis - Biotechnology

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## **B.S.Ch.E. in Chemical Engineering**

### **Description**

The B.S. in chemical engineering provides the student with a fundamental knowledge of chemical engineering science and prepares graduates for a variety of careers in industry and government, or for advanced study in engineering, business, or professional school.

**Minimum Total Credit Hours: 128**

### **Goals/Mission Statement**

Graduates from the Department of Chemical Engineering of the University of Mississippi are:

1. Globally competitive in the professional world
2. Prepared for success in their chosen career or in continued education
3. Equipped with flexible problem solving skills to address complex issues in society.

As students progress through the B.S. ChE Program, they develop a set of abilities that comprise the program outcomes. These outcomes are consistent with and encompass those proscribed by our accrediting organization.

Program Outcomes - Our students will demonstrate an:

- Ability to apply knowledge of math, engineering, and science
- Ability to design and conduct experiments
- Ability to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- Ability to function on multi-disciplinary teams
- Ability to identify, formulate, and solve engineering problems
- Understanding of professional and ethical responsibility
- Ability to communicate effectively
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- Recognition of the need for, and an ability to engage in life-long learning
- Knowledge of contemporary issues
- Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

### **General Education Requirements**

In addition to the courses specified by the School of Engineering general education requirements, the following are required: Math 263-264 and Math 353; laboratory science to be fulfilled by Chem 105, 106, 115, 116 and Phys 211, 212, 221, 222. Students must also complete 18 hours of humanities/social sciences/fine arts to include 3 hours of fine arts, 6 hours of sequential work in the humanities, 6 hours of sequential work in the social sciences, and 3 additional hours of advanced course work in the area selected for the humanities or social sciences. Courses in the categories of humanities/social science/fine arts acceptable for these 18 hours of credit are specified under the general education requirements for the School of Engineering. Speech courses may not be used to satisfy any of these required 18 credits.

### **Course Requirements**

Specific requirements for the B.S. in chemical engineering are as follows: Chem 221, 222, 225, 331; CSci 251; Engr 309, 310, 313, 321, 322, 362; Ch E 103, 104, 307, 308, 317, 345, 411, 417, 421, 423, 445, 446, 451, 452, 511; technical electives to include two 3-hour electives from among engineering, science, or mathematics.

### **Other Academic Requirements**

Students in the Department of Chemical Engineering are encouraged to take the Fundamentals of Engineering examination prior to awarding of the baccalaureate degree.

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### **Course Requirements**

Biological Options - Two Options Biotechnology and Pre-Medical Biotechnology Option (adds 13 credits for Total of 129 credits) CHEM 334 Biophysical Chemistry 3 credits PHAR 331 Basic Pharmaceuticals 4 credits Ch E 520 Biochemical Engineering 3 credits 300 level or higher Technical Elective (i.e. CHEM 580) or Undergraduate Research (ChE 3xx) 3 credits

### **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.Ch.E. in Chemical Engineering**

### **General Education**



REQUIREMENT	HOURS	DESCRIPTION
<a href="#">Chem 105</a>	3	Complete <a href="#">Chem 105</a> with a passing grade.
<a href="#">Chem 106</a>	3	Complete <a href="#">Chem 106</a> with a passing grade.
<a href="#">Chem 115</a>	1	Complete <a href="#">Chem 115</a> with a passing grade.
<a href="#">Chem 116</a>	1	Complete <a href="#">Chem 116</a> with a passing grade.
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 <a href="#">Hon 102</a> , <a href="#">Liba 102</a> , or <a href="#">Writ 102</a> with a passing grade.
<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="#">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.
3 hrs fine arts	3	Student must successfully complete 3 hours in the fine arts. The course may be chosen from art history, art appreciation, and criticism of art, dance, music, and theatre arts. Courses emphasizing the enhancement of skills and performance are not acceptable.
Serial humanities	6	Complete 6 hrs (from the same department) of humanities choosing from course work in classics, literature, history, philosophy, religion, Southern Studies, African American Studies, and Gender Studies.
Serial social science	6	Complete 6 hours (from the same department) of social sciences choosing from the following; economics, anthropology, political science, psychology, and sociology. <a href="#">Psy 202</a> and <a href="#">Econ 230</a> are excluded from these options.
Add'l 300+ level hum/soc sci	12	Complete an additional 3 hours of advanced course work (300 level or above) in the area selected for the humanities or social sciences.

### Major Requirements

REQUIREMENT	HOURS	DESCRIPTION
<a href="#">Ch E 103/104</a> or approved course	2	Complete <a href="#">Ch E 103</a> and <a href="#">Ch E 104</a> . As an alternative, students may complete one one of the following courses: <a href="#">Engr 100</a> , <a href="#">Manf 150</a> or <a href="#">Manf 252</a> . Coursework must be completed with a passing grade.
<a href="#">Ch E 307</a>	2	Complete <a href="#">Ch E 307</a> with a passing grade.
<a href="#">Ch E 308</a>	2	Complete <a href="#">Ch E 308</a> with a passing grade.
<a href="#">Ch E 317</a>	3	Complete <a href="#">Ch E 317</a> with a passing grade.
<a href="#">Ch E 345</a>	3	Complete <a href="#">Ch E 345</a> with a passing grade.
<a href="#">Ch E 411</a>	1	Complete <a href="#">Ch E 411</a> with a passing grade.
<a href="#">Ch E 417</a>	3	Complete <a href="#">Ch E 417</a> with a passing grade.
<a href="#">Ch E 421</a>	3	Complete <a href="#">Ch E 421</a> with a passing grade.
<a href="#">Ch E 423</a>	3	Complete <a href="#">Ch E 423</a> with a passing grade.
<a href="#">Ch E 445</a>	2	Complete <a href="#">Ch E 445</a> with a passing grade.
<a href="#">Ch E 446</a>	2	Complete <a href="#">Ch E 446</a> with a passing grade.
<a href="#">Ch E 451</a>	4	Complete <a href="#">Ch E 451</a> with a passing grade.
<a href="#">Ch E 452</a> or <a href="#">Ch E 460/461</a>	3	Complete either <a href="#">Ch E 452</a> or <a href="#">Ch E 460/461</a> with a passing grade.
<a href="#">Ch E 511</a>	3	Complete <a href="#">Ch E 511</a> with a passing grade.
School of Engineering GPA		Must be at least a 2.0



REQUIREMENT	HOURS	DESCRIPTION
Enroll in a BSChE emphasis		Enroll in an emphasis in BSChE program.

### Major Requirements II

REQUIREMENT	HOURS	DESCRIPTION
<a href="#">Chem 225</a>	1	Complete <a href="#">Chem 225</a> with a passing grade.
<a href="#">Chem 222</a>	3	Complete <a href="#">Chem 222</a> with a passing grade.
<a href="#">Chem 221</a>	3	Complete <a href="#">Chem 221</a> with a passing grade.
<a href="#">Engr 310</a>	3	Complete <a href="#">Engr 310</a> with a passing grade.
<a href="#">Engr 313</a>	3	Complete <a href="#">Engr 313</a> with a passing grade.
<a href="#">Engr 321</a>	3	Complete <a href="#">Engr 321</a> with a passing grade.
<a href="#">Engr 322</a>	3	Complete <a href="#">Engr 322</a> with a passing grade.
<a href="#">Engr 362</a>	3	Complete <a href="#">Engr 362</a> with a passing grade.
<a href="#">Engr 309</a> or <a href="#">Csci 251</a>	3	Complete either <a href="#">Engr 309</a> or <a href="#">Csci 251</a> with a passing grade.

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REQUIREMENT	HOURS	DESCRIPTION
<a href="#">Ch E 520</a>	3	Complete <a href="#">Ch E 520</a> with a passing grade.
<a href="#">Chem 334</a>	3	Complete <a href="#">Chem 334</a> with a passing grade.
<a href="#">Phar 331</a>	3	Complete <a href="#">Phar 331</a> with a passing grade.
Tech elective or <a href="#">Ch E 330</a>	3	Complete a technical elective or ChE R&D Experience ( <a href="#">ChE 330</a> ).

