

## 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

#### Program Educational Objectives

Graduates from the Department of Chemical Engineering of the University of Mississippi will be: 1. Globally competitive in the professional world; 2. Prepared for leadership and success in their chosen career or in continued education; 3. Equipped with flexible problem-solving skills to address complex professional and societal issues.

#### Student Outcomes

In accordance with ABET accreditation requirements, BSChE students at the University of Mississippi should demonstrate the attainment of the following student outcomes: (a) an ability to apply knowledge of mathematics, science, and engineering (b) an ability to design and conduct experiments, as well as to analyze and interpret data (c) 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 (d) an ability to function on multidisciplinary teams (e) an ability to identify, formulate, and solve engineering problems (f) an understanding of professional and ethical responsibility (g) an ability to communicate effectively (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (i) a recognition of the need for, and an ability to engage in life-long learning (j) a knowledge of contemporary issues (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

### 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.

## Emphasis - Biotechnology Course Requirements

#### Biotechnology

|   |                |
|---|----------------|
| Ch E 520                                | 3 Credit Hours |
| Chem 334, Chem 471, or Bisc 333         | 3 Credit Hours |
| Chem 222 or Bisc 160, 161, 162 and 163  | 3 Credit Hours |
| 300 level or higher Biotech Elective    | 3 Credit Hours |
| 300 level or higher Technical Electives | 6 Credit Hours |
| Add'l hum/soc sci/gen ed                | 3 Credit Hours |

### 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   |
|--------------------------|-------|---|
| 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="#">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.   |
| <a href="#">Math 261</a> | 3     | Complete <a href="#">Math 261</a> with a passing grade.   |



| REQUIREMENT              | HOURS | DESCRIPTION   |
|--------------------------|-------|---|
| <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.          |

### Major Requirements

| REQUIREMENT   | HOURS | DESCRIPTION   |
|---|-------|---|
| <a href="#">Ch E 101</a> or <a href="#">103/104</a> or <a href="#">Engr 100</a> | 2     | Complete <a href="#">Ch E 101</a> or <a href="#">Ch E 103/104</a> or <a href="#">Engr 100</a> with a passing grade. |
| <a href="#">Ch E 251</a>  | 3     | Complete <a href="#">Ch E 251</a> 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 412</a>  | 3     | Complete <a href="#">Ch E 412</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 431</a>  | 1     | Complete <a href="#">Ch E 431</a> with a passing grade.   |
| <a href="#">Ch E 432</a>  | 1     | Complete <a href="#">Ch E 432</a> with a passing grade.   |
| <a href="#">Ch E 433</a>  | 2     | Complete <a href="#">Ch E 433</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>  | 3     | Complete <a href="#">Ch E 452</a> with a passing grade.   |
| Enroll in a BSChE emphasis  |       | Enroll in an emphasis in BSChE program.   |
| School of Engineering GPA   |       | Must be at least a 2.0  |

### 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 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. |



| REQUIREMENT  | HOURS | DESCRIPTION   |
|--|-------|---|
| <a href="#">Engr 313</a> or <a href="#">Manf 251/252</a> | 3     | Complete <a href="#">Engr 313</a> or <a href="#">Manf 251/252</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.                                 |

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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> , <a href="#">Chem 471</a> , or <a href="#">Bisc 333</a> | 3     | Complete either <a href="#">Chem 334</a> , <a href="#">Chem 471</a> , or <a href="#">Bisc 333</a> with a passing grade.  |
| <a href="#">Chem 222</a> or Bisc sequence   | 3     | Complete either <a href="#">Chem 222</a> or <a href="#">Bisc 160</a> , <a href="#">161</a> , <a href="#">162</a> and <a href="#">163</a> with a passing grade.                 |
| 1 Biotech Emph Elective   | 3     | Complete either <a href="#">Bisc 333</a> , <a href="#">509</a> , <a href="#">BME 313</a> , <a href="#">413</a> , <a href="#">Chem 473</a> , or Pharm 331 with a passing grade. |
| 2 Technical Electives   | 6     | Complete at least 6 credit hours of technical electives at 300 or higher course numbers from among engineering, science, or mathematics with a passing grade.                  |
| 3 hrs add'l hum/soc sci/gen ed  | 3     | Complete an additional 3 credit hours in humanities, social sciences or approved general education courses with a passing grade.   |

