

## Standard Option

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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

### Course Requirements

Specific requirements for the individualized emphasis in chemical engineering are as follows: Math 261-264, Math 353, Writ 100, Writ 101, Writ 102, or Liba 102; Chem 105, 106, 115, 116, and Phys 211, 212, 221, 222; Chem 221, 222, 225, advanced chemistry (defined below); Csci 251 or Engr 309, 310, 313, 321, 322, 360; Ch E 103, 104, 307, 308, 317, 345, 411, 417, 421, 423, 445, 446, 451, 452, 412 or 511; technical electives to include three 3-hour electives of 300 or higher course number from among engineering, science, or mathematics. Any of the following will satisfy the advanced chemistry requirement: Chem 334, Chem 471, Chem 472, Ch E 543, Ch E 545, G E 503, and Engr 540. The following alternative courses may satisfy course requirements as specified:

- Alternatives to Ch E 103 and 104: Engr 100, or Manf 150 and Manf 252
- Alternative to Ch E 452: The combination of Manf 451 and Manf 452
- Alternative to Engr 313: The combination of Manf 251 and 252
- Alternatives for 300-level technical electives: Manf 253, Manf 254, and the combination of Bisc 160, 161, 162, and 163. In the case of the Bisc 160-163 series, the student must take all 8 credits to fulfill the requirement for one 3-credit technical elective. A maximum of 3 credits of Ch E 330 may be used to satisfy one of the technical elective requirements.

Emphases in Chemical Engineering: As alternative to the standard or PreMed options in chemical engineering, a student may choose to obtain a B.S. in Chemical Engineering with one or more of the following five emphases: biotechnology, biomedical engineering, environmental, manufacturing (in collaboration with the Center for Manufacturing Excellence), and materials. The same general education and course requirements (defined above) apply to all emphases in chemical engineering. Taking specific advanced chemistry and elective courses satisfy specific emphasis requirements.

### 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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|                                         |                |
|-----------------------------------------|----------------|
| Any approved advanced chemistry         | 3 Credit Hours |
| 300 level or higher technical electives | 9 Credit Hours |

No more than 3 credits of undergraduate research can be used to fulfill the elective requirements.

### 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.                                                                                                                                                                                                           |
| <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 103</a>                                 | 2     | Complete <a href="#">Ch E 103</a> .                                                            |
| <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="#">Manf 451/452</a> | 3     | Complete either <a href="#">Ch E 452</a> or <a href="#">Manf 451/452</a> with a passing grade. |
| <a href="#">Ch E 412</a> or <a href="#">511</a>          | 3     | Complete <a href="#">Ch E 412</a> or <a href="#">511</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                                                                         |

The University of Mississippi is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award certificates and baccalaureate, master's, specialist, and doctoral degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097, call 404-679-4500, or visit online at [www.sacscoc.org](http://www.sacscoc.org) for questions about the accreditation.



## 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 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. |
| <a href="#">Engr 360</a>                             | 3     | Complete <a href="#">Engr 360</a> with a passing grade.                                    |

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| REQUIREMENT               | HOURS | DESCRIPTION                                                                                                                                                                                                                                                   |
|---------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advanced chemistry course | 3     | Complete at least one advanced chemistry course. Course can be chosen from the following: <a href="#">Chem 334</a> , <a href="#">Chem 471</a> , <a href="#">Ch E 543</a> , <a href="#">Ch E 545</a> , <a href="#">GE 503</a> , and <a href="#">Engr 540</a> . |
| 9 hrs technical electives | 9     | Complete at least 9 credit hours of technical electives to include three 3-hour electives of 300 or higher course number from among engineering, science, or mathematics.                                                                                     |
| Add'l hum/soc sci         | 3     | Complete an additional 3 hours in humanities or social sciences.                                                                                                                                                                                              |

