

## Emphasis - Manufacturing

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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 standard option in chemical engineering are as follows: Writ 100, Writ 101, or Hon 101; Writ 102, Liba 102, or Hon 102; Math 261, 262, 263, 264, and 353; Chem 105, 106, 115, 116, 221, and 225; Phys 211, 212, 221, 222; an advanced science (defined below); Engr 310, 313, 321, and 322; Ch E 101, 251, 307, 308, 317, 345, 411, 412, 417, 421, 423, 445, 446, 451, and 452; an engineering elective (defined below); 12 hours of technical electives of 300 or higher course number from engineering, science, or mathematics; and 3 hours of fine arts, 6 hours of humanities from the same department, 6 hours of social science from the same department, and 3 additional hours of humanities, social science, or a general education course as defined by the School of Engineering with the exception that speech and math content courses may not be used to satisfy any of these required 18 credits. Any of the following will satisfy the advanced science requirement: Engr 340, Engr 540, Ch E 543, Ch E 545, Ch E 547, Geol 314, Geol 415, Geol 450, G E 503, Chem 314, Chem 331, Chem 332, Chem 334, Chem 373, Chem 401, Chem 471, Chem 473, Phys 315, Phys 317, Phys 318, Phys 319, Phys 321, Phys 401, Phys 402, Bisc 301, Bisc 306, Bisc 318, Bisc 320, Bisc 327, or Bisc 335. Any of the following will satisfy the engineering elective requirement: Engr 309, Engr 330, Engr 340, Engr 360, Engr 573, C E 471, C E 472, or M E 534.

The following alternative courses may satisfy course requirements as specified:

- Alternatives to Ch E 101: Ch E 103 and Ch E 104, or Engr 100
- Alternative to Engr 313: The combination of Manf 251 and Manf 252
- Alternatives for 300-level technical electives: Chem 222, Manf 253, Manf 254, 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 pre-med options in chemical engineering, a student may choose to obtain a B.S. in Chemical Engineering with one or more of the following four emphases: biotechnology, 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.

## Emphasis - Manufacturing Course Requirements

### Manufacturing

| Course           | Hours          |
|------------------|----------------|
| Advanced Science | 3 Credit Hours |
| Bus 250          | 3 Credit Hours |
| Manf 150         | 1 Credit Hour  |
| Manf 251         | 3 Credit Hours |
| Manf 252         | 1 Credit Hour  |



**Course**

**Hours**

|          |                |
|----------|----------------|
| Manf 253 | 3 Credit Hours |
| Manf 254 | 3 credit Hours |
| Manf 350 | 3 Credit Hours |
| Manf 351 | 1 Credit Hour  |
| Manf 450 | 3 Credit Hours |
| Manf 451 | 1 Credit Hour  |
| Manf 452 | 2 Credit Hours |

## Other Academic Requirements

Acceptance into the Center for Manufacturing Excellence.

## 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 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.   |



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

### Emphasis - Manufacturing

| REQUIREMENT              | HOURS | DESCRIPTION   |
|--------------------------|-------|---|
| <a href="#">Manf 150</a> | 1     | Complete <a href="#">Manf 150</a> with a passing grade.   |
| <a href="#">Manf 251</a> | 3     | Complete <a href="#">Manf 251</a> with a passing grade.   |
| <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 254</a> | 3     | Complete <a href="#">Manf 254</a> with a passing grade.   |
| <a href="#">Manf 350</a> | 3     | Complete <a href="#">Manf 350</a> with a passing grade.   |
| <a href="#">Manf 351</a> | 1     | Complete <a href="#">Manf 351</a> with a passing grade.   |
| <a href="#">Manf 450</a> | 3     | Complete <a href="#">Manf 450</a> with a passing grade.   |
| <a href="#">Manf 451</a> | 1     | Complete <a href="#">Manf 451</a> with a passing grade.   |
| <a href="#">Manf 452</a> | 2     | Complete <a href="#">Manf 452</a> with a passing grade.   |
| <a href="#">Bus 250</a>  | 3     | Complete <a href="#">Bus 250</a> with a passing grade.  |
| 3 hrs of Adv Science     | 3     | Complete at least 3 hrs of Advanced Science with a passing grade chosen from: <a href="#">Engr 340</a> , <a href="#">540</a> , <a href="#">CH E 543</a> , <a href="#">545</a> , <a href="#">547</a> , <a href="#">GEOL 314</a> , <a href="#">G E 415</a> , <a href="#">450</a> , <a href="#">503</a> , <a href="#">CHEM 314</a> , <a href="#">331</a> , <a href="#">332</a> , <a href="#">334</a> , <a href="#">373</a> , <a href="#">401</a> , <a href="#">471</a> , <a href="#">473</a> , <a href="#">PHYS 315</a> , <a href="#">317</a> , <a href="#">318</a> , <a href="#">319</a> , <a href="#">321</a> , <a href="#">401</a> , <a href="#">402</a> , <a href="#">BISC 301</a> , <a href="#">306</a> , <a href="#">318</a> , <a href="#">320</a> , <a href="#">327</a> , <a href="#">333</a> , <a href="#">335</a> . |

