

## Emphasis - Biotechnology

- [B.S.Ch.E. in Chemical Engineering](#)
- [Emphasis - Biotechnology](#)
- [Degree Requirements](#)

## 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, within 3-5 years after graduation, will:

1. Meet or exceed the expectations of employers of chemical engineers;
2. Continue their professional development by pursuing advanced study if they so desire; and
3. Continue their professional development by pursuing leadership opportunities and other positions of service in their profession and/or communities.

### Student Outcomes

In accordance with ABET accreditation requirements, BSChE students at the University of Mississippi should demonstrate the attainment 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 hours of general education requirements: 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 [general education courses as specified 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."

### Course Requirements

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.

### 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.
<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	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> .
6 hrs Serial Humanities	6	Complete 6 hrs with a passing grade (from the same department) of humanities choosing from course work in classics, literature, history, philosophy, religion, Southern Studies, African American Studies, and Gender Studies.
6 hrs Serial Social Sciences	6	Complete 6 hours with a passing grade (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 316</a>	3	Complete <a href="#">Ch E 316</a> with a passing grade.
<a href="#">Ch E 318</a>	3	Complete <a href="#">Ch E 318</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.

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.



REQUIREMENT	HOURS	DESCRIPTION
<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 449</a> & <a href="#">Ch E 450</a>	4	Complete <a href="#">Ch E 449</a> & <a href="#">CH E 450</a> with a passing grade.
<a href="#">Ch E 452</a>	3	Complete <a href="#">Ch E 452</a> with a passing grade.
<a href="#">Chem 221</a>	3	Complete <a href="#">Chem 221</a> with a passing grade.
<a href="#">Chem 225</a>	1	Complete <a href="#">Chem 225</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.
Enroll in a BSChE emphasis		Enroll in an emphasis in BSChE program.
School of Engineering GPA		Must be at least a 2.0

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<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. (Alternatives for 300-level technical electives: <a href="#">Chem 222</a> , <a href="#">Manf 253</a> , <a href="#">Manf 254</a> , the combination of [ <a href="#">Bisc 160</a> ]( <a href="https://catalog.olemiss.edu/2023/fall/graduate/bisc-160">https://catalog.olemiss.edu/2023/fall/graduate/bisc-160</a> ), <a href="#">161</a> , <a href="#">162</a> , and <a href="#">163</a> . In the case of the <a href="#">Bisc 160</a> -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 <a href="#">Ch E 330</a> may be used to satisfy one of the technical elective requirements.)
3 hrs add'l hum/soc sci/gen ed	3	Complete 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 such as <a href="#">Psy 202</a> and <a href="#">Econ 230</a> may not be used to satisfy any of these required 18 credits.

