

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 |
|------------------------------|-------|---|
| Chem 105 | 3 | Complete Chem 105 with a passing grade. |
| Chem 106 | 3 | Complete Chem 106 with a passing grade. |
| Chem 115 | 1 | Complete Chem 115 with a passing grade. |
| Chem 116 | 1 | Complete Chem 116 with a passing grade. |
| First Year Writing I | 3 | Complete Hon 101 , Writ 100 or Writ 101 with a passing grade. |
| First Year Writing II | 3 | Complete Hon 102 , Liba 102 , or Writ 102 with a passing grade. |
| Math 261 | 3 | Complete Math 261 with a passing grade. |
| Math 262 | 3 | Complete Math 262 with a passing grade. |
| Math 263 | 3 | Complete Math 263 with a passing grade. |
| Math 264 | 3 | Complete Math 264 with a passing grade. |
| Math 353 | 3 | Complete Math 353 with a passing grade. |
| Phys 211 | 3 | Complete Phys 211 with a passing grade. |
| Phys 212 | 3 | Complete Phys 212 with a passing grade. |
| Phys 221 | 1 | Complete Phys 221 with a passing grade. |
| Phys 222 | 1 | Complete Phys 222 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. |
| 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. |
| 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. Psy 202 and Econ 230 are excluded from these options. |

Major Requirements

| REQUIREMENT | HOURS | DESCRIPTION |
|--|-------|--|
| Ch E 103/104 or approved course | 2 | Complete Ch E 103 and Ch E 104 . As an alternative, students may complete one one of the following courses: Engr 100 , Manf 150 or Manf 252 . Coursework must be completed with a passing grade. |
| Ch E 307 | 2 | Complete Ch E 307 with a passing grade. |
| Ch E 308 | 2 | Complete Ch E 308 with a passing grade. |
| Ch E 317 | 3 | Complete Ch E 317 with a passing grade. |
| Ch E 345 | 3 | Complete Ch E 345 with a passing grade. |
| Ch E 411 | 1 | Complete Ch E 411 with a passing grade. |
| Ch E 417 | 3 | Complete Ch E 417 with a passing grade. |
| Ch E 421 | 3 | Complete Ch E 421 with a passing grade. |
| Ch E 423 | 3 | Complete Ch E 423 with a passing grade. |
| Ch E 445 | 2 | Complete Ch E 445 with a passing grade. |
| Ch E 446 | 2 | Complete Ch E 446 with a passing grade. |
| Ch E 451 | 4 | Complete Ch E 451 with a passing grade. |
| Ch E 452 or Ch E 460/461 | 3 | Complete either Ch E 452 or Ch E 460/461 with a passing grade. |
| Ch E 511 | 3 | Complete Ch E 511 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 |
|--|-------|--|
| Chem 225 | 1 | Complete Chem 225 with a passing grade. |
| Chem 222 | 3 | Complete Chem 222 with a passing grade. |
| Chem 221 | 3 | Complete Chem 221 with a passing grade. |
| Engr 310 | 3 | Complete Engr 310 with a passing grade. |
| Engr 313 | 3 | Complete Engr 313 with a passing grade. |
| Engr 321 | 3 | Complete Engr 321 with a passing grade. |
| Engr 322 | 3 | Complete Engr 322 with a passing grade. |
| Engr 362 | 3 | Complete Engr 362 with a passing grade. |
| Engr 309 or Csci 251 | 3 | Complete either Engr 309 or Csci 251 with a passing grade. |

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|---|-------|--|
| Ch E 520 | 3 | Complete Ch E 520 with a passing grade. |
| Chem 334 | 3 | Complete Chem 334 with a passing grade. |
| Phar 331 | 3 | Complete Phar 331 with a passing grade. |
| Tech elective or Ch E 330 | 3 | Complete a technical elective or ChE R&D Experience (ChE 330). |

