

## Emphasis - Bioinformatics

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## B.S.B.E. in Biomedical Engineering Description

This Bachelor of Science in Biomedical Engineering (BME) degree program will prepare engineering students at the University of Mississippi to capably apply advanced mathematics, science, and engineering to solve the problems at the interface of engineering, biology, and medicine. Moreover, the curriculum will prepare graduates with the ability to make measurements on and interpret data from living systems, addressing the problems associated with the interaction between living and non-living materials and systems.

The graduates of the program will be able to pursue (i) employment in biomedical or related industries (ii) graduate studies in biomedical engineering or related discipline, and (iii) pursue professional careers in medicine, dentistry, pharmacy, or patent law.

### Minimum Total Credit Hours: 127

### General Education Requirements

Students must complete at least 18 semester hours of general education requirements: 3 hours in humanities, 3 hours in fine arts, 3 hours in humanities/fine arts, 6 hours in social science (including Econ 310), and the remaining 3 hours can be in any of the humanities/fine arts, social science, or [general education courses as specified by the School of Engineering](#).

### Course Requirements

Specific requirements for the B.S. in BME include Writ 100, Writ 101, or Hon 101; Writ 102, Liba 102 or Hon 102; Math 261-264, Math 353; Chem 105, 106, 115, 116, 221, 225; Phys 211, 212, 221, 222; Bisc 160, 161; Csci 251; Econ 310; Engr 310, 360, 400; El E 313, 314, 331; Ch E 307, 308; BME 200, 222, 333, 444, 461, 462.

## Emphasis - Bioinformatics Description

Bioinformatics is an interdisciplinary field investigating methods/ software tools to understand better biological data. Bioinformatics combines computer science, statistics, mathematics, and engineering to analyze and interpret biological data. Bioinformatics is both an umbrella term for the body of biological studies that use computer programming and simulation as part of their methodology, and specific analysis "pipelines" that are repeatedly used, particularly in the field of genomics.

### Course Requirements

Specific requirements for the bioinformatics emphasis within bioengineering include BISC 162, 163, 336; CSCI 343, 475; 6 hours of CSCI electives chosen from 345, 443, 444, 447, or 547; 9 hours of emphasis electives chosen from BISC, CHEM, MATH, PHYS, or School of Engineering 300 level or above or special courses with departmental approval.

### 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.B.E. in Biomedical Engineering General Education

| REQUIREMENT                | HOURS | DESCRIPTION  |
|----------------------------|-------|--|
| First Year Writing I       | 3     | Successfully 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     | Successfully complete one of the following courses with a passing grade: <a href="#">Writ 102</a> , <a href="#">Liba 102</a> , <a href="#">Hon 102</a> .   |
| <a href="#">Econ 310</a>   | 3     | Successfully complete <a href="#">Econ 310</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.  |
| 3 hrs social sciences      | 3     | Complete 3 hours of social sciences choosing from the following; economics, anthropology, political science, psychology, and sociology.  |
| 3 hrs humanities           | 3     | Complete 3 hrs of humanities choosing from course work in classics, literature, history, modern language, philosophy, religion, Southern studies, African American Studies, Gender Studies, and Southern Studies.  |
| 3 hrs GenEd, SS, Hum or FA | 3     | Complete 3 hrs General Education work chosen from the following: additional fine art, additional social science, additional humanities, <a href="#">As 301</a> , <a href="#">As 302</a> , <a href="#">Bus 250</a> , <a href="#">Bus 271</a> , <a href="#">Edld 110</a> , <a href="#">Edld 111</a> , <a href="#">Edld 120</a> , <a href="#">Edld 220</a> , <a href="#">Engr 400</a> , <a href="#">Mgmt 371</a> , <a href="#">Msl 102</a> , <a href="#">Nsc 211</a> , <a href="#">Spch 102</a> , or <a href="#">Spch 105</a> . |



| REQUIREMENT                | HOURS | DESCRIPTION   |
|----------------------------|-------|---|
| 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. |
| 3 hrs fine arts/humanities | 3     | Complete 3 additional hours in any of the humanities or fine arts categories defined by the School of Engineering general education requirements.   |

### Major Requirements

| REQUIREMENT              | HOURS | DESCRIPTION   |
|--------------------------|-------|---|
| <a href="#">BME 200</a>  | 2     | Complete <a href="#">BME 200</a> with a passing grade.  |
| <a href="#">BME 222</a>  | 3     | Complete <a href="#">BME 222</a> with a passing grade.  |
| <a href="#">BME 333</a>  | 3     | Complete <a href="#">BME 333</a> with a passing grade.  |
| <a href="#">BME 444</a>  | 3     | Complete <a href="#">BME 444</a> with a passing grade.  |
| <a href="#">BME 461</a>  | 2     | Complete <a href="#">BME 461</a> with a passing grade.  |
| <a href="#">BME 462</a>  | 2     | Complete <a href="#">BME 462</a> with a passing grade.  |
| <a href="#">Bisc 160</a> | 3     | Complete <a href="#">Bisc 160</a> with a passing grade. |
| <a href="#">Bisc 161</a> | 1     | Complete <a href="#">Bisc 161</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="#">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="#">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="#">Csci 251</a> | 3     | Complete <a href="#">Csci 251</a> with a passing grade. |
| <a href="#">BME 313</a>  | 3     | Complete <a href="#">BME 313</a> with a passing grade.  |
| <a href="#">BME 314</a>  | 1     | Complete <a href="#">BME 314</a> with a passing grade.  |
| <a href="#">El E 331</a> | 3     | Complete <a href="#">El E 331</a> with a passing grade. |
| <a href="#">Engr 310</a> | 3     | Complete <a href="#">Engr 310</a> with a passing grade. |
| <a href="#">Engr 360</a> | 3     | Complete <a href="#">Engr 360</a> with a passing grade. |
| <a href="#">Engr 400</a> | 1     | Complete <a href="#">Engr 400</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. |

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| REQUIREMENT              | HOURS | DESCRIPTION   |
|--------------------------|-------|---|
| <a href="#">Bisc 162</a> | 3     | Complete <a href="#">Bisc 162</a> with a passing grade. |
| <a href="#">Bisc 163</a> | 1     | Complete <a href="#">Bisc 163</a> with a passing grade. |
| <a href="#">Bisc 336</a> | 4     | Complete <a href="#">Bisc 336</a> with a passing grade. |
| <a href="#">Csci 343</a> | 3     | Complete <a href="#">Csci 343</a> with a passing grade. |
| <a href="#">Csci 475</a> | 3     | Complete <a href="#">Csci 475</a> with a passing grade. |



| REQUIREMENT              | HOURS | DESCRIPTION  |
|--------------------------|-------|--|
| 6 hrs Csci elective      | 6     | Complete 6 hrs from the following with a passing grade: <a href="#">Csci 345</a> , <a href="#">CSci 356</a> , <a href="#">Csci 443</a> , <a href="#">Csci 444</a> , <a href="#">Csci 447</a> , or <a href="#">Csci 547</a> . |
| 9 hrs emphasis electives | 9     | Complete 9 hours of emphasis electives with a passing grade.   |

