

## Emphasis - Manufacturing

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## B.S.M.E. in Mechanical Engineering Description

The B.S.M.E. provides students with fundamentals in the field and a specialization in the following disciplines: mechanics, thermodynamics, fluid mechanics, materials, design, and laboratory diagnostics. The preparation fosters an inquisitiveness and understanding that will preclude future obsolescence of the mechanical engineering graduate.

**Minimum Total Credit Hours: 128**

### Goals/Mission Statement

The program educational objectives of the Department of Mechanical Engineering derive their foundation from the statement of purpose for The University of Mississippi's statement of purpose and vision statement. The academic mission of the Department of Mechanical Engineering (ME) is focused on broad, overarching goals that reflect both the academic purpose of the School of Engineering and the university. The stated university goals have been used to refine the goals and objectives of the department. The goals and objectives have been established from input by the faculty, students, and the Ole Miss Engineering School Advisory Board as constituency groups. These goals and objectives are listed as follows.

- Educate students in the broad scope of the mechanical engineering discipline so as to be successful in applying and advancing knowledge in industry, academia, and related fields;
- Conduct basic and applied research in fields related to mechanical engineering to maintain and enhance the quality and reputation of the faculty and the School of Engineering;
- Serve industry, the engineering community, and the community at large in the State of Mississippi, the nation, and the world;
- Teach students the influence of issues related to health, safety, economy, environment, and society while seeking engineering solutions.

### Program Educational Objectives

This process and these goals have resulted in the development of the Department of Mechanical Engineering curriculum consisting of lecture, design, and laboratory courses that stress the departmental goals. The mechanical engineering faculty, advisory board, and students, as constituency groups, have established the following undergraduate program educational objectives:

1. Graduates will meet or exceed the expectations of employers of mechanical engineers;
2. Qualified graduates will continue their professional development by pursuing advanced study if they so desire;
3. Graduates will continue their professional development by pursuing leadership positions in their profession and/or communities.

### Student Outcomes

Students of the Bachelor of Science in Mechanical Engineering program will demonstrate achievement 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 judgments, 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 judgment 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 semester hours of general education requirements: 3 hours in humanities, 3 hours in fine arts, 3 hours in humanities, languages (modern, Greek, or Latin), or fine arts, 6 hours in social science (including Econ 310), and the remaining 3 hours can be in any of the humanities, languages (modern, Greek, or Latin), fine arts, social science, or general education courses as specified by the School of Engineering.

## Course Requirements

Specific requirements for the B.S.M.E. 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; Phys 211, 212, 221, 222; Csci 251; Econ 310; Engr 309, 310 or Math 375, 312, 313, 314, 321, 323, 330, 360, 361, 420, 553; M E 101, 201, 324, 325, 401, 402, 416, 419, 426, 428, 438.

One technical elective must be chosen from Thermal/Fluid Elective including M E 406, 529 or Engr 551.

A second technical elective must be chosen from Design Elective (includes 1 hour of design): M E 406, 417, 418, 422, 523, 524, 526, 527, 531, 534, 535, 538, 540, 541, 555 or Engr 559.

A third technical elective must be chosen from any of the Thermal/Fluid Elective courses, Design Elective courses or Other Electives including M E 417, 418, 421, 521, 522, 523, 524, 529, 530, 532, 533, 537, 543, Engr 410, 515, 523, 546, 554, 558, 559, 585, 590, 593.



## Emphasis - Manufacturing Description

The B.S.M.E. provides students with fundamentals in the field and a specialization in the following disciplines: mechanics, materials, thermodynamics, fluid mechanics, design, and laboratory diagnostics. The preparation fosters an inquisitiveness and understanding that will preclude future obsolescence of the mechanical engineering graduate. An emphasis in manufacturing is also available under the B.S.M.E. degree in cooperation with the Center for Manufacturing Excellence. The B.S.M.E. with emphasis in manufacturing provides broad training in the basic and engineering sciences along with a cross-disciplinary account and business focus on manufacturing.

### 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, 115 and Phys 211, 212, 221, 222. The required 18 hours of humanities/behavioral and social science/fine arts are as specified by the School of Engineering general education requirements but must include Bus 250 and Econ 310.

### Course Requirements

Specific requirements for the B.S.M.E. with an emphasis in manufacturing include Csci 251; Engr 309, 310 or Math 375, 312, 313, 314, 321, 323, 330, 360, 420, 553; M E 201, 324, 325, 401, 416, 419, 426, 428, 438; Manf 150, 152, 251, 252, 253, 255, 351, 353, 355, 455. Two electives are required and may be chosen from the following courses: M E 402, 406, 417, 418, 421, 422, 521, 522, 523, 524, 526, 527, 529, 530, 531, 532, 533, 534, 535, 537, 538, 540, 541, 543, 555; Engr 410, 496, 515, 558, 559, 585, 590, 593; Fin 331; Mgmt 371, 372, 383, 466, 476; Bus 322; Mktg 351; GB 350, 370; or Manf 460, 465, 470.

### 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.M.E. in Mechanical 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 one of the following courses with a passing grade: <a href="#">Liba 102</a> , <a href="#">Writ 102</a> or <a href="#">Hon 102</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 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> .                                                                                                                                                  |
| 3 hrs humanities         | 3     | Successfully complete 3 hrs of humanities with a passing grade chosen from the following: African American studies ( <a href="#">Aas 201</a> , <a href="#">202</a> ), classics (Clc), environmental studies ( <a href="#">Envys 101</a> ), gender studies ( <a href="#">G St 201</a> , <a href="#">202</a> ), history (Hst), liberal arts ( <a href="#">Liba 202</a> , <a href="#">305</a> , <a href="#">312</a> ), literature ( <a href="#">Eng 103</a> , <a href="#">220-226</a> ), philosophy (Phil), religion (Rel), Southern studies 100-level, and either <a href="#">Hon 101</a> or <a href="#">102</a> (if not being used to fulfill composition requirements). |
| 3 hrs social sciences    | 3     | Successfully complete 3 hrs of social science with a passing grade chosen from anthropology (Anth), economics (Econ), political science (Pol), psychology (Psy), sociology (Soc), <a href="#">Liba 203</a> , <a href="#">313</a> , or <a href="#">Hon 101</a> , <a href="#">102</a>                                                                                                                                                                                                                                                                                                                                                                                     |
| 3 hrs FA/Lang/Hum        | 3     | Successfully complete 3 hrs of Fine Arts, Humanities, or Modern language with a passing grade. Modern Language include courses in courses in Ancient Greek (Gr), Arabic (Arab) nd Swahili (Swa). (Japn), Korean (Kor), Latin (Lat), Portuguese (Port), Russian (Russ), Spanish                                                                                                                                                                                                                                                                                                                                                                                          |
| <a href="#">Econ 310</a> | 3     | Complete <a href="#">Econ 310</a> with a passing grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### General Education II

| REQUIREMENT              | HOURS | DESCRIPTION                                             |
|--------------------------|-------|---------------------------------------------------------|
| <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="#">Chem 105</a> | 3     | Complete <a href="#">Chem 105</a> with a passing grade. |
| <a href="#">Chem 115</a> | 1     | Complete <a href="#">Chem 115</a> with a passing grade. |
| <a href="#">Phys 211</a> | 3     | Complete <a href="#">Phys 211</a> with a passing grade. |
| <a href="#">Phys 221</a> | 1     | Complete <a href="#">Phys 221</a> with a passing grade. |
| <a href="#">Phys 212</a> | 3     | Complete <a href="#">Phys 212</a> with a passing grade. |



| REQUIREMENT              | HOURS | DESCRIPTION                                             |
|--------------------------|-------|---------------------------------------------------------|
| <a href="#">Phys 222</a> | 1     | Complete <a href="#">Phys 222</a> with a passing grade. |

### General Education (non-emphasis)

| REQUIREMENT                    | HOURS | DESCRIPTION                                                                                                                                                                                |
|--------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">Chem 106</a>       | 3     | Complete <a href="#">Chem 106</a> with a passing grade.                                                                                                                                    |
| <a href="#">Chem 116</a>       | 1     | Complete <a href="#">Chem 116</a> with a passing grade.                                                                                                                                    |
| 3 add'l hrs social science     | 3     | Complete 3 additional hours of social sciences choosing from the following; economics, anthropology, political science, psychology, and sociology.                                         |
| 3 hrs gen ed, lang, or SS/H/FA | 3     | Complete 3 additional hours with a passing grade of humanities, languages (modern, Greek, or Latin), social science, or a general education course as defined by the School of Engineering |

### Major Requirements

| REQUIREMENT               | HOURS | DESCRIPTION                                            |
|---------------------------|-------|--------------------------------------------------------|
| <a href="#">M E 201</a>   | 2     | Complete <a href="#">M E 201</a> with a passing grade. |
| <a href="#">M E 324</a>   | 3     | Complete <a href="#">M E 324</a> with a passing grade. |
| <a href="#">M E 325</a>   | 3     | Complete <a href="#">M E 325</a> with a passing grade. |
| <a href="#">M E 401</a>   | 3     | Complete <a href="#">M E 401</a> with a passing grade. |
| <a href="#">M E 416</a>   | 1     | Complete <a href="#">M E 416</a> with a passing grade. |
| <a href="#">M E 419</a>   | 1     | Complete <a href="#">M E 419</a> with a passing grade. |
| <a href="#">M E 426</a>   | 3     | Complete <a href="#">M E 426</a> with a passing grade. |
| <a href="#">M E 428</a>   | 3     | Complete <a href="#">M E 428</a> with a passing grade. |
| <a href="#">M E 438</a>   | 3     | Complete <a href="#">M E 438</a> with a passing grade. |
| School of Engineering GPA |       | Must be at least a 2.0                                 |

### Major Requirements II

| REQUIREMENT                                          | HOURS | DESCRIPTION                                                                         |
|------------------------------------------------------|-------|-------------------------------------------------------------------------------------|
| <a href="#">Csci 251</a>                             | 3     | Complete <a href="#">Csci 251</a> with a passing grade.                             |
| <a href="#">Engr 309</a>                             | 3     | Complete <a href="#">Engr 309</a> with a passing grade.                             |
| <a href="#">Engr 310</a> or <a href="#">Math 375</a> | 3     | Complete <a href="#">Engr 310</a> or <a href="#">Math 375</a> with a passing grade. |
| <a href="#">Engr 312</a>                             | 3     | Complete <a href="#">Engr 312</a> with a passing grade.                             |
| <a href="#">Engr 313</a>                             | 3     | Complete <a href="#">Engr 313</a> with a passing grade.                             |
| <a href="#">Engr 314</a>                             | 1     | Complete <a href="#">Engr 314</a> with a passing grade.                             |
| <a href="#">Engr 321</a>                             | 3     | Complete <a href="#">Engr 321</a> with a passing grade.                             |
| <a href="#">Engr 323</a>                             | 3     | Complete <a href="#">Engr 323</a> with a passing grade.                             |
| <a href="#">Engr 330</a>                             | 3     | Complete <a href="#">Engr 330</a> with a passing grade.                             |
| <a href="#">Engr 360</a>                             | 3     | Complete <a href="#">Engr 360</a> with a passing grade.                             |
| <a href="#">Engr 420</a>                             | 3     | Complete <a href="#">Engr 420</a> with a passing grade.                             |
| <a href="#">Engr 553</a>                             | 3     | Complete <a href="#">Engr 553</a> with passing grade                                |

### Non-specialization Requirements

| REQUIREMENT                 | HOURS | DESCRIPTION                                                                                                           |
|-----------------------------|-------|-----------------------------------------------------------------------------------------------------------------------|
| <a href="#">Engr 361</a>    | 1     | Complete <a href="#">Engr 361</a> with a passing grade.                                                               |
| <a href="#">M E 101</a>     | 1     | Complete <a href="#">M E 101</a> with a passing grade.                                                                |
| <a href="#">M E 402</a>     | 3     | Complete <a href="#">M E 402</a> with a passing grade.                                                                |
| Thermal/Fluid tech elective | 3     | Complete either <a href="#">M E 406</a> , <a href="#">M E 529</a> , or <a href="#">Engr 551</a> with a passing grade. |



| REQUIREMENT          | HOURS | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Design tech elective | 3     | Complete one of the following electives with a passing grade: <a href="#">M E 406</a> , <a href="#">M E 417</a> , <a href="#">M E 418</a> , <a href="#">M E 422</a> , <a href="#">M E 523</a> , <a href="#">M E 524</a> , <a href="#">M E 526</a> , <a href="#">M E 527</a> , <a href="#">M E 531</a> , <a href="#">M E 534</a> , <a href="#">M E 535</a> , <a href="#">M E 538</a> , <a href="#">M E 540</a> , <a href="#">M E 541</a> , <a href="#">M E 555</a> or <a href="#">Engr 559</a> .                                                                                                                                                                           |
| Tech elective        | 3     | Choose a third technical elective from any of the Thermal/Fluid Elective courses, Design Elective courses or Other Electives including <a href="#">M E 417</a> , <a href="#">418</a> , <a href="#">421</a> , <a href="#">521</a> , <a href="#">522</a> , <a href="#">523</a> , <a href="#">524</a> , <a href="#">529</a> , <a href="#">530</a> , <a href="#">532</a> , <a href="#">533</a> , <a href="#">537</a> , <a href="#">543</a> , <a href="#">Engr 410</a> , <a href="#">515</a> , <a href="#">523</a> , <a href="#">546</a> , <a href="#">554</a> , <a href="#">558</a> , <a href="#">559</a> , <a href="#">585</a> , <a href="#">590</a> , <a href="#">593</a> . |

### Emphasis - Manufacturing

| REQUIREMENT                | HOURS | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">Bus 250</a>    | 3     | Complete <a href="#">Bus 250</a> with a passing grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <a href="#">Manf 150</a>   | 1     | Complete <a href="#">Manf 150</a> with a passing grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <a href="#">Manf 152</a>   | 1     | Complete <a href="#">Manf 152</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 255</a>   | 1     | Complete <a href="#">Manf 255</a> with a passing grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <a href="#">Manf 351</a>   | 1     | Complete <a href="#">Manf 351</a> with a passing grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <a href="#">Manf 353</a>   | 3     | Complete <a href="#">Manf 353</a> with a passing grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <a href="#">Manf 355</a>   | 1     | Complete <a href="#">Manf 355</a> with a passing grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <a href="#">Manf 455</a>   | 3     | Complete <a href="#">Manf 455</a> with a passing grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2 Manf Technical electives | 6     | Choose two electives from the following courses: <a href="#">M E 402</a> , <a href="#">406</a> , <a href="#">417</a> , <a href="#">418</a> , <a href="#">421</a> , <a href="#">422</a> , <a href="#">521</a> , <a href="#">522</a> , <a href="#">523</a> , <a href="#">524</a> , <a href="#">526</a> , <a href="#">527</a> , <a href="#">529</a> , <a href="#">530</a> , <a href="#">531</a> , <a href="#">532</a> , <a href="#">533</a> , <a href="#">534</a> , <a href="#">535</a> , <a href="#">537</a> , <a href="#">538</a> , <a href="#">540</a> , <a href="#">541</a> , <a href="#">543</a> , <a href="#">555</a> ; <a href="#">Engr 410</a> , <a href="#">496</a> , <a href="#">515</a> , <a href="#">558</a> , <a href="#">559</a> , <a href="#">585</a> , <a href="#">590</a> , <a href="#">593</a> ; <a href="#">Fin 331</a> ; <a href="#">Mgmt 371</a> , <a href="#">372</a> , <a href="#">383</a> , <a href="#">466</a> , <a href="#">476</a> ; <a href="#">Bus 322</a> ; <a href="#">Mktg 351</a> ; <a href="#">GB 350</a> , <a href="#">370</a> ; or <a href="#">Manf 460</a> , <a href="#">465</a> , <a href="#">470</a> |

