# Mechanical Engineering B.S.M.E.

## Degree Requirements: 130 Credit Hours

See Core Curriculum for required courses in Area A1 through Area E.

### General Requirements (Core Areas A-E)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1310 Comprehensive General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 1133 Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 2242 Calculus III</td>
<td>1</td>
</tr>
<tr>
<td>MATH 3230 Ordinary Differential Equations</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 2212K Principles of Physics II</td>
<td>1</td>
</tr>
</tbody>
</table>

### Additional Requirements

- Area F - Courses Appropriate to Major: 18 Credit Hours
- Carryover from Area A2: 2 Credit Hours
- Carryover from Area D: 4 Credit Hours

### Specific Requirements

- ENGR 1121 Computing Applications in Mechanical Engineering: 3 Credit Hours
- ENGR 2131 Electronics and Circuit Analysis: 3 Credit Hours
- ENGR 3431 Thermodynamics: 3 Credit Hours
- ENGR 2231 Engineering Mechanics I: 3 Credit Hours
- ENGR 2232 Dynamics of Rigid Bodies: 3 Credit Hours
- ENGR 3233 Mechanics of Materials: 3 Credit Hours
- ENGR 3235 Fluid Mechanics: 3 Credit Hours

### Major Requirements

- ENGR 2112 Solid Modeling and Analysis: 3 Credit Hours
- MENG 1310 Manufacturing Processes Lab: 2 Credit Hours
- MENG 2110 Mechanical Engineering Case Studies in Design & Analysis: 4 Credit Hours
- MENG 2139 Numerical Methods in Engineering: 3 Credit Hours
- MENG 3130 Mechanism Design: 3 Credit Hours
- MENG 3135 Machine Design: 3 Credit Hours
- MENG 3233 Heat Transfer: 3 Credit Hours
- MENG 3331 Materials Science: 3 Credit Hours
- MENG 3333 Materials Processing: 3 Credit Hours
- MENG 3531 Introduction to Mechatronics: 3 Credit Hours
- MENG 4210 Energy Science Laboratory: 3 Credit Hours
- MENG 4430 Engineering Quality Control and Project Management: 3 Credit Hours
- MENG 4612 Mechanical Engineering Senior Seminar: 3 Credit Hours
- MENG 5136 Introduction to Finite Element Analysis: 3 Credit Hours
- MENG 5137 Mechanical System Design: 3 Credit Hours

### ME Technical Electives

- EENG 5432 Programmable Logic Controllers with Lab: 3 Credit Hours
- MENG 5090 Selected Topics in Mechanical Engineering: 3 Credit Hours
- MENG 5134 Vehicle Dynamics: 3 Credit Hours
- MENG 5135 Vibration and Preventive Maintenance: 3 Credit Hours
- MENG 5138 Composite Materials: Manufacturing, Analysis, and Design: 3 Credit Hours
- MENG 5139 Renewable Energy: 3 Credit Hours
- MENG 5233 Wind Energy: 3 Credit Hours
- MENG 5234 Heating, Ventilating, and Air Conditioning: 3 Credit Hours
- MENG 5237 Applied Combustion: 3 Credit Hours
- MENG 5238 Engine Development and Performance: 3 Credit Hours
- MENG 5239 Biofuels Development and Testing: 3 Credit Hours
- MENG 5331 Automation and Computer Integrated Manufacturing Systems: 3 Credit Hours
- MENG 5333 Robot Dynamics, Design and Analysis: 3 Credit Hours
- MENG 5431 Compressible Flow: 3 Credit Hours
- MENG 5432 Applied Computational Fluid Dynamics: 3 Credit Hours
- MENG 5433 Analysis of Energy Systems: 3 Credit Hours
- MENG 5434 Heat Transfer Principles and Applications: 3 Credit Hours
- MENG 5536 Mechanical Controls: 3 Credit Hours
- MENG 5811 Introduction to Mechanical Engineering Research and Projects: 3 Credit Hours
- MENG 5822 Research Project in Mechanical Engineering: 3 Credit Hours
- MENG 5891 Special Problems in Mechanical Engineering: 3 Credit Hours
- MFGE 5333 Additive Manufacturing Studio: 3 Credit Hours
- TMAE 5139 Renewable Energy or equivalent with program coordinator’s approval: 3 Credit Hours

### Free Elective

- Select 3 credit hours of Free Electives: 3 Credit Hours

### Total Credit Hours

- 130 Credit Hours

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1. MATH 2242 Calculus II and PHYS 2211 Principles of Physics II are recommended in Area D.
2. While Calculus I (MATH 1441) is 4 credit hours, only 3 credit hours will count toward fulfilling Area A2. The remaining credit hour will be applied toward Specific Requirements.
3. College credits can be given for high school pre-engineering program Project Lead The Way’s (PLTW’s) Introduction to Engineering Design (IED) course as a possible substitution for Engineering Graphics (ENGR 1133), if the following three conditions are satisfied:
   - student scores 80% or above overall in the course and
   - an approval of the PLTW affiliate director faculty member at Georgia Southern.
   - student scores 70% or above on a Georgia Southern administered competency exam.

### Other Program Requirements

- At least 30 credit hours of approved Engineering courses must be taken at Georgia Southern.
- The listed courses are recommended in Area D.
- Proficiency examinations will not be accepted in the substitution for any upper-division or laboratory-based courses.

### Honors In Mechanical Engineering

To graduate with Honors in Mechanical Engineering a student should:

- Be admitted to the University Honors Program.
- Complete at least 6 credit hours of honors credit in 2000+ ENGR or MENG courses beyond the honors core requirements.
- Complete Introduction to Mechanical Engineering Research and Projects (MENG 5811) and Research Project in Mechanical Engineering (MENG 5822) or an equivalent research course such as MENG 5891 (taking both Introduction to Mechanical Engineering Research and Projects (MENG 5811) and Research Project in
Mechanical Engineering (MENG 5822) or three credits of MENG 5891 can substitute for one Mechanical Engineering Technical Elective.

- Successfully complete and present an Honors Thesis or Capstone Project
- Be in good standing in the University Honors Program at the time of graduation.

### Credit Hours

<table>
<thead>
<tr>
<th>Requirements</th>
<th>43</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 1121</td>
<td>Computing Applications in Mechanical Engineering</td>
</tr>
<tr>
<td>ENGR 1133</td>
<td>Engineering Graphics</td>
</tr>
<tr>
<td>ENGR 2112</td>
<td>Solid Modeling and Analysis</td>
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<td>Thermodynamics</td>
</tr>
<tr>
<td>MENG 2139</td>
<td>Numerical Methods in Engineering</td>
</tr>
<tr>
<td>MENG 3130</td>
<td>Mechanism Design</td>
</tr>
<tr>
<td>MENG 3233</td>
<td>Heat Transfer</td>
</tr>
<tr>
<td>MENG 3333</td>
<td>Materials Processing</td>
</tr>
<tr>
<td>MENG 3521</td>
<td>Mechatronics Studio Laboratory</td>
</tr>
<tr>
<td>MENG 4210</td>
<td>Energy Science Laboratory</td>
</tr>
<tr>
<td>MENG 5811</td>
<td>Introduction to Mechanical Engineering Research and Projects (Mechanical Engineering Research)</td>
</tr>
<tr>
<td>MENG 5822</td>
<td>Research Project in Mechanical Engineering (Research Project in Mechanical Engineering)</td>
</tr>
<tr>
<td>MENG 5136</td>
<td>Introduction to Finite Element Analysis</td>
</tr>
<tr>
<td>MENG 5536</td>
<td>Mechanical Controls</td>
</tr>
</tbody>
</table>

### Total Credit Hours

43

1. Students completing Honors in Mechanical Engineering are strongly encouraged to select honors courses such as ENGR 1121, ENGR 1133, ENGR 1731, ENGR 2112, ENGR 2231, ENGR 3233, ENGR 3431, MATH 1441, Calculus II (MATH 2242), Principles of Physics I (PHYS 2211K), and Principles of Physics II (PHYS 2212K).

2. For students entering the University Honors Program as a freshman and seeking to complete the Departmental Honors in Mechanical Engineering, it is highly recommended that these freshmen complete MATH 1441.

### Admission Requirements

**Regular**

For regular admission to the Accelerated Bachelor's to Master's Degree of Science in Mechanical Engineering (ABM-MSME) degree program, the applicant must:

1. Be enrolled in the undergraduate mechanical engineering program (B.S.M.E) in the Department of Mechanical Engineering at the Georgia Southern University.
2. Have completed no less than 25 and no more than 50 credits of ENGR and MENG course.
3. Must have 3.0 or better Georgia Southern Institutional GPA.

### Provisional

A student may be granted provisional admission based upon the recommendation of the Master of Science in Mechanical Engineering Graduate Coordinator or Department Chair.

### Degree Requirements: (Thesis and Non-Thesis)

1. Student in the ABM program will be allowed to use up to 9 credits MENG 5000G level courses offered within the Mechanical Engineering program in meeting the requirements of both a bachelor’s degree and a master’s degree.
2. The 9 credit hours that will be applied to both the bachelor’s and master’s degrees include: MENG 5811G, MENG 5822G, and two MENG 5000G level courses approved by each student’s research adviser and the Chair of the Mechanical Engineering Department.
3. Maintain a cumulative graduate GPA of 3.0 (grade of “B” or better) in their graduate degree course work (including the 9 credits of graduate course work shared with the undergraduate degree)
4. Meet all requirements for both the B.S.M.E. and M.S.M.E. degrees.

### Advisement

Statesboro: Student Services Center, IT Building 1208, PO Box 7996, 912-478-4877

Armstrong: Student Success Center 123, 912-344-3209

### Accelerated Bachelor's to Master's (ABM) Degree

This 4+1 Accelerated Bachelor's to Master's Degree Program is intended for current undergraduate students in the Department of Mechanical Engineering at the Georgia Southern University. It will produce a path way to potentially earn both a Bachelor’s and a Master’s Degree within five years.

Students accepted into the accelerated program will be allowed to take up to 9 credits at the 5000G level and within the degree program while in their senior year that will counts toward the MSME. There must be at least 150 unique hours between the two programs. All additional degree requirements for both the B.S. degree and the M.S. degree are required to be met.