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) 1 42

Additional Requirements 4

Area F - Courses Appropriate to Major
CHEM 1310 Comprehensive General Chemistry 4
ENGR 1133 Engineering Graphics 3 3
MATH 2243 Calculus III 4
MATH 3230 Ordinary Differential Equations 3
PHYS 2212K Principles of Physics II 4

Specific Requirements
Carryover from Area A2 2 1
Carryover from Area D 1
ENGR 1121 Computing Applications in Mechanical Engineering 2
ENGR 2131 Electronics and Circuit Analysis 3
ENGR 3431 Thermodynamics 3
ENGR 2231 Engineering Mechanics I 3
ENGR 2232 Dynamics of Rigid Bodies 3
ENGR 3233 Mechanics of Materials 3
ENGR 3235 Fluid Mechanics 3

Major Requirements
ENGR 2112 Solid Modeling and Analysis 1
MENG 1310 Manufacturing Processes Lab 1
MENG 2110 Mechanical Engineering Case Studies in Design & Analysis 1
MENG 2139 Numerical Methods in Engineering 3
MENG 3130 Mechanism Design 3
MENG 3135 Machine Design 3
MENG 3233 Heat Transfer 3
MENG 3331 Materials Science 3
MENG 3333 Materials Processing 3
MENG 3531 Introduction to Mechatronics 3
MENG 4210 Energy Science Laboratory 1
MENG 4430 Engineering Quality Control and Project Management 3
MENG 4612 Mechanical Engineering Senior Seminar 1
MENG 5136 Introduction to Finite Element Analysis 3
MENG 5137 Mechanical System Design 3

ME Technical Electives 6
EENG 5432 Programmable Logic Controllers with Lab
MENG 4811 Mechanical Engineering Research
MENG 4822 Research Project in Mechanical Engineering
MENG 5134 Vibration and Preventive Maintenance
MENG 5135 Composite Materials: Manufacturing, Analysis, and Design
MENG 5139 Renewable Energy
MENG 5233 Wind Energy
MENG 5234 Heating, Ventilating, and Air Conditioning
MENG 5237 Applied Combustion
MENG 5238 Engine Development and Performance
MENG 5239 Biofuels Development and Testing
MENG 5331 Automation and Computer Integrated Manufacturing Systems
MENG 5333 Robot Dynamics, Design and Analysis
MENG 5431 Compressible Flow
MENG 5432 Applied Computational Fluid Dynamics
MENG 5433 Analysis of Energy Systems
MENG 5434 Heat Transfer Principles and Applications
MENG 5536 Mechanical Controls
MENG 5691 Selected Topics in Mechanical Engineering
MENG 5941 Special Problems in Mechanical Engineering
MFGE 5333 Additive Manufacturing Studio
TMAE 5139 Renewable Energy or equivalent with program coordinator’s approval

Free Elective
Select 3 credit hours of Free Electives 3

Total Credit Hours 130

1 MATH 2242 Calculus II and PHYS 2211 Principles of Physics I 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 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 1
To graduate with Honors in Mechanical Engineering a student should:
• Be admitted to the University Honors Program 2
• Complete at least 6 credit hours of honors credit in 2000+ ENGR or MENG courses beyond the honors core requirements
• Complete Mechanical Engineering Research (MENG 4811) and Research Project in Mechanical Engineering (MENG 4822) (taking both Mechanical Engineering Research (MENG 4811) and Research Project in Mechanical Engineering (MENG 4822) substitutes 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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGR 1121</td>
<td>Computing Applications in Mechanical Engineering</td>
<td>2</td>
</tr>
<tr>
<td>ENGR 1133</td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 2112</td>
<td>Solid Modeling and Analysis</td>
<td>1</td>
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<td>Materials Processing</td>
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<td>MENG 3521</td>
<td>Mechatronics Studio Laboratory</td>
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<td>MENG 4210</td>
<td>Energy Science Laboratory</td>
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<tr>
<td>MENG 4811</td>
<td>Mechanical Engineering Research</td>
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<tr>
<td>MENG 4822</td>
<td>Research Project in Mechanical Engineering</td>
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<tr>
<td>MENG 5136</td>
<td>Introduction to Finite Element Analysis</td>
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<tr>
<td>MENG 5536</td>
<td>Mechanical Controls</td>
<td>3</td>
</tr>
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1 Students completing Honors in Mechanical Engineering are strongly encouraged to select honors courses such as 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.

Advisement
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