# Manufacturing Engineering B.S.Mfg.E.

## Degree Requirements: 132 Credit Hours

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

### Credit Hours

<table>
<thead>
<tr>
<th>Area</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Communication Skills (6 Credit Hours)</td>
<td>6</td>
</tr>
<tr>
<td>A2</td>
<td>Quantitative Skills (3 Credit Hours)</td>
<td>3</td>
</tr>
<tr>
<td>A3</td>
<td>Global Engagement (4 Credit Hours)</td>
<td>4</td>
</tr>
<tr>
<td>A4</td>
<td>Humanities, Fine Arts, and Ethics (6 Credit Hours)</td>
<td>6</td>
</tr>
<tr>
<td>A5</td>
<td>Natural Sciences, Mathematics, and Technology (11 Credit Hours)</td>
<td>11</td>
</tr>
<tr>
<td>A6</td>
<td>Social Sciences (12 Credit Hours)</td>
<td>12</td>
</tr>
<tr>
<td>A7</td>
<td>Courses Appropriate to Major (18 Credit Hours)</td>
<td>18</td>
</tr>
<tr>
<td>B1</td>
<td>Health and Physical Education Activities (4 Credit Hours)</td>
<td>4</td>
</tr>
<tr>
<td>B2</td>
<td>Orientation (2 Credit Hours)</td>
<td>2</td>
</tr>
<tr>
<td>B3</td>
<td>Specific Requirements (11 Credit Hours)</td>
<td>11</td>
</tr>
<tr>
<td>B4</td>
<td>Major Requirements (52 Credit Hours)</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Free Elective (3 Credit Hours)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Area A1 - Communication Skills (6 Credit Hours)

- Select 6 credit hours from Area A1 of the Core Curriculum

### Area A2 - Quantitative Skills (3 Credit Hours)

- **MATH 1441/1441H** Calculus I
  - 3

### Area A3 - Global Engagement (4 Credit Hours)

- Select 4 credit hours from Area B of the Core Curriculum

### Area A4 - Humanities, Fine Arts, and Ethics (6 Credit Hours)

- Select 6 credit hours from Area C of the Core Curriculum

### Area A5 - Natural Sciences, Mathematics, and Technology (11 Credit Hours)

- **MATH 2242** Calculus II
  - 3
- **PHYS 1113** Physics Lab I
  - 1
- **PHYS 2211** Principles of Physics I
  - 3
- Environmental Science
  - 4

### Area A6 - Social Sciences (12 Credit Hours)

- Select 12 credit hours from Area E of the Core Curriculum

### Area A7 - Courses Appropriate to Major (18 Credit Hours)

- CHEM 1147 Comprehensive General Chemistry
  - 4
- **MENG 2139** Numerical Methods in Engineering
  - 3
- **MFG 2142** Mechanical Analysis and Design
  - 4
- **MFG 2534** Applied Computing in Manufacturing Engineering
  - 3
- **PHYS 1114** Physics Lab II
  - 1
- **PHYS 2212** Principles of Physics II
  - 3
- Health and Physical Education Activities (4 Credit Hours)
  - HLTH 1520 Healthful Living
  - 2
  - Physical Education Activities
  - 2

### Orientation (2 Credit Hours)

- **FYE 1220** First-Year Seminar
  - 2

### Specific Requirements (11 Credit Hours)

- Carryover from Area A2
  - 1
- Carryover from Area D
  - 1
- **ENGR 2131** Electronics and Circuit Analysis
  - 3
- **MATH 3337** Probability
  - 3
- **STAT 3130** Applied Statistics
  - 3

### Major Requirements (52 Credit Hours)

- **ENGR 1133** Engineering Graphics
  - 3
- **MENG 1310** Manufacturing Processes Lab
  - 1
- **ME Technical Electives**
  - 4
- **MFG 2421** Modeling & Prototyping
  - 2
- **MFG 2531** Materials Science Studio for Manufacturing Engineering
  - 3
- **MFG 2533** Manufacturing Processing 2 Studio
  - 3
- **MFG 3131** Design for Manufacturability, Assembly, Sustainability
  - 3
- **MFG 3132** Quality and Statistical Process Control for Engineers
  - 3
- **MFG 3337** Hydraulics, Fluidics, Pneumatics and Electrical Movers
  - 3
- **MFG 3421** Industrial Sensors, PLCs and IT Networking Studio
  - 2
- **MFG 3423** Facilities Design
  - 2
- **MFG 3531** Advanced Materials Processing Studio Laboratory
  - 3
- **MFG 3541** Energy Science Studio
  - 4
- **MFG 4135** Lean MFG Principals and Engineering Project Management
  - 3
- **MFG 4321** Manufacturing Engineering Capstone I
  - 2
- **MFG 4322** Manufacturing Engineering Capstone II
  - 2
- **MFG 4533** Dynamics and Kinematics of Robotics and Automation Studio
  - 3
- **MFG 4614** Senior Seminar: Professional Skills and Leadership
  - 1

### Select 9 hours from one of the following Specialization Areas:

- Lean and Six Sigma Belt
  - **MFGE 5131** Lean Six Sigma 1
  - **MFGE 5132** Lean Six Sigma 2
  - **TMAE 5134** World Class Manufacturing

### Manufacturing Automation

- **MFGE 5238** Facilities Maintenance
- **MENG 5331** Automation and Computer Integrated Manufacturing Systems
  - **MFG 5333** Additive Manufacturing Studio

### Materials Process

- **MENG 5138** Composite Materials: Manufacturing, Analysis, and Design
- **MFGE 5534** Packaging
- **MFGE 5535** NanoManufacturing

### SAP

- **CISM 3333** ERP Systems Using SAP
- **CISM 4237** Business Intelligence
- **CISM 4333** Human Resource Information Systems
- **CISM 4335** Advanced Business Applications Programming (ABAP) for the SAP/ERP System
- **CISM 4336** ERP and Enterprise Performance
- **CISM 4434** Enterprise System Configuration
- **CISM 4435** ERP Web Portal Customization and Collaboration using SAP NetWeaver

### Occupational Health and Safety

- **TSEC 5331** Occupational Safety
- **TSEC 5333** Industrial Hygiene and Ergonomics
- **TSEC 5334** Hazardous Waste Management
- **TSEC 5335** Systems Safety in Manufacturing
- **TSEC 5336** Environmental Law

### General Manufacturing Engineering

- Choose any combination of three courses (9 credits) from any combination of specialization areas above with the advanced approval of your advisor and the department chair

Free Elective (3 Credit Hours)
Select 3 credit hours of Free Electives  

| Total Credit Hours | 132 |

1. 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.

2. The listed courses are recommended in Area D.

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:  
   1. student scores 80% or above overall in the course and  
   2. an approval of the PLTW affiliate director faculty member at Georgia Southern.

4. An appropriate supervised practicum experience/special topic (MFGE 4890 or 4090) can be substituted for one technical elective with the advanced approval of your advisor and the department chair.

**Other Program Requirements**

At least 33 semester hours of approved Engineering courses must be taken at Georgia Southern.