

Mechanical Engineering M.S.M.E. (Thesis)

Degree Requirements: 30 Credit Hours (Thesis)

Admission Requirements

Regular Admission

1. Completed requirements for the bachelor's degree or the equivalent in the proposed or closely related field of study in Mechanical Engineering.
2. A 2.75 (4.0 scale) cumulative grade point average or higher on courses in undergraduate work, or equivalent.
3. International students must meet College of Graduate Studies English Proficiency requirements (6.0 IELTS or 80 on TOFEL).

Provisional Admission

A student may be granted provisional admission based upon the recommendation of the Master of Science in Mechanical Engineering Graduate Coordinator and department chair.

Non-Degree Admission

Non-degree students are accepted on an individual basis as space is available.

Program of Study ¹

| | Credit Hours |
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| Core Requirements | 9 |
| MENG 7137 Principles of Modeling and Simulation | |
| MENG 7530 Research in Mechanical Engineering | |
| MENG 7136 Mechatronics I | |
| Elective Requirements | 15 |
| Restricted Elective courses at or above the 5000G level as contracted with the faculty advisor and degree coordinator. Any appropriate course outside of the department approved by both the graduate program director and the department chair. | |
| EENG 5341G Robotic Systems Design w/Lab | |
| EENG 5342G Computer Systems Design w/Lab | |
| EENG 5431G Control Systems with Lab | |
| EENG 5532G Wireless Communications | |
| EENG 5540G Communication Systems with Lab | |
| MATH 5335G Intermediate Linear Algebra | |
| MATH 5530G Mathematics for Scientists and Engineers | |
| MENG 5134G Vehicle Dynamics | |
| MENG 5090G Selected Topics in Mechanical Engineering | |
| MENG 5135G Vibration and Preventive Maintenance | |
| MENG 5136G Introduction to Finite Element Analysis | |
| MENG 5137G Mechanical System Design | |

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| MENG 5138G | Composite Materials: Manufacturing, Analysis, and Design |
| MENG 5139G | Renewable Energy |
| MENG 5231G | Tribology and Reliability |
| MENG 5233G | Wind Energy |
| MENG 5234G | Heating, Ventilating, and Air Conditioning |
| MENG 5237G | Applied Combustion |
| MENG 5238G | Engine Development and Performance |
| MENG 5239G | Biofuels Development and Testing |
| MENG 5331G | Automation and Computer Integrated Manufacturing Systems |
| MENG 5333G | Robot Dynamics, Design and Analysis |
| MENG 5335G | Applied Programmable Logic Controllers |
| MENG 5431G | Compressible Flow |
| MENG 5432G | Applied Computational Fluid Dynamics |
| MENG 5433G | Analysis of Energy Systems |
| MENG 5434G | Heat Transfer Principles and Applications |
| MENG 5531G | Metalcasting |
| MENG 5532G | Nanomaterials, Nanocomposites & Nanotechnology |
| MENG 5533G | Applied Welding and Joining |
| MENG 5536G | Mechanical Controls |
| MENG 5891G | Special Problems in Mechanical Engineering |
| MENG 7138 | Mechatronics II |
| MENG 7239 | Intermediate Fluid Mechanics |
| MENG 7431 | Mechanics of Deformable Solids |
| MENG 7432 | Fracture Mechanics |
| MENG 7890 | Selected Topics in Mechanical Engineering |
| MENG 7891 | Special Problems in Mechanical Engineering |
| MENG 7895 | Independent Study |
| MFGE 5230G | International Manufacturing |
| MFGE 5333G | Additive Manufacturing Studio |
| MFGE 5533G | Heat Treatment and Microstructure of Metal |
| TMAE 7431 | Advanced Quality Control |
| TMAE 7432 | Advanced Engineering Economy |
| TMAE 7531 | Technical Management and Leadership |
| TMFG 5133G | Automated Manufacturing Systems |
| TMFG 5233G | Manufacturing Applications in Information Technology |
| Additional restricted electives as approved by the graduate program coordinator and/or department chair | |

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| Capstone Activity (Thesis) | 6 |
| MENG 7999 Thesis | |
| Other Thesis Track Requirements: Comprehensive Exam | |
| Comprehensive Exam | |
| Total Credit Hours | 30 |

¹ A minimum of 50% of courses for the Master of Science in Mechanical Engineering degree must be taken at or above the 6000 level.

Thesis

Each candidate for the Master of Science in Mechanical Engineering Thesis Track degree must complete a thesis on a subject approved by the adviser. The major professor supervises the research, directs the writing of the thesis, and approves the thesis in its final form. Prior to the final approval, the thesis is read by thesis committee. The thesis must be presented and defended in an oral examination before committee of at least three members prior to final approval and sign-off.

The style and format for the completed thesis shall follow that prescribed by the Director for the Master of Science in Mechanical Engineering degree. Procedural steps in the preparation of the thesis are as follows:

- The prospectus for the thesis shall be submitted to the major professor and thesis committee for approval.
- The student must prepare the thesis for electronic submission following the latest version of the Electronic Thesis and Dissertation (ETD): Student Guide to Preparation and Processing manual.
- The thesis must be electronically submitted to the ETD site for format check by the ETD format check submission deadline as stated in the University Calendar.
- The final corrected thesis must be electronically submitted to the ETD site by the ETD format check submission deadline as stated in the University Calendar. The final document must be electronically approved by the Thesis Committee.
- Thesis will be announced and defended by calendar.

See the *Electronic Thesis and Dissertation (ETD): Student Guide to Preparation and Processing* (latest version at the COGS Electronic Theses and Dissertation website).

Other Program Requirements (Thesis)

1. Each candidate in the Thesis Track of MSME Program must have accomplished the following by the end of their second academic semester in the MSME program to maintain program eligibility:
 - Identify a research adviser (thesis committee chair) and form a thesis committee.
 - Determine a research topic for their thesis, and present a research proposal to their thesis committee for topic approval.
2. Each candidate must receive approval from the Graduate Director or Department Chair of the Mechanical Engineering to take courses that are taught outside of the Mechanical Engineering Program and/or specifically identified in M.S. in Mechanical Engineering degree program.
3. Each candidate of the MSME must complete a thesis on a subject approved by his/her thesis committee.
 - The thesis defense must be announced to the public one week prior to the defense. The thesis must be submitted to Thesis Committee, and presented at a public seminar.
 - The thesis must be defended before the thesis committee.

- The thesis defense is a comprehensive oral examination that may include questions on the thesis, and subject matter related to the thesis, and course work.
- In addition to the thesis, the student must provide the faculty research adviser with all forms data that was collected, including: electronic files, and a written document detailing the contents of the data.
- The degree is conferred at the end of the semester, after the student has passed the thesis defense and the final written version of the thesis has been approved by the College of Graduate Studies.

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

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

In accordance with SACSCOC requirements, 120 unique credit hours are required in a Bachelors degree program, and at least 30 unique credit hours are required for a Masters degree program. The **MSME-ABM** program combines **130** hours from the **BSME program** and **30** hours from the **MSME program**, exceeding the required 150 unique hours between undergraduate and graduate degree programs by **10** hours. The *Jack N. Averitt College of Graduate Studies Handbook for Program Directors and Graduate Advisors* permits a maximum of 9 shared credit hours between the undergraduate and graduate degree programs. Therefore, **MSME-ABM** students may share a maximum of **9** credit hours of graduate level courses (5000G) in satisfying the requirements of both degree programs.

Admission Requirements

Regular Admission

For regular admission to the Accelerated Bachelor's to Masters 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 courses, or permission of Department Chair.
3. Must have 3.0 or better Georgia Southern Institutional GPA.

ABM programs do not allow provisional admission. ABM programs are designed for students who have demonstrated a high level of undergraduate academic performance that validates their ability to be successful graduate students. Students who do not meet the minimum requirements for regular admission may be granted admission to the program upon approval of an admissions committee consisting of at least the Department Chair and the Graduate Program director.

Degree Requirements: 30 Credit Hours (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

advisor and the the Mechanical Engineering Department's graduate program coordinator.

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 B.S.M.E. and M.S.M.E. degrees.
5. A minimum of 50% of courses for the Master of Science in Mechanical Engineering degree must be taken at or above the 6000 level.

Thesis Track, 30 Credit Hours

| | Credit Hours |
|--|--------------|
| Core Requirements | 9 |
| MENG 7137 Principles of Modeling and Simulation | |
| MENG 7530 Research in Mechanical Engineering | |
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| Elective Requirements | 15 |
| Restricted Elective courses at or above the 5000G level as contracted with the faculty advisor and degree coordinator. Any appropriate course outside of the department approved by both the graduate program director and the department chair. | |
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| MENG 5433G | Analysis of Energy Systems |
| MENG 5434G | Heat Transfer Principles and Applications |
| MENG 5531G | Metalcasting |
| MENG 5532G | Nanomaterials, Nanocomposites & Nanotechnology |
| MENG 5533G | Applied Welding and Joining |
| MENG 5536G | Mechanical Controls |
| MENG 5811G | Introduction to Mechanical Engineering Research and Projects |
| MENG 5822G | Research Project in Mechanical Engineering |
| MENG 5891G | Special Problems in Mechanical Engineering |
| MENG 7138 | Mechatronics II |
| MENG 7239 | Intermediate Fluid Mechanics |
| MENG 7431 | Mechanics of Deformable Solids |
| MENG 7432 | Fracture Mechanics |
| MENG 7890 | Selected Topics in Mechanical Engineering |
| MENG 7891 | Special Problems in Mechanical Engineering |
| MENG 7895 | Independent Study |
| MFGE 5230G | International Manufacturing |
| MFGE 5333G | Additive Manufacturing Studio |
| MFGE 5533G | Heat Treatment and Microstructure of Metal |
| TMAE 7431 | Advanced Quality Control |
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| TMAE 7531 | Technical Management and Leadership |
| TMFG 5133G | Automated Manufacturing Systems |
| TMFG 5233G | Manufacturing Applications in Information Technology |
| Additional restricted electives as approved by the graduate program coordinator and/or department chair | |
| Capstone Activity (Thesis) | 6 |
| MENG 7999 | Thesis |
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| Comprehensive Exam | |
| Total Credit Hours | 30 |
| Thesis | |
| Each candidate for the Master of Science in Mechanical Engineering Thesis Track degree must complete a thesis on a subject approved by the adviser. The major professor supervises the research, directs the writing of the thesis, and approves the thesis in its final form. Prior to the final approval, the thesis is read by a thesis committee. The thesis must be presented and defended in an oral examination before committee of at least three faculty members prior to final approval and sign-off. | |

The style and format for the completed thesis shall follow that prescribed by the Director for the Master of Science in Mechanical Engineering degree. Procedural steps in the preparation of the thesis are as follows:

Email: gradschool@georgiasouthern.edu

- The prospectus for the thesis shall be submitted to the major professor and thesis committee for approval.
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See the Electronic Thesis and Dissertation (ETD): Student Guide to Preparation and Processing (latest version at the COGS Electronic Theses and Dissertation website).

Other Program Requirements (Thesis)

1. Each candidate in the ABM Thesis Track of MSME Program must have accomplished the following :
 - Identify a research adviser and form a thesis committee by completion of MENG 5811G.
 - Determine a research topic for their thesis, and present research proposal to their thesis Committee by completion of MENG 5822G.
2. Each candidate must receive approval from the Graduate Director or Department Chair of the Mechanical Engineering to take courses that are taught outside of the Mechanical Engineering Program and/or do not apply to the M.S. in Mechanical Engineering degree.
3. Each candidate of the ABM must complete a thesis on a subject approved by his/her thesis committee.
 - The thesis defense must be announced to the public one week prior to the defense. The thesis must be submitted to Thesis Committee, and presented at a public exit seminar.
 - Thesis must be defended before the thesis committee.
 - The thesis defense is a comprehensive examination that may include questions on the thesis, and subject matter related to the thesis, and course work.
 - In addition to the thesis, the student must provide the adviser with all forms of the data that were collected, including: electronic files, and a written document detailing the contents of the data.
 - The degree is conferred at the end of the semester, after the student has passed the thesis defense and the final written version of the thesis has been approved by the College of Graduate Studies.

Advisement

Graduate students are advised by their program. Graduate students should reach out to their graduate program director for information regarding the structures in place to facilitate advisement. For more information visit the Graduate Academic Advisement (<http://catalog.georgiasouthern.edu/graduate/graduate-studies/general-graduate-policies-procedures/advisement/>) catalog page.

Graduate students can also contact the Jack N. Averitt College of Graduate Studies for more information about their program director.
Phone: 912-478-COGS (2647)