MECHANICAL ENGINEERING, BSME

Requirements for Students Matriculating in or before Academic Year 2021-2022. Learn more about University Academic Regulation 3.1 (http://catalog.okstate.edu/university-academic-regulations/#matriculation).

Minimum Overall Grade Point Average: 2.00
Total Hours: 121

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<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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General Education Requirements
All General Education coursework requirements are satisfied upon completion of this degree plan

English Composition
See Academic Regulation 3.5 (http://catalog.okstate.edu/university-academic-regulations/#english-composition)
ENGL 1113 Composition I 1 3
or ENGL 1313 Critical Analysis and Writing I 1

American History & Government
Select one of the following:
HIST 1103 Survey of American History 3
HIST 1483 American History to 1865 (H) 3
HIST 1493 American History Since 1865 (DH) 3

Analytical & Quantitative Thought (A)
MATH 2144 Calculus I (A) 1 4
MATH 2153 Calculus II (A) 1 3
MATH 2163 Calculus III 1 3
MATH 2233 Differential Equations 1 3

Humanities (H)
Courses designated (H) 6
Natural Sciences (N)
Must include one Laboratory Science (L) course
CHEM 1414 General Chemistry for Engineers (LN) 1 4
or CHEM 1515 Chemistry II (LN) 4
PHYS 2014 University Physics I (LN) 1 4

Social & Behavioral Sciences (S)
Course designated (S) 3

Hours Subtotal 42

Diversity (D) & International Dimension (I)
May be completed in any part of the degree plan
Select at least one Diversity (D) course
Select at least one International Dimension (I) course

College/Departmental Requirements
Basic Science
PHYS 2114 University Physics II (LN) 1 4

Select one of the following:
ASTR 1013 The Solar System (N) 1
ASTR 1023 Stars, Galaxies, Universe (N) 1
Biol 1114 Introductory Biology (LN) 1
Chem 3053 Organic Chemistry I 1
Geol 3114 Physical Geology (LN) 1
Geol 3413 Petroleum Geology for Engineers 1
Phys 3213 Optics 1
Phys 3313 Introduction to Semiconductor Device Physics 1
Phys 3713 Modern Physics 1

Engineering and Engineering Science
ENGR 1111 Introduction to Engineering 1 1
ENGR 1332 Engineering Design with CAD for MAE 1 2
ENGR 1412 Introductory Engineering Computer Programming (I) 1 2
ENSC 2113 Statics 1 3
ENSC 2123 Elementary Dynamics 1 3
ENSC 2143 Strength of Materials (STW students are recommended to concurrently take ENSC 2141) 1 3

ENSC 2213 Thermodynamics 1 3
ENSC 2613 Introduction to Electrical Science 1 3
Choose one of the below laboratory options 1 3
ENGR 2421 Engineering Data Acquisition Controls Lab & ENSC 2141 & ENSC 3231 and Fluids and Hydraulics Lab
MAE 3113 Measurements and Instrumentation 3

Hours Subtotal 30

Upper Division Major Requirements
ENSC 3313 Materials Science 3
MAE 3013 Engineering Analysis and Methods I 3
MAE 3153 Introduction to MAE Design 3
MAE 3233 Heat Transfer 3
MAE 3333 Fundamental Fluid Dynamics (STW students are recommended to concurrently take ENSC 3231) 3

MAE 3324 Mechanical Design I 4
MAE 3403 Computer Methods in Analysis and Design 3
MAE 3524 Thermal Fluids Design 4
MAE 3724 Dynamic Systems Analysis and Introduction to Control 4
IEM 3503 Engineering Economic Analysis 3

Select 7 hours of the following 2 categories, selecting one course from each category so that both categories are represented:

Category I (Realization): 1 2
MAE 4243 Aerospace Propulsion and Power 4
MAE 4263 Energy Conversion Systems 3
MAE 4353 Mechanical Design II 3
MAE 4363 Advanced Methods in Design 3
MAE 4513 Aerospace Structures 3
MAE 4623 Biomechanics 3
MAE 4703 Design of Indoor Environmental Systems 3
MAE 4713 Thermal Systems Realization 3
MAE 4723 Refrigeration Systems Design 3

Category II (Realization): 1
CHEM 3053 Organic Chemistry I 3
Mechanical Engineering, BSME

**Category II (Capstone Design):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MAE 4344</td>
<td>Design Projects</td>
</tr>
<tr>
<td>MAE 4354</td>
<td>Aerospace Systems Design for Mechanical Engineers</td>
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</tbody>
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**Upper Division Elective Requirements**

6 hours of MAE electives to be selected from the following list, or from courses in the Category I listed above, but not used to satisfy the category requirement:

<table>
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<tbody>
<tr>
<td>MAE 3033</td>
<td>Design of Machines and Mechanisms</td>
</tr>
<tr>
<td>MAE 3123</td>
<td>Manufacturing Processes</td>
</tr>
<tr>
<td>MAE 3223</td>
<td>Thermodynamics II</td>
</tr>
<tr>
<td>MAE 3253</td>
<td>Applied Aerodynamics and Performance</td>
</tr>
<tr>
<td>MAE 3293</td>
<td>Fundamentals of Aerodynamics</td>
</tr>
<tr>
<td>MAE 4053</td>
<td>Automatic Control Systems</td>
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<tr>
<td>MAE 4063</td>
<td>Mechanical Vibrations</td>
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<tr>
<td>MAE 4273</td>
<td>Experimental Fluid Dynamics</td>
</tr>
<tr>
<td>MAE 4313</td>
<td>Advanced Processing of Engineered Materials</td>
</tr>
<tr>
<td>MAE 4333</td>
<td>Mechanical Metallurgy</td>
</tr>
<tr>
<td>MAE 4583</td>
<td>Corrosion</td>
</tr>
<tr>
<td>MAE 4733</td>
<td>Mechatronics Design</td>
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3 hours of technical elective to be selected from the following list (or from courses in the Category I listed above, but not used to satisfy the category requirement):

3000-level or above from:

<table>
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<tbody>
<tr>
<td>BCOM 3223</td>
<td>Oral Communication</td>
</tr>
<tr>
<td>MATH 3303</td>
<td>Advanced Perspectives on Functions and Modeling for Secondary Teachers</td>
</tr>
<tr>
<td>MGMT 3133</td>
<td>Developing Leadership Skills</td>
</tr>
<tr>
<td>PHIL 3803</td>
<td>Business Ethics (H)</td>
</tr>
<tr>
<td>PHIL 3833</td>
<td>Biomedical Ethics (H)</td>
</tr>
</tbody>
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Or from BAE, BIOL, BIOC, CHE, CHEM, CIVE, CS, ECEN, IEM, GEOL, LSB, MAE, PETE, or PHYS

4000-level or above courses from:

<table>
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<tbody>
<tr>
<td>MGMT 4073</td>
<td>Management and Ethical Leadership</td>
</tr>
<tr>
<td>MGMT 4533</td>
<td>Leadership Dynamics</td>
</tr>
</tbody>
</table>

**Hours Subtotal** 49

**Total Hours** 121

1. MAE requires grades of "C" or better in all prerequisite courses, and their prerequisites.

2. Grades of "C" or higher in all Upper Division Major Requirements courses and ME Realization Category course and Capstone Design Category course.

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**Additional State/OSU Requirements**

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2027.

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**Graduation Requirements**

1. A "C" or better is required in each course that is designated with footnote 1 and footnote 2.

2. The major engineering design experience, capstone course, is satisfied by MAE 4344 Design Projects or MAE 4354 Aerospace Systems Design for Mechanical Engineers.