MECHANICAL ENGINEERING, BSME

Requirements for Students Matriculating in or before Academic Year 2022-2023. 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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<tbody>
<tr>
<td>ENGL 1113</td>
<td>Composition I 1</td>
<td>3</td>
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<tr>
<td>or ENGL 1313</td>
<td>Critical Analysis and Writing I</td>
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<tr>
<td>Select one of the following:</td>
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<tr>
<td>ENGL 1213</td>
<td>Composition II 1</td>
<td>3</td>
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<tr>
<td>ENGL 1413</td>
<td>Critical Analysis and Writing II 1</td>
<td></td>
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<tr>
<td>ENGL 3323</td>
<td>Technical Writing 1</td>
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American History & Government
Select one of the following: 3
- HIST 1103 Survey of American History
- HIST 1483 American History to 1865 (H)
- HIST 1493 American History Since 1865 (DH)
- POLS 1113 American Government

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)                          |       |
- 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:                              |       |

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<tr>
<td>ASTR 1013</td>
<td>The Solar System (N)</td>
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<tr>
<td>ASTR 1023</td>
<td>Stars, Galaxies, Universe (N)</td>
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<tr>
<td>BIOL 1113</td>
<td>Introductory Biology (N)</td>
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<tr>
<td>&amp; BIOL 1111</td>
<td>and Introductory Biology Laboratory (LN)</td>
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<tr>
<td>or BIOL 1114</td>
<td>Introductory Biology (LN)</td>
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<tr>
<td>CHEM 1314</td>
<td>Chemistry I (LN) (May not be used for degree credit with CHEM 1414)</td>
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<tr>
<td>CHEM 3053</td>
<td>Organic Chemistry I</td>
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<tr>
<td>GEOL 1114</td>
<td>Physical Geology (LN)</td>
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<tr>
<td>GEOL 3413</td>
<td>Petroleum Geology for Engineers</td>
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<tr>
<td>PHYS 3213</td>
<td>Optics</td>
<td></td>
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<tr>
<td>PHYS 3313</td>
<td>Introduction to Semiconductor Device Physics</td>
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<tr>
<td>PHYS 3713</td>
<td>Modern Physics</td>
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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 (1) 1 |       |
ENSC 2113 Statics 1                                        | 3     |
ENSC 2123 Elementary Dynamics 1                            | 3     |
ENSC 2143 Strength of Materials 1                          | 3     |
ENSC 2213 Thermodynamics 1                                 | 3     |
ENSC 2613 Introduction to Electrical Science 1             | 3     |
Choose one of the below laboratory options: 1              | 3     |

OPTION 1 (ENGR 2421 is required for this option)
ENGR 2421 Engineering Data Acquisition Controls Lab
and two more from the following labs:
- ENSC 2141 Strength of Materials Lab
- ENSC 2411 Electrical Science Lab
- ENSC 3231 Fluids and Hydraulics Lab
- ENSC 3311 Material Science Lab

OPTION 2
MAE 3113 Measurements and Instrumentation 2                |       |

 Hours Subtotal 30

Upper Division Major Requirements 2
- 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                       | 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 |       |
- 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): 2
- MAE 4243 Aerospace Propulsion and Power                   |       |
- MAE 4263 Energy Conversion Systems                        |       |
- MAE 4353 Mechanical Design II                             |       |
MAE 4363  Advanced Methods in Design  
MAE 4513  Aerospace Structures  
MAE 4623  Biomechanics  
MAE 4703  Design of Indoor Environmental Systems  
MAE 4713  Thermal Systems Realization  
MAE 4723  Refrigeration Systems Design  

Category II (Capstone Design):  
MAE 4344  Design Projects  
MAE 4354  Aerospace Systems Design for Mechanical Engineers  
MAE 4374  Aerospace System Design

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:

- MAE 3033  Design of Machines and Mechanisms  
- MAE 3123  Manufacturing Processes  
- MAE 3223  Thermodynamics II  
- MAE 3253  Applied Aerodynamics and Performance  
- MAE 3293  Fundamentals of Aerodynamics  
- MAE 4053  Automatic Control Systems  
- MAE 4063  Mechanical Vibrations  
- MAE 4273  Experimental Fluid Dynamics  
- MAE 4313  Advanced Processing of Engineered Materials  
- MAE 4333  Mechanical Metallurgy  
- MAE 4583  Corrosion  
- MAE 4733  Mechatronics Design  

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:
- BCOM 3223  Oral Communication  
- ENGR 3030  Co-op Industrial Practice II  
- MATH 3303  Advanced Perspectives on Functions and Modeling for Secondary Teachers  
- MGMT 3133  Developing Leadership Skills  
- PHIL 3803  Business Ethics (H)  
- PHIL 3833  Biomedical Ethics (H)  

Or from BAE, BIOL, BIOC, CHE, CHEM, CIVE, CS, ECEN, IEM, GEOL, LSB, MAE, PETE, or PHYS

4000-level or above courses from:
- ENGR 4030  Co-op Industrial Practice III  
- ENGR 4403  Interdisciplinary Senior Design  
- MGMT 4073  Management and Ethical Leadership  
- MGMT 4533  Leadership Dynamics  

Hours Subtotal 49

Or from MATH, MET, or STAT

Total Hours 121

1 MAE requires grades of "C" or better for any course that is a pre-requisite or co-requisite to a required course on the degree plan.

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

Graduation Requirements
1. A "C" or better is required in each course that is designated with footnote 1 or 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 or MAE 4374 Aerospace Systems Design.

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 2028.