The Department of Aerospace Engineering at Mississippi State University provides an accredited undergraduate curriculum with the mission of preparing students to enter the workplace as qualified entry-level aerospace engineers or to enter any aerospace engineering graduate program adequately prepared for advanced study. This mission is accomplished by a strong foundation in mathematics and physical and engineering sciences upon which student problem-solving and application skills are developed. The curriculum stresses analytical and communication skills, with particular emphasis placed on engineering design throughout the curriculum. A capstone design experience in the senior year provides the opportunity to integrate design, analytical, and problem-solving skills along with communication skills in a team environment that emulates aerospace engineering practice.

The mission is accomplished by the following educational objectives, which describe the career and professional accomplishments we are preparing our graduates to achieve. Our graduates will:

1. Be involved in solving unstructured engineering problems within their organization that will allow them to successfully advance in the engineering profession.
2. Be engaged in lifelong learning and pursue professional development through actions such as persistent study of the current literature in the field, participation in graduate education, professional education or continuing education opportunities, attainment of professional licensure, or membership in professional societies.
3. Be professionally and ethically responsible to the profession, society, and the environment incumbent on an engineering professional.
4. Collaborate successfully and positively on multi-disciplinary, culturally-diverse teams in support of their organizational goals.
5. Communicate effectively in various settings and contexts by activities such as writing technical reports and peer-reviewed articles and presenting at technical interchanges.

These objectives are accomplished in two different concentrations in the aerospace engineering curriculum, an aeronautics concentration and an astronautics concentration. The concentration in aeronautics focuses on the analysis and design of aircraft and other vehicles that operate primarily within the earth’s atmosphere, and the concentration in astronautics focuses on the analysis and design of spacecraft and other vehicles that operate primarily outside the earth’s atmosphere. A student in aerospace engineering will choose one of these two concentrations upon choosing the aerospace engineering major.

The aerospace engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

### General Education Requirements

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>English Composition</strong></td>
<td>EN 1103 English Composition I</td>
<td>3</td>
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<tr>
<td></td>
<td>or EN 1104 Expanded English Composition I</td>
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<tr>
<td></td>
<td>EN 1113 English Composition II</td>
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<td>or EN 1173 Accelerated Composition II</td>
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<tr>
<td><strong>Mathematics</strong></td>
<td>MA 1713 Calculus I</td>
<td>3</td>
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<tr>
<td></td>
<td>or MA 1723 Calculus II</td>
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<tr>
<td></td>
<td>or MA 2733 Calculus III</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or MA 2743 Calculus IV</td>
<td>3</td>
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<tr>
<td><strong>Science</strong></td>
<td>See Major Core system</td>
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<tr>
<td><strong>Humanities</strong></td>
<td>See General Education courses</td>
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<tr>
<td><strong>Fine Arts</strong></td>
<td>See General Education courses</td>
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<td><strong>Social/Behavioral Sciences</strong></td>
<td>See General Education courses</td>
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<tr>
<td><strong>Major Core</strong></td>
<td>See General Education courses</td>
<td>3</td>
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</tbody>
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*See Major Core system includes Calculus I, II, III, and IV.*
MA 3113       Introduction to Linear Algebra           3
MA 3253       Differential Equations I               3
Math/Science Elective 1
CH 1213       Chemistry I                           3
CH 1211       Investigations in Chemistry I         1
PH 2213       Physics I                              3
PH 2223       Physics II                             3
CSE 1233      Computer Programming with C            3

Engineering Topics
ECE 3413      Introduction to Electronic Circuits     3
EM 2413       Engineering Mechanics I                3
EM 2433       Engineering Mechanics II               3
EM 3213       Mechanics of Materials                 3
EM 3313       Fluid Mechanics                        3
EM 3413       Vibrations                             3
ASE 1013      Introduction to Aerospace Engineering  3
ASE 2013      Astrodynamics, Propulsion and Structures 3
ASE 2113      Introduction to Aircraft and Spacecraft Performance 3
ASE 3233      Aerospace Structural Analysis I        3
ASE 3243      Aerospace Structural Analysis II       3
ASE 3333      Aerothermodynamics                     3
ASE 4113      Aerospace Engineering Laboratory I    3
ASE 4123      Aerospace Controls                    3
ASE 4343      Compressible Aerodynamics              3
ASE 4623      Aerospace Structural Design           3
ASE 4721      Aerospace Engineering Laboratory II   1

Technical Electives 2

Oral Communication Requirement
Satisfied by successful completion of ASE 2013, ASE 4513/ASE 4523 or ASE 4533/ASE 4543, ASE 4623, ASE 4721 and GE 3513.

Writing Requirement
GE 3513       Technical Writing                     3

Computer Literacy
Satisfied by successful completion of ASE 1013, ASE 2013, and ASE 2113.

Choose one of the following concentrations: 15

Aeronautics Concentration (ARO)
ASE 3123       Aircraft Flight Dynamics              
ASE 3313       Incompressible Aerodynamics           
ASE 4413       Aircraft Propulsion                   
ASE 4513       Aircraft Design I                    
ASE 4523       Aircraft Design II                   

Astronautics Concentration (ASO)
ASE 3813       Introduction to Orbital Mechanics     
ASE 3823       Spacecraft Attitude Dynamics           
ASE 4443       Spacecraft Propulsion                  
ASE 4533       Spacecraft Design I                   
ASE 4543       Spacecraft Design II                  

Total hours 128

1 The department maintains a list of pre-approved math/science electives on its website. Other courses may be selected upon approval of the department.
Technical electives may be selected from any of the department's listing of Advanced Undergraduate/Graduate Courses, plus EM 4123, EM 4133 and EM 4143. Other courses may be selected upon approval of the department. All required courses in one concentration qualify as technical electives for students in the other concentration.