DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

BACHELOR OF SCIENCE IN ENGINEERING DEGREE

Major in Aerospace Engineering

The courses you will take to earn a B.S. degree in Aerospace Engineering fall into three categories:

- University general education requirements
- Engineering general education requirements
- Major specific courses

General education requirements include:

- SAGES First Seminar
- two SAGES University Seminars
- 4 Breadth Electives (12 credits outside of the areas of engineering, natural science, and mathematics)
- two semesters of Physical Education

Engineering core requirements include:

- 7 preparatory courses in Math, Chemistry, and Physics
- 4 basic Engineering courses taken by most or all engineering majors
- one Departmental Seminar (ENGR398/ENGL398)

Major specific courses include:

- 18 required courses in Mechanical/Aerospace, Civil, and Electrical Engineering
- Physics 221
- one Technical Elective
- one Open Elective

More information about electives can be found after the recommended curriculum below.
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### Spring

Breadth Elective ................................................................. (3)  
EMAE 353 Heat Transfer ......................................................... (3)  
EMAE 359 Aero/Gas Dynamics ................................................... (3)  
EMAE 376 Aerostructures ......................................................... (3)  
EECS 304 Control Engineering I ............................................... (3)  
                  optional 1 credit Lab (305); offered Spring only

Total ......................................................................................... (15)

### Fourth Year

#### Fall

Breadth Elective ................................................................. (3)  
EMAE 383 Flight Mechanics ..................................................... (3)  
EMAE 384 Orbital Dynamics ..................................................... (3)  
EMAE 355 Design of Fluid and Thermal Elements .................. (3)  
Open Elective ........................................................................... (3)  

Total ......................................................................................... (15)

#### Spring

Breadth Elective ................................................................. (3)  
EMAE 356 Aerospace Design ...................................................... (3)  
EMAE 382 Propulsion ............................................................... (3)  
EMAE 398 Senior Project .......................................................... (3)  
ENGL/ENGR 398 Professional Communications for Eng. .... (3)  
Technical Elective ....................................................................... (3)  

Total ......................................................................................... (18)

Total ......................................................................................... (129)
BACHELOR OF SCIENCE IN ENGINEERING DEGREE

Major in Mechanical Engineering

The courses you will take to earn a B.S. degree in Mechanical Engineering fall into three categories:

- University general education requirements
- Engineering general education requirements
- Major specific courses

General education requirements include:

- SAGES First Seminar
- two SAGES University Seminars
- 4 Breadth Electives (12 credits outside of the areas of engineering, natural science, and mathematics)
- two semesters of Physical Education

Engineering core requirements include:

- 7 preparatory courses in Math, Chemistry, and Physics
- 4 basic Engineering courses taken by most or all engineering majors
- one Departmental Seminar (ENGR398/ENGL398)

Major specific courses include:

- 15 required courses in Mechanical, Civil, and Electrical Engineering
- 4 Technical Electives
- 1 Science Elective
- 1 Open Elective

More information about electives can be found after the recommended curriculum below.
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<td>Design and Manufacturing I</td>
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<td>EMAE 353</td>
<td>Heat Transfer</td>
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<td>EMAE 370</td>
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<td>EECS 304</td>
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**Optional 1 credit Lab (305); offered Spring only**

**Elective (3)**

**Total (18)**

### Fourth Year

#### Fall

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**Offered Fall only**

**Technical Elective (3)**

**Open Elective (3)**

**Total (15)**

#### Spring

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**Technical Elective (3)**

**Total (15)**

**Total (129)**
BACHELOR OF SCIENCE IN ENGINEERING DEGREE

Double Major in Mechanical Engineering and Aerospace Engineering

The courses you will take to earn a B.S. degree in Mechanical Engineering and Aerospace Engineering fall into three categories:

- University general education requirements
- Engineering general education requirements
- Major specific courses

General education requirements include:

- SAGES First Seminar
- two SAGES University Seminars
- 4 Breadth Electives (12 credits outside of the areas of engineering, natural science, and mathematics)
- two semesters of Physical Education

Engineering core requirements include:

- 7 preparatory courses in Math, Chemistry, and Physics
- 4 basic Engineering courses taken by most or all engineering majors
- one Departmental Seminar (ENGR398/ENGL398)

Major specific courses include:

- 21 required courses in Mechanical/Aerospace, Civil, and Electrical Engineering
- Physics 221

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| **Third Year** |         |       |
| **Fall**   |              |       |
| Breadth Elective ..................................................(3) |
| EMAE 252   | Fluid Mechanics ..................................................(3) |
| EMAE 285   | Mechanical Engineering Measurements Lab .....................(4) |
| EMAE 350   | Mechanical Engineering Analysis ...............................(3) |
| ECIV 310   | Strength of Materials ...........................................(3) |
| **Total**  | ................................................................. (16) |
### Spring

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<td>EMAE 359</td>
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<td>EMAE 376</td>
<td>Aerostructures</td>
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Total: (18)

### Fourth Year

#### Fall

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#### Spring

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Total: (18)

**Total**: (132)
TECHNICAL ELECTIVES

All 200, 300, and 400 level courses from the following areas:

- EMAE ALL, EMAE CROSS LISTED, EBME ALL, EBME CROSS LISTED, ECIV ALL,
- EECS ALL, EECS CROSS LISTED, EMAC ALL, EMAC CROSS LISTED, EMSE ALL,
- EMSE CROSS LISTED

ALL 300 and 400 level courses in ECHE

ALL 300 level MATH and STAT courses with the concurrence of the advisor.

OPEN ELECTIVE

You may take any course you wish to fill the Open Elective slot.

SCIENCE ELECTIVE (for Mechanical Engineering Major)

SIS is currently setup to accept PHYS 221 or STAT 312 as a science elective. Other courses for individual students can be selected with the approval of the student’s advisor and the chair using an Academic Advisement Requirement Form.

BREADTH ELECTIVE REQUIREMENTS

The General Education Requirements of the Case School of Engineering requires twelve (12) credit-hours of Breadth Electives. The Breadth Elective requirements are satisfied by any course outside of the areas of engineering, natural science, and mathematics offered by:

- the College of Arts and Sciences
- the Weatherhead School of Management
- the Frances Payne Bolton School of Nursing
- the Jack, Joseph, and Morton Mandel School of Applied Social Sciences
- the School of Medicine Department of Bioethics
- the Cleveland Institute of Music
- the Cleveland Institute of Art

Other courses approved by the School of Engineering's Undergraduate Studies Committee are also acceptable. The selection of courses to satisfy this requirement should be done in consultation with the student's academic advisor(s).

NOTES

All courses may be taken in Fall or Spring unless otherwise noted.
Revision Control

03/27/2019   Updated information on CSE Breadth Elective requirements: replaced Humanities or Social Science electives with Breadth electives

10/17/2017   Included information on EMAE Course requirements change