

# Aerospace Engineering

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The Department of Aerospace Engineering offers graduate study leading to the degrees of Master of Science in Aerospace Engineering and Doctor of Philosophy with an Aerospace Engineering concentration. Online learning options for these degrees are also available (see <http://www.bcolearning.msstate.edu> (<http://www.bcolearning.msstate.edu/>)). Major areas of study are include the following:

- Aeroacoustics
- Aerodynamics
- Aeroelasticity
- Autonomous systems
- Structures and composites
- Computational fluid dynamics
- Design optimization
- Fatigue and fracture
- Fluid structure interaction
- Guidance and control
- Nondestructive evaluation

Research in the Department of Aerospace Engineering is performed in state-of-the-art facilities. The Advanced Performance Composite Materials Laboratory focuses on innovative methodologies for structural health monitoring of composite structures. Capabilities include fatigue and fracture testing and non-destructive evaluation. Research in the Autonomous System Research Lab focuses on UAS control and monitoring systems to enable a high degree of autonomous, cooperative behavior in unmanned air and ground systems. Other department facilities include a low speed wind tunnel and a two-stage light gas gun. Faculty and students also conduct research at the Advanced Composites Institute, including the Marvin B. Dow Stitched Composites Development Center, the Raspet Flight Research Laboratory, and the Center for Advanced Vehicular Systems (CAVS), which is a member center of the High Performance Computing Collaboratory. Graduate research and teaching assistantships are available for highly-qualified students.

## Accelerated Program

Highly qualified undergraduates in the Bagley College of Engineering are encouraged to consider applying to the Accelerated Program in Aerospace Engineering. This program permits students to earn up to 9 hours of graduate-level coursework and earn both undergraduate credit and graduate credit simultaneously. Students must consult with the Graduate Coordinator to ensure graduate credit could be applied to a program of study for the graduate degree. Interested students should see Accelerated Programs (<http://catalog.msstate.edu/graduate/colleges-degree-programs/>) for complete information and contact the department's Graduate Coordinator.

In addition to the University requirements, applicants in the Department of Aerospace Engineering must also meet the following requirements:

- a. Be enrolled at Mississippi State University in one of the eight Bagley College of Engineering programs
- b. Have at least 85 hours earned toward their respective B.S. degree
- c. Have an overall cumulative GPA of at least 3.50

An application package consists of the following items, which must be submitted to the Graduate Coordinator of the Aerospace Engineering Department:

- a. Application form (NOTE: Students wishing to pursue a thesis in their M.S. program must have the support of an advisor prior to applying for the program).
- b. One page résumé
- c. Contact information for three references (included on the application form). Ideal references are those who are knowledgeable about the academic abilities of the applicant. The department will contact these references to gather additional information as needed to determine the acceptability of the study into the program.

The Aerospace Engineering Graduate Coordinator will review applications three times a year to assess whether students possess those qualifications and interests that are indicative of successful completion of the Aerospace Engineering M.S. program.

## Admission Criteria

In addition to meeting the requirements discussed in the General Requirements for Admission section of this publication, the minimum requirement for regular admission to the graduate program is a B.S. degree in Aerospace Engineering or a closely related field, with a 3.00/4.00 GPA for the junior and senior years. An applicant with a B.S. degree from a program that is not accredited by EAC/ABET (Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology) must submit GRE general-test scores. Applicants required to take the TOEFL examination (see Admission section for more details) must have a minimum score of 550 PBT (79 iBT) or an IELTS score of 6.5. Applicants for the Ph.D. program should have a M.S. degree in Aerospace Engineering or a closely related field. Exceptionally qualified applicants (GPA in excess of 3.50/4.00 for junior and senior years) may apply for direct admission to the Ph.D. program. Graduates from an EAC/ABET-accredited program will receive the highest consideration.

## Contingent Admission

A student whose B.S. or M.S. degree is not in Aerospace or Mechanical Engineering may be granted contingent admission, depending on qualifications and experience. Typically, the contingency is removed by taking undergraduate prerequisite courses in the first few terms after admission. Specific conditions are handled on a case-by-case basis. For more information, please contact the Graduate Coordinator.

## Provisional Admission

An applicant who has not fully met the GPA requirement stipulated by the University may be granted admission as a degree-seeking graduate student with provisional status. Please refer to the Provisional Admission requirements (<http://catalog.msstate.edu/graduate/academic-policies/academic-requirements/#provisionaladmissiontext>) section for more details. The minimum acceptable undergraduate grade point average for admission as a provisional student is 2.75/4.00 for the junior and senior years.

## Academic Performance and Continued Enrollment

Continued enrollment in the graduate program in Aerospace Engineering is contingent upon satisfactory performance in the courses and research and satisfactory performance toward completion of the degree. Satisfactory performance is achieved when all four of the following criteria are fulfilled:

- a. The student maintains a B average or better on
  - i. all undergraduate prerequisite courses;
  - ii. all graduate courses completed;
  - iii. all graduate courses included on the program of study.
- b. The student has no more than one grade less than C.
- c. If the student registers for research credits in a given term, he/she receives a Satisfactory (S) grade at the end of the term.
- d. The student has a major advisor and a supervisory graduate committee by the end of the second term of enrollment.

Should the cumulative GPA (in any of the three categories of the first criterion) be less than a 3.00/4.00 at the end of a term, the student will be placed on probation. Should the student earn a second grade less than C, the student will be terminated immediately. Should the student receive an Unsatisfactory (U) grade on research credit hours attempted, he/she will be placed on probation.

The probationary period is defined to be one term (summer counts as one term if the student is enrolled). If at the end of the probationary period the student has not remedied his/her deficiency (i.e., has not achieved a 3.00 GPA, has not scheduled research credit hours and received a satisfactory grade), then his/her program of study will be terminated. A student may appeal termination of his/her program of study to the Aerospace Engineering graduate coordinator. If the appeal at the program level is unsuccessful, the student may then appeal to the college dean. If the appeal at the college level is unsuccessful, the student may then appeal to the Provost and Vice President for Academic Affairs.

## Further Information

For information about the program or financial support, contact the Aerospace Engineering Graduate Coordinator (p. 1).

## Master of Science in Aerospace Engineering - Thesis

|                                      |                              |           |
|--------------------------------------|------------------------------|-----------|
| 8XXX                                 | Coursework at the 8000 level | 9         |
| Additional graduate-level coursework |                              | 15        |
| Thesis research/dissertation         |                              | 6         |
| <b>Total Hours</b>                   |                              | <b>30</b> |

A thesis master's degree student must pass a final thesis defense upon completion of all course requirements.

## Master of Science in Aerospace Engineering - Non-Thesis

|                                      |                              |           |
|--------------------------------------|------------------------------|-----------|
| 8XXX                                 | Coursework at the 8000 level | 10        |
| Additional graduate-level coursework |                              | 20        |
| <b>Total Hours</b>                   |                              | <b>30</b> |

A non-master's degree student must pass a coursework-based comprehensive examination.

## Doctor of Philosophy with Aerospace Engineering Concentration

|                                      |                              |           |
|--------------------------------------|------------------------------|-----------|
| 8XXX                                 | Coursework at the 8000 level | 10        |
| Additional graduate-level coursework |                              | 20        |
| Dissertation research/dissertation   |                              | 20        |
| <b>Total Hours</b>                   |                              | <b>50</b> |

The number of course hours required of a Ph.D. student depends on each student's needs; numbers shown above are typical beyond a Master's degree. In order to be admitted to candidacy for the Ph.D. degree, a student must pass a doctoral qualifying examination, have his/her dissertation topic approved, and sit for a candidacy examination. A final dissertation defense and an oral examination of the candidate are also required.