

# 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. Distance-learning options for these degrees are also available (see <http://www.bcolearning.msstate.edu>). Major areas of study are include the following.

- Fluid mechanics
- Aerodynamics
- Computational fluid dynamics
- Structures and composites
- Structural dynamics
- Design optimization
- Structural reliability
- Fatigue and fracture
- Dynamics and controls
- Satellite engineering
- Orbital mechanics

The Raspet Flight Research Laboratory operated by Mississippi State University is a unique facility for graduate aeronautical research and education and has been an integral part of the Aerospace Engineering Department activities for decades. The department is a major participant in the Center for Advanced Vehicular Systems (CAVS) where members of this faculty provide a primary role in computational simulations. Other department facilities include a low speed wind tunnel, a blow-down supersonic wind tunnel, and a fatigue and fracture testing laboratory. Graduate research and teaching assistantships are available.

## 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 after the completion of 85 hours of graded coursework towards their B.S. degree. Students take graduate-level courses and earn both undergraduate credit and graduate credit simultaneously. Students need to consult with the Graduate Coordinator to ensure graduate credit could be applied to a program of study for the graduate degree. Application to this program may be made when a student has completed 85 hours of graded coursework counting towards the completion of a B.S. degree in an engineering discipline. Students interested in applying to the Accelerated Program should contact the department's Graduate Coordinator for more details.

At the time a student applies to the program, the student must:

1. be enrolled at Mississippi State University in one of the eight Bagley College of Engineering programs;
2. have at least 85 hours earned toward their respective B.S. degree; and
3. 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.

1. 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.)
2. One page résumé
3. 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.

For students enrolled in Accelerated Program, the MSU Graduate Council has established these guidelines in cooperation with the Registrar's Office:

Once the student is accepted into the combined program, the student and the advisor may select up to 9 hours that will satisfy both undergraduate and graduate requirements. These courses may be split-level (i.e., 4000-6000 level) or 8000 level classes. The student should take the courses for graduate credit (i.e., 6000-level or higher). The combination of undergraduate and graduate credit hours may not exceed 13 hours within a semester.

The student should use the Undergraduate Enrollment in Accelerated Degree Program form to (i) receive from the Office of the Graduate School a level override that enables the student's enrollment in the graduate course(s) and (ii) activate a process with the Registrar's Office to obtain both undergraduate and graduate credit for the course. After successfully completing the graduate-level class(es), the Registrar will grant credit for the undergraduate course and give the same grade as received for the graduate course. For the case of a split-level class, the transcript will show credit for both the 4000- and 6000-level. In the case of an 8000-level class, a special topics undergraduate course of the same title will be entered on the transcript to allow dual credit.

Students are permitted to opt out of the accelerated program at any time, at which point they could complete only the undergraduate portion of the program. No additional dual counting of courses would occur after the student leaves the accelerated program.

Students are expected to apply to the graduate degree program during the last semester in which they are enrolled in the bachelor's program. Application to the graduate degree program would be made through the standard application process via the Office of the Graduate School. Student's will receive the bachelor's degree once the requirements for the bachelor's degree are met. Students will be required to complete all of the requirements for both the bachelor's and graduate degrees in order to receive both degrees, and those requirements will be identical to the requirements for students enrolled in the traditional bachelor's and graduate degree programs. Students will be classified as undergraduates until they fulfill all the requirements for the undergraduate degree. At that time, upon admission to graduate school, they will be classified as graduate students and will be subject to all the guidelines pertaining to the graduate degree.

## 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) can apply for direct admission to the Ph.D. program.

## 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/archives/2017-18/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:

1. The student maintains a B average or better on
  - a. all undergraduate prerequisite courses;
  - b. all graduate courses completed;
  - c. all graduate courses included on the program of study.
2. The student has no more than one grade less than C.
3. If the student registers for research credits in a given term, he/she receives a Satisfactory (S) grade at the end of the term.
4. The student has a major advisor and a supervisory graduate committee after the first two terms 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	12
Additional graduate-level coursework		12
Thesis research/dissertation		6
Total Hours		30

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	15
Additional graduate-level coursework		15
Total Hours		30

A non-master's degree student must pass a final written/oral examination upon completion of all course requirements.

### Doctor of Philosophy with Aerospace Engineering Concentration

8XXX	Coursework at the 8000 level	15
Additional graduate-level coursework		15
Dissertation research/dissertation		20
Total Hours		50

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.