CU Boulder’s Department of Aerospace Engineering Sciences (AES) is internationally recognized for its research and education leadership in aerospace engineering, Earth and space sciences. Its world-renowned engineers and scientists tackle challenges in aerospace technology and science, focusing on astrodynamics and satellite navigation systems (ASN); autonomous systems (AUT); bioastronautics (Bio), fluids, structures and materials (FSM); and remote sensing, Earth and space science (RSESS).

With more than 50 faculty members and over 460 MS and PhD students, our graduate programs prepare aerospace engineering students to meet the needs of our 21st-century society through the understanding, conception, design and application of aerial and spacecraft systems.

In the MS program, we focus on hands-on, experiential learning, technical and organizational expertise, and end-to-end mission and systems perspectives.

For more information, visit the department’s Prospective Graduate Students (https://www.colorado.edu/aerospace/prospective-students/graduates/) webpage.

Requirements

Program Requirements

- Students must complete a total of 30 credit hours (including both course and thesis hours) with a grade of B- or better and a cumulative GPA of at least 3.00. At least 24 credit hours must be completed at the 5000 level or above, and at least 18 of those credits must be in ASEN courses. (Note: EMEN 5405 Fundamentals of Systems Engineering counts as an ASEN class.
- Up to 6 credits can be taken at the 4000 level in related engineering, math and science departments (ECEN, CVEN, MCEN, CHEN, CSCI, ATOC, ASTR, PHYS, MCDB, APPM, MATH, CHEM, IPHY, GEOL, ENVD). 4000-level ASEN courses are not counted toward the program.
- One approved graduate-level math course (3 credit hours) in ASEN, APPM or MATH.
- Seminar credits, even those earned in other disciplines, do not count toward the MS degree.
- Master’s degree residency requirements can be met only by residence on the CU Boulder campus for two semesters or three summer sessions, or a combination of at least one semester and two summer sessions. Residence in this context refers to a student’s registration for CU Boulder courses. This does not apply to distance learning students.
- If a student is admitted on a provisional basis, a GPA of 3.25 must be maintained for each semester until 12 credit hours are completed, or the student will be suspended. Provisional students are required to take a minimum of 12 hours of graduate coursework over a period of 4 semesters. Additional conditions may be placed on a provisional student at the discretion of the department, to account for individual circumstances.

Additional Requirements

Students choose one of the Focus Areas for specialization. As a requirement, they must complete a series of courses designed by the Focus Area to provide the fundamentals of the field. This includes two to four required courses (6-12 credit hours) in the student’s primary Focus Area and one required course (3 credit hours) that must be taken in a second Focus Area (or sub-track in some instances).

In addition, six more credit hours must be completed following one of the following options:

1. MS thesis option
2. Non-thesis course work option, which consists of one of the following:
   a. Required courses leading to an approved certificate (or completion of the dual ASEN/EMP degree)
   b. Courses as defined by each focus area

MS Thesis Option

The MS thesis must consist of original and independent research conducted by the graduate student under the supervision of the faculty advisor. The thesis topic must be related to the major field. The thesis must:

- Represent the equivalent of 6 credit hours of coursework.
- Comply in mechanical features with the University of Colorado Graduate School Thesis and Dissertation Specifications.
- Be filed with the Graduate School by posted deadlines for the semester for which the degree is to be conferred. The examination committee for the MS thesis will consist of three graduate faculty members.

For additional information, please see the Graduate School Rules (https://www.colorado.edu/graduateschool/academic-resources/).

Non-thesis Course Work Options

Graduate Projects I and II

Graduate Projects (ASEN 5018/ASEN 6028) is a two-semester course sequence designed to expose MS and PhD students to project management and systems engineering disciplines while working a complex aerospace engineering project as part of a project team. The course is also open to students in other engineering departments with the approval of the project professor. Graduate projects I and II is offered during the summer as a six-credit course and will count towards graduation requirements.

Certificate

In interdisciplinary certification programs, graduate students explore an interdisciplinary area while pursuing a master’s or doctoral degree in a specific department. The students take classes outside their department and work with a faculty member affiliated with the program. Some programs also have research requirements. Professional certification programs allow professionals to pursue certification apart from degree completion. After completing the required work, students receive a certificate in the interdisciplinary field.

For detailed certificate information, see the graduate school’s Certificate Programs (https://www.colorado.edu/graduateschool/legacy-content/distance-education/certificate-programs/) webpage.
Focus Area-Defined Courses
Some Focus Areas offer the option to take additional courses to satisfy the non-thesis option. This will represent at least an additional six credit hours with respect to the minimum requirement to obtain a MS with that Focus Area.

Time Limit
All degree requirements must be completed within four years of the date of commencing coursework. Most students complete the degree in one to two years.

Dual Degree Program
Dual MS or ProMS in Aerospace Engineering Sciences and ME in Engineering Management
For more information, visit the Engineering Management Program’s MS Aerospace Engineering Sciences & ME Engineering Management (http://www.colorado.edu/emp/programs/graduate-program/dual-degree-program/ms-aerospace-engineering-sciences-me-engineering/) webpage.