

Minor in Aerospace Engineering

Offered by: Sibley School of Mechanical and Aerospace Engineering

Administered by: MAE Undergraduate Assistant, Ashley Blank (ab2224), 125 Upson Hall

Eligibility: All undergraduates. Pre-approval of minor plan is required.

Educational Objectives: The aerospace minor develops the engineering analysis and design skills necessary for creating and understanding aerospace vehicles and their subsystems. The minor includes diverse topics relevant to applications both in the earth's atmosphere (e.g. aerodynamics) and in space (e.g. spacecraft thermal systems or orbital mechanics). Students in this minor will take at least four core aerospace courses, along with up to two supporting courses in engineering fundamentals or courses with applicability to aeronautics and spacecraft.

Requirements:

Six courses from the lists below, each worth at least 3 credits. At most one course from outside Cornell can be used in place of one of those listed below, by petition. Any course used to satisfy early MEng graduation requirements may **not** be used for the Aerospace minor.

Rules for ME majors:

- Select at least 4 courses from group A, of which you must choose MAE 3050 or MAE 4060 (or both).
- Select at most 2 courses from group B. No courses from group C may be used.
- Two courses must be selected from the Aerospace Engineering subject field under the Major Approved Electives list in Mechanical Engineering (for a complete listing, consult www.mae.cornell.edu). These two courses may not be used to fulfill any B.S., Mechanical Engineering degree requirements

Rules for other majors:

- Select at least 4 courses from group A, of which you must choose MAE 3050 or MAE 4060 (or both).
- Select a total of at most 2 courses from group B and group C.
- Students may not use any courses to satisfy requirements of both the Mechanical Engineering Minor and the Aerospace Engineering Minor.

Academic Standards: A grade of C- or better in each course. In S/U only courses, S is acceptable.

Group A: Core Aerospace Engineering

MAE 3050: Intro to Aeronautics

MAE 4060: Introduction to Spaceflight Mechanics

MAE/ECE 4150: GPS: Theory and Design

MAE 4160/4161/5160: Spacecraft Technology and Systems Architecture

MAE 4291^a: Supervised Senior Design Experience, **with Aerospace Focus**, or MAE 4900^a: Individual and Group Projects in Mechanical Engineering, **with Aerospace Focus**

MAE 4230/4231/5230: Intermediate Fluid Dynamics

MAE 4510/5510: Aerospace Propulsion

MAE 5070: Dynamics of Flight Vehicles

NOTE:

MAE 4291 and 4900 require an email or note from the project advisor, stating that the project focuses on Aerospace and is suitable for the minor. MAE 4291 or 4900 must be worth at least 3 credits. Students may count at most one MAE 4291 OR one MAE 4900 toward the minor (i.e. students may not count both MAE 4291 and MAE 4900 toward the minor).

Group B: Courses Applicable to Aerospace Engineering

MAE 4020/4021/5020: Wind Power

MAE 4130/4131: Mechanics of Composite Structures

MAE 4180/5180/CS 3758/ECE 4180/5772: Autonomous Mobile Robots

MAE 4700/4701/5700: Finite Element Analysis for Mechanical and Aerospace Design **or** CEE 4720: Introduction to the Finite Element Method

MAE 4730/5730: Intermediate Dynamics

MAE 4770: Engineering Vibrations

MAE 4780/5780 Control Systems

MAE 5130: Mechanical Properties of Thin Films

MAE 5430: Combustion Processes

MAE 6510: Advanced Heat Transfer

Group C: Fundamentals

ENGRD 2020: Statics and Mechanics of Solids

MAE 2030: Dynamics

ENGRD 2210: Thermodynamics

MAE 3230: Introductory Fluid Mechanics

MAE 3240: Heat Transfer

MAE 3270: Mechanics or Engineering Materials

MAE 3260: System Dynamics

MAE 3780/3783: Mechatronics **or** ECE/ENGRD 2100: Intro. to Circuits for Electrical and Computer Engineers **or** PHYS 3360: Electronic Circuits.