Minor in Aerospace Engineering

Offered by: Sibley School of Mechanical and Aerospace Engineering
Administered by: MAE undergraduate coordinator, 108 Upson Hall, 255-3573, np18@cornell.edu
Eligibility: All undergraduates. Pre-Approval for the Aerospace Minor is required. Students intending to earn a minor in Aerospace Engineering should seek advice and pre-approval of their minor academic program from the associate director for undergraduate affairs in MAE before taking courses toward the minor.

Educational Objectives:
The 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:
1) Six courses from the lists below, each worth at least 3 credits, must be completed. No substitutions will be accepted from other departments at Cornell or elsewhere. Any course used to satisfy early M. Eng graduation may not be used for Aerospace minor.
2) Rules for ME majors:
a) Select at least 4 courses from group A, of which you must choose MAE 3050 or MAE 4060 (or both).
b) Select at most 2 courses from group B. No courses from group C may be used.
c) 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 ). These two courses may not be used toward fulfilling the B.S., Mechanical Engineering degree requirements
3) Rules for other majors:
a) Select at least 4 courses from group A, of which you must choose MAE 3050 or MAE 4060 (or both).
b) Select a total of at most 2 courses from group B and group C.
c) You 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 4160/4161/5160: Spacecraft Technology and Systems Architecture
MAE/ECE 4150: GPS: Theory and Design
MAE 4291: Supervised Senior Design Experience, with Aerospace Focus
or MAE 4900: Individual and Group Projects in Mechanical Engineering, with Aerospace Focus
MAE 4230/4231/5230: Intermediate Fluid Dynamics
MAE 4510/5510: Propulsion and Power
MAE 5070: Dynamics of Flight Vehicles
NOTE
an. MAE 4291 and 4900 require a form, signed by the project advisor, stating that the project focuses on Aerospace and is suitable as a core aerospace course for the minor. MAE 4291 or 4900 must be worth 3 credits or more. 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 4130/4131/5130: Mechanics of Composite Structures
MAE 4140/4141: Mechanics of Lightweight Vehicles
MAE 4180/5180: 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 and Vibrations
MAE 4780/5780 Control Systems
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 2120: Mechanical Properties and Selection of Engineering Materials
MAE 3230: Introductory Fluid Mechanics
MAE 3240: Heat Transfer
MAE 3250: Analysis of Mechanical and Aerospace Structures
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

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