

Aerospace Certificate Option in Engineering

University of Kentucky

Purpose

The purpose of the aerospace option in engineering certificate program is to provide students with a formalized recognition of an emphasis in aerospace subjects as part of their undergraduate degree program. In addition, this certificate program will increase the state-wide and nation-wide recognition of UK's involvement in aerospace education and research.

At UK, as at most universities, the fundamental and applied courses necessary for a career in aerospace engineering are taught in various departments¹. The UK Aerospace Certificate option will provide students with multidisciplinary experience in aerospace systems and in aerospace specializations, preparing them to join the aerospace workforce.

¹In the United States in 2004, the American Society for Engineering Education survey listed 64 participating degree programs in aerospace engineering or related engineering subjects (e.g., aeronautics, aerospace sciences, etc.) compared to nearly 300 degree programs in mechanical engineering or electrical engineering.

Entrance Requirements

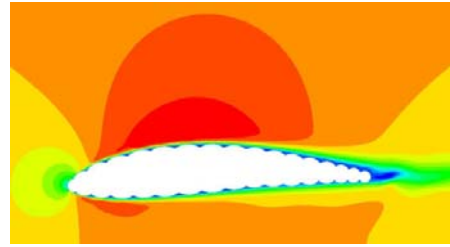
In order to participate in the program a student must be pursuing an undergraduate degree in a participating department and must have a minimum cumulative GPA of 2.5. Each department will have the option of imposing additional entrance requirements for participants. Students must complete an application form developed by the administrative committee and be accepted into the Aerospace Certificate program. Application is encouraged in the student's Junior year, however, students may apply for the aerospace certificate at any time (up to two months) before their graduation with an undergraduate degree.

Exit Requirements

Upon completion of the associated undergraduate degree program and the specific course requirements associated with the certificate program, the student will be awarded a certificate recognizing the completion of an aerospace option as part of their associated degree program. The student must achieve a GPA of 3.0 or better, with no grade less than C, in each course included as part of the certificate program. Students are required to complete the requirements for the certificate at the same time as their normal degree requirements. In the event of extenuating circumstances, a student may apply for up to a one year extension to complete the certificate requirements following graduation. In order to receive such an extension the student must formally apply to the committee and receive approval.

Application Forms

For application forms, contact Dr. Suzanne Smith, UK Aerospace Engineering Certificate Faculty Coordinator, via email at ssmith@engr.uky.edu.



Program Requirements

To receive an aerospace option in engineering certificate at the undergraduate level, the student would be required to obtain an undergraduate degree in a participating department of the college of engineering and take a minimum of 18 credit hours from the following:

A. Required Courses (4 courses, 12 hours)

Each participating department will require four courses essential to the practice of aerospace engineering. The content of these courses, taken as a whole, should offer a broad perspective on aerospace engineering within the departmental discipline, rather than an in-depth sequence in a specific area.

At least one of these courses must be a 3-hour design course including significant content involving a multidisciplinary team-based aerospace design project culminating in a functional aerospace system verified by testing and reviewed by aerospace industry professionals. Suitable design projects include student design competitions such as the annual Design, Build, Fly and AUVSI Student UAV competitions. Suitable design projects also include non-competition opportunities such as a microgravity experiments through NASA's Reduced Gravity Flight Opportunities program and participation in the KYSat CubeSat design.

Required courses for students in **Mechanical Engineering** include the following:

- ME 380: Aircraft or Spacecraft Design (or other design course such as ME 412 Senior Design if the project selected culminates in a functional aerospace system reviewed by aerospace professionals and verified by testing)
- ME 530: Gas Dynamics
- ME 513: Mechanical Vibrations
- ME 599: Systems Engineering

B. Option Courses (2 courses, 6 hours)

Each participating department will offer option courses, specialization courses related to the practice of aerospace engineering. These courses should enable participating students to pursue a multidisciplinary experience in another department or an in-depth sequence in a specific area.

Option courses for students in **Mechanical Engineering** include the following:

- ME 506: Composite Materials
- ME 531: Fluid Dynamics
- ME 532: Advanced Strength of Materials
- ME 563: Basic Combustion Phenomena
- ME 565: Scale Modeling
- ME 599: Aerodynamics
- ME 548: Aerodynamics of Turbomachinery
- certificate courses in other participating departments, and
- independent study (with approval of Certificate Faculty Coordinator)
- new courses that may be developed including propulsion, controls, ground and flight testing, aeroelasticity, flight control and stability

