The Pennsylvania State University
Aerospace Engineering Undergraduate Program

Program Educational Objectives

Two to three years after obtaining a B.S. in aerospace engineering, graduates will be

1. employed in the customary settings such as government laboratories, large and small aerospace firms, and nontraditional positions that also require the use of systems engineering approaches to problems-solving, or

2. pursuing graduate study in aerospace engineering and related fields.

Student Outcomes

The undergraduate program will provide students with the

a.) ability to apply knowledge of mathematics, science and engineering to foundational subjects of aerospace engineering (aeronautics, astronautics, aerodynamics and fluid dynamics, aerospace materials and structures, dynamics and automatic control, stability and control of aircraft and/or spacecraft, air-breathing and rocket propulsion, and aircraft systems design and/or spacecraft systems design),
b.) ability to design and conduct experiments, analyze and interpret data in aerodynamics, propulsion, structures or control systems,
c.) ability to design a system, component or process, integrating knowledge from relevant topics in astronautics and aeronautics, to meet desired needs in aircraft systems and/or in spacecraft systems,
d.) ability to function on multi-disciplinary teams,
e.) ability to identify, formulate, and solve engineering problems,
f.) understanding of professional and ethical responsibility,
g.) ability to communicate effectively,
h.) broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context,
i.) recognition of the need for, and an ability to engage in life-long learning,
j.) knowledge of contemporary issues,
k.) ability to use the techniques, skills, and modern engineering tools necessary for engineering practice, and
l.) knowledge in all subjects in Category I or in Category II, and in some subjects in the other category:

(Category I. aerodynamics, aerospace materials, structures, propulsion, flight mechanics, and stability and control),
(Category II: orbital mechanics, space environment, attitude determination and control, telecommunications, space structures, and rocket propulsion).