

SPACE SYSTEMS ENGINEERING, CERTIFICATE

Requirements for an undergraduate certificate may be completed at any campus location offering the specified courses for the certificate.

Program Description

This certificate program is designed to prepare students for careers in the space industry and for work on space systems. To achieve this, a minimum program of three space systems engineering related courses, a space systems engineering seminar, and project work is to be completed.

You Might Like This Program If...

You would like to explore a how to approach the engineering of complex systems; you have an interest in space, aerospace engineering, or satellites, or have an interest in working within the defense and/or aerospace industry.

Entrance to Certificate

For entrance into the certificate program, students must be at least 5th semester standing. The cumulative GPA considered for admission will be consistent with, or equivalent to, the GPA minimum of 2.00 for maintaining good academic standing.

Program Requirements

To earn an undergraduate certificate in Space Systems Engineering, a minimum of 12 credits is required.

Students must earn a C grade or better in each of the courses to continue with the certificate.

Code	Title	Credits
Prescribed Courses		
<i>Prescribed Courses: Require a grade of C or better</i>		
EE 474	Satellite Communications Systems	3
Select one of the following:		2-9
AERSP 401A	Spacecraft Design–Preliminary	
AERSP 401B	Spacecraft Design–Detailed	
AERSP 430	Space Propulsion and Power Systems	
AERSP 450	Orbit and Attitude Control of Spacecraft	
AERSP 492	Space Astronomy and Introduction to Space Science	
AERSP 497	Special Topics	
AERSP 550	Astrodynamics	
AERSP 597	Special Topics	
AERSP 597	Special Topics	
EE 472	Space Astronomy and Introduction to Space Science	
EE 474	Satellite Communications Systems	
Select one of the following:		3-9
AERSP 55	Space Science and Technology	
AERSP 309	Astronautics	
AERSP 540	Theory of Plasma Waves	
EDSGN 597	Special Topics	

EE 471	Introduction to Plasmas
EE 477	Fundamentals of Remote Sensing Systems
EE 534	Conformal Antennas
EE 541	Manufacturing Methods in Microelectronics
EE 576	Inversion Techniques in Remote Sensing
EE 579	Microwave Radar Remote Sensing
EE 580	Linear Control Systems
EE 581	Optimal Control
GEOSC 21	Earth and Life: Origin and Evolution
GEOSC 474	Astrobiology
METEO 477	Fundamentals of Remote Sensing Systems
NUCE 490	Introduction to Plasmas
NUCE 540	Theory of Plasma Waves
STS 55	Space Science and Technology

Students must complete an application. A project report must be submitted adhering to SPSYS Certificate formatting and systems content guidelines.

Prerequisites Required.

Certificate Learning Objectives

- Complete a hands-on project experience representing the application of principles learned.
- Demonstrate a basic understanding of the following:
 - systems approach to engineering;
 - several technical subjects related to space systems;
 - processes and procedures for development of space hardware.
- Work effectively in multifunctional teams.

Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

University Park

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Career Paths

Students will learn more about how to plan, design, build, integrate, test launch, operate, and manage various forms of space systems, subsystems, launch vehicles, spacecraft, payload or ground systems in order to work as space system architects, launch system experts, propulsion technicians and much more.

Contact

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<https://www.eecs.psu.edu/students/undergraduate/Majors-Minors-Certificates.aspx>