

5.10 Graduate Systems Engineering Certificate (SEC)

5.10.1 Program Description

For those students not enrolled in the Systems Engineering (SE) Master of Science (MS) degree program, AFIT offers a Graduate Certificate Program (SEC) in Systems Engineering. This program consists of four required SE core courses and an SE Capstone Group Project. These courses are part of the SE degree program and may also be used as minor concentration in another AFIT degree program. If the certificate is earned as minor concentration in another AFIT degree program, the requirement for the capstone project may be met by the student's thesis (with SE curriculum chair approval).

Likewise, this program is also offered via distance learning for part-time remote students. The target audience is active duty military, DoD civilians, and contractors with traditional engineering backgrounds, usually working in laboratories, test centers, product centers, air logistics centers, or in a requirements/ capability planning office (Air Staff, Joint Staff or MAJCOM staff). All courses use prerecorded lectures, supplemented with live webinars. Each course is offered during an AFIT academic quarter. If taking one course per quarter, this program can be completed in 15 months.

5.10.2 Program Educational Objectives (PEOs)

The SE program takes students with traditional engineering backgrounds (mechanical, electrical, aerospace, etc.) and produces graduates who can effectively use the tools and techniques of both systems science and traditional engineering disciplines to approach and analyze complex problems, design feasible solutions, and select an appropriate solution. Specific objectives are as follows:

1. A graduate will understand the context of SE and the role of the systems engineer in government and industry organizations.
2. A graduate will thoroughly understand the SE process from mission area analysis through definition of requirements to system development, sustainment, and retirement.
3. A graduate will have skills to effectively evaluate the technical integrity of emerging designs and processes.

5.10.3 School and Program Admission Criteria

The general requirements for admission to the Systems Engineering Certificate are as follows.

DEGREE REQUIRED: Any engineering degree (Aeronautical, Astronautical, Aerospace, Chemical, Civil, Computer, Industrial, Mechanical, Electrical, or Systems Engineering) or a degree in Engineering Science. A degree in science (e.g. physics), math or computer science will be considered on a case-by- case basis.

MATHEMATICS REQUIRED: Differential and Integral Calculus

TEST REQUIRED – None

GPA REQUIRED: OVERALL - 3.0

Waivers to the criteria may be granted (on an individual basis) by the Department of Systems and Engineering Management. For more information about distance learning or about this specific program, and to apply, go to AFIT's Extension Services website (<http://www.afit.edu/en/dl>).

5.10.4 Course Sequence/ Sample EdPlan

The courses required to earn the Graduate Certificate are as follows (shown in the quarter they are offered via DL).

SENG 520	(Fall)	Systems Engineering Design
CSCE 590	(Winter)	Engineering Software-Intensive Systems
SENG 640	(Spring)	System Architecture
SENG 610	(Summer)	Systems Engineering Management
SENG 798	(Fall)	Group Design Project (Capstone)

These courses provide a common breadth of knowledge and the basic building blocks for all Air Force and DoD Systems Engineers. All core courses are 4 credit hours.