

B.S. in Systems Engineering

The Bachelor of Science degree in Systems Engineering is designed to graduate engineers who can address system level analysis, integration, and risk issues throughout the system lifecycle, starting from the early conceptual design, to development, testing, operating, and decommissioning of systems. Graduates will naturally learn how to use systems thinking and analysis techniques to improve system performance over the entire life cycle.

In a few years of completing their undergraduate degree, graduates of the Bachelor of Science in Systems Engineering:

- Have established themselves in successful engineering careers in aviation, aerospace, and related fields and/or are pursuing advanced degrees.
- Are serving society and their professions as involved and responsible citizens, leaders, and role models.
- Are problem solvers, systems thinkers, and innovators.

The curriculum is designed to facilitate accomplishment of these objectives by program graduates. It provides a broad education, including fundamental knowledge about engineering systems and their hardware and software components. It also allows graduates to work in a team environment and to recognize the value of collaborative effort. The program lays a foundation for lifelong learning, professional growth, and ethical and responsible behavior in society.

There are two Areas of Concentration (AOC) to choose from: Aerospace Systems Engineering and Enterprise Systems Engineering. The courses in the AOCs allow students to broaden their general education or pursue specific interests. Upper-level courses involve students in team projects that emphasize industrial processes and practices.

Aerospace Systems Engineering Area of Concentration

The Systems Engineering degree with an Area of Concentration in Aerospace Systems Engineering produces graduates who have a solid knowledge of systems engineering and significant exposure to aerospace systems domain. The curriculum emphasizes fundamental concepts of aerospace engineering and system level design and analysis methodologies for aerospace systems.

Enterprise Systems Engineering Area of Concentration

The Systems Engineering degree with an Area of Concentration in Enterprise Systems Engineering emphasizes the generic systems engineering education, applicable to all large-scale engineering systems. The graduates will be able to succeed in a wide range of engineering domains.

Degree Requirements

The Bachelor of Science degree can be earned in eight semesters assuming appropriate background and full-time enrollment. Successful completion of a minimum of 125 credit hours is required. A minimum cumulative grade point average of 2.0 is needed for all required AE, CEC, CS, EE, ES, EGR, HF, and SYS courses that fulfill any degree requirement.

Students entering this program should have demonstrated a competence in mathematics and science (preferably physics). They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students can prepare for the program by taking MA 143 before taking MA 241. For those students who have not

taken physics in high school, it is recommended that PS 103 be taken prior to PS 150.

The Systems Engineering program is designed to prepare students to work as part of a team on the design and analysis of large-scale engineering systems. Systems engineering concepts, methods, and techniques are integrated through the curriculum. The curriculum includes courses in general education, math and science, and engineering. The latter is divided into engineering fundamentals, modeling and analysis, and systems engineering. In addition, a student can acquire a minor or a concentration in a domain area of interest. Students should be aware that several courses in each academic year may have prerequisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to ensure requisite sequencing.