SE 51000 - Systems Engineering

Type of Course
Core course for the Systems Engineering concentration of the MSE program

Catalog Description
Systems Engineering (SE) is a structured approach to developing interdisciplinary and complex products. This course introduces SE methodologies spanning the product development life cycle from initial scope definition through delivery of the prototype or first production article. SE techniques are used to define and manage requirements, analyze and optimize product architectures, develop comprehensive designs, plan and supervise manufacturing, test and evaluation, and implement the production line. SE also provides techniques for ensuring that system-level requirements (i.e., reliability, maintainability, safety, etc.) are incorporated into the final product. Spanning all these activities are a set of SE analysis and control functions that continuously assess and manage the product scope, quality, configuration, interfaces, and performance.

Credits
3

Contact Hours
3

Prerequisite Courses

Prerequisites by Topics

Reference books

Course Objectives
To develop capabilities of students to solve real-life problems. Students apply knowledge from their previous course work to accomplish project formulation, final design and prototype evaluation.

Course Outcomes
A student who successfully fulfills the course requirements will have demonstrated:

1. Apply Systems Engineering methodology to design products and enterprise systems.
2. Understand the importance of system design in the development of an enterprise.
3. Evaluate and determine the disciplines necessary to set up a successful enterprise and operations.
4. Design and develop stakeholder use case functions and performance that the enterprise must satisfy.
5. Understand the importance and significance of the systems engineering acquisition process milestones associated with the Systems Engineering Lifecycle.
6. Ability to function within a team.

Lecture Topics

1. System Requirement Review
2. Preliminary Deign Review
3. Critical Design Review

Coordinator

David Cochran, Ph.D.

Cross-listed Course

Date

03/02/2025