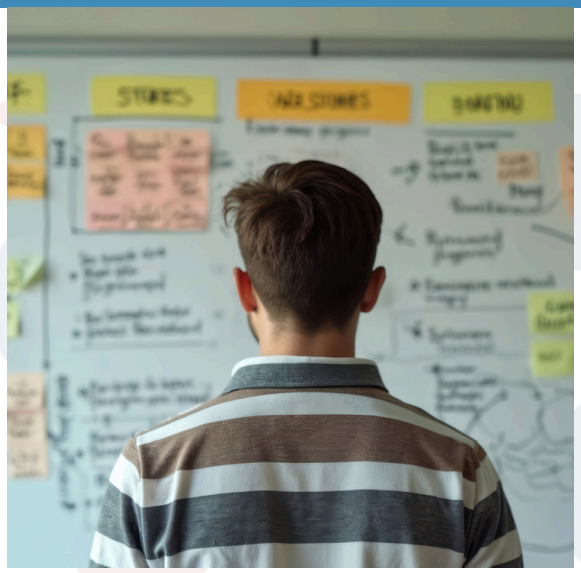
THE UNIVERSITY OF ARIZONA
COLLEGE OF ENGINEERING
Systems & Industrial Engineering

SIE 517 - SYSTEMS ENGINEERING STRATEGY AND IMPLEMENTATION

COURSE DESCRIPTION

This course explores **the strategic and practical implementation of Systems Engineering** (SE), focusing on adapting SE principles, managing key activities, and customizing the Systems Engineering Management Plan (SEMP) to project needs. It also covers technology integration and lifecycle management.



EXPECTED LEARNING OUTCOMES

- Develop and tailor Systems Engineering Management Plans (SEMP) for diverse projects, considering unique contexts and objectives.
- Integrate systems engineering principles and approaches effectively within project teams and technical disciplines.
- Implement technology insertion strategies and manage the integration of new technologies in system development and operation.
- Navigate and adjust systems engineering strategies based on evolving project objectives, conditions, and technological landscapes.
- Execute tailored systems engineering processes that maximize efficiency and effectiveness in system development.

COURSE FORMAT

- The course will use a flipped classroom instructional approach. The student will read the required material and attempt to complete the homework on their own before coming to class.
- Students will be expected to familiarize themselves with the toolset and resolve problems independently.
- Remote students must also use a drawing-enabled device during the semester so that they can contribute to group discussions and with the overall class in virtual whiteboards.

PROGRAM DIRECTOR
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ENROLLMENT
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COURSE SCHEDULE

SESSION 0.5
- Course introduction and Overview
- The SEMP in the context of a systems engineering endeavor

SESSION ONE
- Fundamentals of the SEMP:
  - Objectives and structure
  - Project specific needs
  - Customization and flexibility

SESSION TWO
- Integration of SE principles and approaches:
  - SE principles integration strategies
  - Establishing the role of the SE team
  - Defining cross-disciplinary collaboration

SESSION THREE
- Technology insertion strategies:
  - Identification of opportunities for technology insertion
  - Establishing guidance to assess technology viability
  - Establishing guidance for integration planning

SESSION FOUR
- Tailoring SE processes
  - Understanding how to map SE processes to project need sand demands
  - Success factors for SE customization
  - Tools and techniques for SE customization

SESSION FIVE
- Managing SE across the lifecycle
  - Defining a life cycle model
  - Establishing main life cycle phases
  - Monitoring and adjusting SE strategies
  - The role of SE in system maturation

SESSION SIX
- Navigating evolving projects with SE
  - Dynamic project environments
  - Adaptive SE strategies
  - Future trends in SE implementation

SESSION SEVEN
- Practical application within SEMP standards

Pioneering SE since 1961

Built-in MBSE/DE

Bridge Theory & Practice

Hands-on Virtual Lab

Distinguished Faculty

MASTERING DISRUPTIVE TRANSFORMATION & **LEADING THE FUTURE** OF SYSTEMS ENGINEERING