

1. ES502 Honors Research and Design Methods
2. 2 credit hours, 1 hour recitation, 2 hours laboratory
3. Course coordinator: Prof. Joel M. Esposito
4. Textbook: None
 - a. Other supplemental materials: Course notes
5. Specific course information
 - a. Engineering design process and project management geared towards advanced projects associated with the Systems Engineering Honors Major. Includes the composition of the proposal for the honors senior research project.
 - b. Prerequisite: 2/C ESEH major
 - c. Required for Systems Engineering Honors Majors (ESEH)
6. Specific goals for the course
 - a. Primary Objectives: The student will learn the following:
 - What constitutes research in systems engineering.
 - How to craft a problem statement.
 - How to perform a critical literature review.
 - How to select among various demonstration techniques
 - How to plan the logistical components of their project
 - About the existence of some available institutional resources

Secondary Objectives: The student will

 - Become knowledgeable in a subject area of their choosing through independent reading.
 - Develop a proposal for their 1/C honors capstone activities.
 - Orally present the proposal to the faculty and their peers.
 - b. This course introduces the following Student Outcomes
 - (b) an ability to design and conduct experiments, as well as to analyze and interpret data

- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues

7. Topics covered:

- Selecting a project
- Reading technical papers
- Writing a literature review
- Crafting a problem statement
- Designing a demonstration plan
- Budgets
- Gantt charts and timelines
- Technical writing and presentation