

THE DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS

AA 470 SYSTEMS ENGINEERING

FALL QUARTER

CREDITS AND

CONTACT HOURS: 4 credits, Two 110 minute lectures per week

COORDINATOR: Adam Bruckner, Professor, Apr. 2007

TEXTBOOK: Systems Engineering and Analysis 4th Ed., Blanchard, B. and Fabrycky, W. 2005.
Optional

**SUPPLEMENTAL
MATERIALS:**

None

CATALOG DATA: SYSTEMS ENGINEERING, Selective Elective
Concepts of system approach, system hierarchies, functional analysis, requirements, trade studies, and other concepts used to define and integrate complex engineering systems. Introductions to risk analysis and reliability, failure modes and effects analysis, writing specifications, and lean manufacturing. Offered: jointly with IND E 470.

PREREQUISITES BY TOPIC: Computer literacy of spreadsheets, powerpoint and word processors.

OUTCOMES:

- 1) Students will be able to quantitatively evaluate system interfaces.
- 2) Students will be able to quantify risk and reliability.
- 3) Students will be able to write a simple component specification.
- 4) Students will be able to develop elements of a project plan

RELATIONSHIP TO STUDENT OUTCOMES:

- a) An ability to apply knowledge of mathematics, science, and engineering.
- c) An ability to define a system, component, or process to meet desired needs.
- e) An ability to identify, formulate, and solve engineering problems.
- g) An ability to communicate effectively
- k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

TOPICS:

- 1) System Definition
- 2) Project Management (PERT, Gantt, WBS, Budgets, Teams)
- 3) Risk Assessment
- 4) Specialty Engineering (Reliability, Maintainability, Human Factors)
- 5) Engineering Requirements
- 6) Writing Specifications
- 7) Failure Modes and Effects Analysis
- 8) Lean Manufacturing, 6-sigma design
- 9) Systems Architecture