

## SE540 Systems Architecture

Credits: 3

Systems engineering best practices prescribe a set of methodologies for architecting and designing complex systems. This course will cover requirements analysis, functional analysis and allocation, and synthesis and their interaction with systems analysis and control functions including system trades, management of risk, configuration, interfaces and data, and development of performance measures. The lectures will be complemented by a class design project to architect a complex system leading to development of a functional and physical architecture and associated functional and allocated baselines.

### Level of the Course:

Anticipated Percentage of Undergraduate Student Enrollment: 10%

Anticipated Percentage of Graduate Student Enrollment: 90%

### Prerequisites: (If none, please explain reasons for absence)

SE510 Systems Engineering or equivalent

### Course Outline:

Classes are 2.5 hours long and will be held once a week. The first half of each class will be theory and second half will be project engineering

Day	Topic
1	The Art of Architecting / Project Introduction
2	Heuristics and Systems Engineering / Project Scope
3	Managing Uncertainties / Project Plans and Requirements
4	Manufacturing / Requirement Analysis
5	Social Systems / Interface Definitions
6	Software and Info. Technology / Functional Analysis 1
8	Collaborative Systems / Functional Analysis and Allocation 2
9	Mid Term Exam / Risk ID and Assessment
10	System Representation and Models / Performance Measures
11	Design Progression / Trade Studies 1
12	Integrated Modeling / Trade Studies 1 / Functional Architecture
13	Architectural Frameworks / Project Synthesis
14	Decision Making in the Real world / Project Synthesis
15	The System Architect / Project Summation
16	Final Exam

### Method of Evaluation or Assessment:

25% Homework

25% Class Project

20% MidTerm

30 % Final Exam

