

SYST 621 / ECE 674 System Architecture Design (3.0:3)

Spring 2012

Prerequisites: SYST 520 and SYST 620/ECE 673 or permission of instructor

Description: Architecture design and representation and the methodologies used to obtain them. Approaches based on software engineering constructs such as object orientation and service oriented architectures as well as systems engineering constructs such as structured analysis are used to design architectures and then represent them in conformance with architecture frameworks such as DoDAF. Executable models of the architecture are derived to be used for architecture evaluation. The roles of the systems architect and the systems engineer are discussed. Examples from current practice are used.

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Spring 2012: M 4:30 – 7:10 pm Classroom: Nguyen Eng. Bldg. 3511

COURSE OUTLINE (subject to change as the course progresses)

1/23/2012	1.	Systems Engineering and Architecture Design
1/30/2012	2.	UML Review
2/6/2012	3.	DoDAF and related Architecture Frameworks; Architecture Design
2/13/2012	4.	Operational Concepts and Use Cases; Capabilities and Project Viewpoints
2/20/2012	5.	Object Oriented Architecture Design; Rule and Dynamics modeling
2/27/2012	6.	Operational and Data Viewpoints
3/5/2012	7.	Loosely Coupled Systems and Service Oriented Architectures
3/12/2012		Spring Break
3/19/2012	8.	Services Viewpoints and Systems Viewpoint
3/26/2012	9.	Class presentations
4/2/2012	10.	Executable Models of Architectures; Review of CPN
4/9/2012	11.	Issues in Architecture Evaluation
4/16/2012	12.	Structural methods
4/23/2012	13.	State Space methods
4/30/2012	14.	Evaluating Systems of Systems and Federated SOAs
5/14/2012		Final Exam

Course notes and collateral readings will be made available for downloading through Blackboard. There are also ten papers that cover some of the material in the course and present two examples. No textbook is required; however, it will be a good idea to have a textbook on UML and Object Oriented design

Homework: There are weekly reading assignments and homework assignments (architecture design and evaluation).

Grading: Homework sets will count for 50% of the final grade. The midterm presentation will count for 15% of the grade and the in-class final examination for 35%.