SYST 621 / ECE 674 System Architecture Design and Evaluation (3:0:3) Spring 2015
Prerequisites: SYST 520 and SYST 620/ECE 673

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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SYST 621	**ECE 674**	**System Architecture Design and Evaluation**
Version 1		
Date	L#	Topic
1/20/2015	L1	Systems Engineering and Architecture Design
1/27/2015	L2	The Unified modeling Language (UML)
2/3/2015	L3	SysML Review; The DoD Architecture Framework
2/10/2015	L4	Capabilities and Project Viewpoints; Operational Concepts and Use Cases
2/17/2015	L5	Rule and Dynamics modeling ; Object Oriented Architecture Design;
2/24/2015	L6	Operational and Data Viewpoints
3/3/2015	L7	Service Oriented Architectures and Services Viewpoints
3/10/2015		Spring Break
3/17/2015	L8	Systems Viewpoint ; Executable Models, Architecture Evaluation Concepts
3/24/2015		**Project presentations**
3/31/2015	L9	BPMN; Structural methods of Evaluation
4/7/2015	L10	State Space methods; M&S Eval; Systems of Systems evaluation
4/14/2015	L11	Evaluating Systems: Federated SOAs and Resilient Architectures
4/21/2015	L12	Multi-modeling and Meta-modeling
4/28/2015	L13	Review and Closure
5/5/2015		Reading Day
5/12/2015		**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 several examples. No textbook is required; however, it will be a good idea to have a textbook on UML and Object Oriented design. It is assumed that you have "A Practical Guide to SysML" by Friedenthal et al. from other SYST courses. It is not required but access to one would be needed.

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 20% of the grade, and the in-class final examination for 30%.

The George Mason University Honor Code can be found at
http://oai.gmu.edu/the-mason-honor-code-2/