

SYST 520 System Engineering Design (3.0:3)

Spring 2013

Prerequisites: Graduate standing

Description: System design and integration methods are studied and practiced, including structured analysis and object-oriented based techniques. Life cycle of systems is addressed, including definition and analysis of life cycle requirements. Software tools are introduced and used for the systems engineering cycle. Identification of preliminary architectures. Students are expected to develop a system design for a system of their choice using both the structured analysis and object-oriented techniques presented in class and they will make presentations on these designs.

Instructors: Prof. Alexander H. Levis Nguyen Eng. Room 3245 Tel 703 993 1619
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Spring 2013: Monday 4:30 – 7:10 pm Classroom: Robinson Hall B220

COURSE OUTLINE (subject to change as the course progresses)

Date	L#	Subject
1/28/2013	L 1	Introduction to Systems Engineering; Design and Integration
2/4/2013	L2	The Systems Engineering Processes:
2/11/2013	L3	Operational Concepts and Use Cases; Modeling Languages Introduction
2/18/2013	L4	Structured Analysis: Activity Modeling (IDEF0 and DFD)
2/25/2013	L5	Structured Analysis: Data Modeling (IDEF1x and E-RD)
3/4/2013	L6	Behavior Modeling: Rule Modeling and Dynamics Modeling (STD)
3/11/2013		Spring Break
3/18/2013	L7	Model Concordance, Functional Architecture
3/25/2018	L8	Physical Architecture and System Design
4/1/2013	L9	Midterm: Team Design Presentations
4/8/2013	L10	Architecture Frameworks and Arch. Description Languages (UML, SysML)
4/15/2013	L11	OO Architecture Design: Functional Viewpoint
4/22/2013	L12	OO Architecture Design: System Viewpoint
4/29/2013	L13	Interface Design, Integration and Qualification
5/6/2013	L14	Closure and Team Design Presentations
5/13/2013		Final Exam

Required Textbooks:

- (1) Dennis M. Buede, *The Engineering Design of Systems*, Wiley, 2009, NY (2nd Edition).
- (2) Sanford Friedenthal, Alan Moore, and Rick Steiner, *A Practical Guide to SysML: The Systems Modeling Language*, The MK/OMG Press, (Elsevier) 2012 (2nd Edition).

This course is offered both as an in-class and synchronous distance learning sections. The Blackboard system will be used for most course activities. Extensive lecture notes will be available through Blackboard

Homework: There are weekly reading assignments and homework assignments

Grading: Homework sets will count for 50% of the final grade. The midterm presentation will count for 10% of the grade, the final class presentation for 15%, and the in-class final examination for 25%.

The George Mason University Honor Code can be found at
<http://oai.gmu.edu/honor-code/masons-honor-code/>

