

Systems design and integration methods are studied and practiced, including structured analysis and object-oriented based (SysML) techniques. The life cycle of systems is addressed, including definition and analysis of life cycle requirements. Structured analysis and object oriented software tools are introduced and used for design throughout the systems engineering lifecycle. The focus of the course is on architectural methods for systems design and integration. Students are expected to develop system design for systems using both structured analysis and object-oriented approaches.

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Course Call numbers: SYST 520 001 72890

Fall 2012: Wednesday 4:30 – 7:10 pm Room 131 Innovation Hall

COURSE OUTLINE (subject to change)

29 Aug 12	Overview of Systems Engineering; Approaches to Design, Blackboard ; B1
5 Sep 12	Systems Engineering Design Process; Structured Analysis; CORE; B2
12 Sep 12	Use cases, Process modeling: IDEF0, DFD: F11, B3 & B12.3
19 Sep 12	Data Modeling and Rule Modeling – Model Based SE – notes, F2
26 Sep 12	Requirements and Design Definition; B6
3 Oct 12	Functional Architecture; B7
10 Oct 12	Physical Architecture and Design; B8 and B9
17 Oct 12	Behavioral Models and Executable Models of Design; B12
24 Oct 12	Interface Design and System Integration and Quantification; B10 & B11
31 Oct 12	Mid Term Exams Due
31 Oct 12	Alternative Structural and Architectural Representations; B12. F15
7 Nov 12	The Systems Modeling Language: (SysML) Basic Concepts; F1 through F 4
14 Nov 12	The Systems Modeling Language: (SysML) Diagrams; F5 through F15
28 Nov 12	The Systems Modeling Language (SysML) Modeling Examples F16, F17
5 Dec 12	Integrating SysML into Development and Organizational Environments, F18, F19
12 Dec 12	Final Take Home Exams Due (No Class)

Textbooks for Course (required):

(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*, Morgan Kaufman OMG Press (Elsevier) Second Edition 2012.

In the Course Outline, Bx denotes chapter x in Buede; Fx denotes chapter x in Friedenthal

A plethora of contemporary literature available on the Internet concerning systems design, integration, and architecting and will be of much use. Experience will be gained using the Internet as a research tool during the course. A course web site on Blackboard Learning Systems (BLS) will be operational and put to much use. We will gain experience in using the CORE software package for design and architecting. Other software will be briefly discussed including Enterprise Architecture and Magic Draw. Detailed class lecture notes (Overheads) will be provided on Blackboard. Student Evaluation Criteria: Homework 40%; Midterm 30%; Final 30%, APS 15 August 2012..