

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 using both the structured analysis and object-oriented techniques presented in class.

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Course Call numbers: SYST 520 001 73459

Fall 2011: Wednesday 4:30 – 7:10 pm Room 137 Innovation Hall

### COURSE OUTLINE (subject to change)

31 Aug 11	Overview of Systems Engineering; Approaches to Design, Blackboard ; B1
07 Sep 11	Systems Engineering Design Process; Structured Analysis; CORE; B2
14 Sep 11	Use cases, Process modeling: IDEF0, DFD: F11, B3 & B12.3
21 Sep 11	Data Modeling and Rule Modeling – Model Based SE – notes, F2
28 Sep 11	Requirements and Design Definition; B6
05 Oct 11	Functional Architecture; B7
12 Oct 11	Physical Architecture and Design; B8 and B9
19 Oct 11	Behavioral Models and Executable Models of Design; B12
26 Oct 11	Interface Design and System Integration and Quantification; B10 & B11
26 Oct 11	Mid Term Exams Due
02 Nov 11	Alternative Structural and Architectural Representations; B12. F15
09 Nov 11	The Systems Modeling Language: (SysML) Basic Concepts; F1 through F 3
16 Nov 11	The Systems Modeling Language: (SysML) Diagrams; F4 through F14
30 Nov 11	The Systems Modeling Language (SysML) Modeling Examples F15, F16
07 Dec 11	Integrating SysML into Development and Organizational Environments, F17, F18
14 Dec 11	Final Take Home Exams Due (No Class)

### Textbooks for Course (required):

(1) Dennis M. Buede, *The Engineering Design of Systems*, Wiley, 2009, NY (2<sup>nd</sup> Edition)..

(2) Sanford Friedenthal, Alan Moore, and Rick Steiner, *A Practical Guide to SysML: The Systems Modeling Language*, Morgan Kaufman OMG Press (Elsevier) 2009.

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 in 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. Detailed class notes (Overheads) will be provided. Student Evaluation Criteria: Homework 40%; Midterm 30%; Final 30%, APS 27 March 2011.