

System design and integration methods are studied and practiced, including both structured analysis and object-oriented based techniques. The course includes the development process of functional, physical, and operational architectures for the allocation and derivation of component-level requirements for the purpose of specification production; examination of interfaces and development of interface architectures. Life cycle of systems is addressed; generation and analysis of life cycle requirements. Software tools are introduced and used for portions of the systems engineering cycle.

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Course Call numbers: SYST 520 001 12322

Spring 2007: Wednesday 4:30 – 7:10 pm Room IN 131 (Innovation Hall)

COURSE OUTLINE (subject to change)

24 Jan 07	Overview of Systems Engineering; Approaches to Design, WebCT ; B1 & Notes
31 Jan 07	Systems Engineering Design Process; Structured Analysis; CORE; B2
7 Feb 07	Use cases, Process modeling: IDEF0, DFD: A5, B3 & B12.3
14 Feb 07	Data Modeling and Rule Modeling
21 Feb 07	Requirements and Design Definition; B6
28 Feb 07	Functional Architecture; B7
7 Mar 07	Physical Architecture and Design; B8 and B9
21 Mar 07	Behavioral Models and Executable Model of Design; B12
28 Mar 07	Interface Design and System Integration and Quantification; B10 & B11
4 Apr 07	Mid Term Exams Due
4 Apr 07	Alternative Structural and Architectural Representations; B12.
11 Apr 07	The Unified Modeling Language: Basic Concepts; A2
18 Apr 07	The Unified Modeling Language: Diagrams; A8, A9, A11, A12
25 Apr 07	Object oriented Design: A8, A9, A11, A12
2 May 07	The Systems Modeling Language (SySML)
9 May 07	Final Exams Due

Textbooks for Course:

(1) Dennis M. Buede, *The Engineering Design of Systems*, Wiley, 2000, NY.

(2) Scott W. Ambler, *The Object Primer*, Cambridge University Press, 2004, NY.

In the Course Outline, Bx denotes chapter x in Buede; Ax chapter x in Ambler

A plethora of contemporary literature available on the Internet concerning systems design and integration and related issues in architecting will be of much use, and experience will be gained in the Internet as a research tool during the course. A course web site on WebCT 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. Detailed class notes (Overheads) by A. P. Sage and A. H. Levis will be provided.

Student Evaluation Criteria: Homework 40%; Midterm 30%; Final 30%, APS 25 January 2007