SYST 520 Systems Engineering Design (3:3:0) Fall 2013.
Prerequisite: Graduate standing.

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.

Instructor: Andrew P. Sage, University Professor, Volgenau School of Engineering, Room 2219, 703-993-1506, asage@gmu.edu, Office Hours by Appt.

Course Call numbers: SYST 520 001 72511
Fall 2013: Wednesday 4:30 – 7:10 pm   Room 1202 University Hall (tentative)

COURSE OUTLINE (subject to change)

28 Aug 13	Overview of Systems Engineering; Approaches to Design, Blackboard ; B1
4 Sep 13	Systems Engineering Design Process; Structured Analysis; CORE; B2
11 Sep 13	Use cases, Process modeling: IDEF0, DFD: F11, B3 & B12.3
18 Sep 13	Data Modeling and Rule Modeling – Model Based SE – notes, F2
25 Sep 13	Requirements and Design Definition; B6
2 Oct 13	Functional Architecture; B7
9 Oct 13	Physical Architecture and Design; B8 and B9
16 Oct 13	Behavioral Models and Executable Models of Design; B12
23 Oct 13	Interface Design and System Integration and Quantification; B10 & B11
30 Oct 13	Mid Term Exams Due
30 Oct 13	Alternative Structural and Architectural Representations; B12. F15
6 Nov 13	The Systems Modeling Language: (SysML) Basic Concepts; F1 through F 4
13 Nov 13	The Systems Modeling Language: (SysML) Diagrams; F5 through F15
20 Nov 13	The Systems Modeling Language (SysML) Modeling Examples F16, F17
4 Dec 13	Integrating SysML into Development and Organizational Environments, F18, F19
11 Dec 13	Final Take Home Exams Due to Blackboard (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 24 March 2013..