SYST 659: Model-Based Systems Engineering

Spring 2014
Innovation Hall 338
Monday 7:20 pm-10:00 pm

Instructor: Chien-Chung (Edward) Huang
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Office hours: Tuesday 10am – 11 am, and by appointment; via e-mail at other times

Textbook: *A Practical Guide to SysML: The Systems Modeling Language, The MK/OMG Press, (Elsevier) 2012 (2nd Edition).*

Course objectives: Model-based Systems Engineering (MBSE) provides a formalized application of modeling to support the engineering of systems. The purpose of the course to study and practice the leading methodologies for MBSE and illustrate the MBSE approaches in systems engineering and management. The advanced objected-oriented systems engineering methodology and model transformation techniques are addressed. Software tools are introduced and used for supporting systems engineering design. Students are expected to develop a system design of their choice using MBSE approaches presented in class and they will make presentations on these designs.

Tentative Course Schedule

Date	Topic	Chapters
Jan 27	Introduction to Model-based Systems Engineering	2
Feb 3	Objective-Oriented Modeling	
Feb 10	Structure Analysis– Physical Decomposition	7
Feb 17	Structure Analysis– Interface Design	7
Feb 24	Structure Analysis– Engineering Analysis Integration	8
Mar 3	Behavior Modeling– Activity modeling in MBSE	9
Mar 10	*Midterm*	
Mar 17	Spring Break; No Class;	
Mar 24	Behavior Modeling– Interaction and State Machine	10, 11
Mar 31	Object-oriented Systems Engineering Modeling Process	17
Apr 7	Meta Modeling: Stereotype and Profiling	
Apr 14	Integration Techniques-- Model-driven Architecture	
Apr 21	Integration Techniques-- Model Transformation	
Apr 28	Integration Techniques-- Model Integration	
May 5	Closure and Team Design Presentations	
May 12	*Final Exam (7:20 pm – 10:00 pm)*	

Grading:
30% Homework
20% Midterm exam
20% Computational project
10% In-Class Assignments and Participation
20% Final exam

Coursework & Grading Policies
Unless otherwise indicated, you are expected to work individually on homework assignments, projects, and exams. Late submissions are not accepted. You can submit homework directly to me via email at chuang10@gmu.edu.

Academic Integrity
GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

GMU Email Accounts
Students must use their Mason email accounts to receive important University information, including messages related to this class. See http://masonlive.gmu.edu for more information.

Disability Services
If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. http://ods.gmu.edu

Technology Policies
Cell phones, pagers, and other communicative devices are not allowed in this class. Please keep them stowed away and out of sight. Laptops or tablets (e.g., iPads) may be permitted for the purpose of taking notes only, but you must submit a request in writing to do so. Engaging in activities not related to the course (e.g., gaming, email, chat, etc.) will result in a significant deduction in your participation grade.

University Policies
The University Catalog, http://catalog.gmu.edu, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at http://universitypolicy.gmu.edu/. All members of the university community are responsible for knowing and following established policies.