

## **SYST 618: Model-Based Systems Engineering**

*Spring 2015*

*Music/Theater Building 1004*

*Monday 7:20 pm-10:00 pm*

**Instructor:** Chien-Chung (Edward) Huang

**Office:** Nguyen Engineering Bldg., room 2238

**Phone:** 703-993-1672

**E-mail:** [chuang10@gmu.edu](mailto:chuang10@gmu.edu)

**Office hours:** Tuesday 11am – 12 pm, 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 26	Introduction to Model-based Systems Engineering	2
Feb 2	Objective-Oriented Modeling	
Feb 9	Structure– Physical Decomposition	7
Feb 16	Structure– Interface Design	7
Feb 23	Structure– Engineering Analysis Integration	8
Mar 2	Behavior– Activity modeling in MBSE	9
Mar 9	<u>Spring Break; No Class;</u>	
Mar 16	<i>Midterm</i>	
Mar 23	Behavior– Interaction and State Machine	10, 11
Mar 30	Object-oriented Systems Engineering Modeling Process	17
Apr 6	Meta Modeling: Stereotype and Profiling	
Apr 13	Integration Techniques-- Model-driven Architecture	
Apr 20	Integration Techniques-- Model Transformation	
Apr 27	Integration Techniques-- Model Integration	
May 4	Closure and Team Design Presentations	
May 11	<i>Final Exam (7:20 pm – 10:00 pm)</i>	

**Grading:**

30% Homework

20% Midterm exam

20% 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](mailto: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.