

GEORGE MASON UNIVERSITY
Department of Systems Engineering and Operations Research,
Volgenau School of Engineering
Course Syllabus

Course:	SYST 618
Long Title:	Model-Based Systems Engineering
CRN:	
Semester:	Fall, 2015
Scheduled Meetings:	<ul style="list-style-type: none"> • Groups: Times to be arranged w/ each group • Blackboard Collaborate (see Blackboard menu) <ul style="list-style-type: none"> ○ Use Generic Collaboration Session ○ URL: https://mymasonportal.gmu.edu
Appointments	<ul style="list-style-type: none"> • Groups or Individual • Virtual or In-person as needed (Virtual same location as above)
Credits:	3 Graduate Credit Hours
Course Dates:	August 31, 2015 through December 12, 2015
Week Start / End	<ul style="list-style-type: none"> • Start: Monday Morning • End: Sunday Midnight

Instructor: Chien-Chung (Edward) Huang
Office Hours: As arranged by groups or individuals
E-mail: chuang10@gmu.edu
Phone: 703-993-1672

COURSE DESCRIPTION

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.

NATURE OF COURSE DELIVERY

The format of this online course is asynchronous. The course is structured around twelve learning units made up of readings, weekly exercises and reflections on your learning. We are scheduled to meet “live”, online twice in a conference system that supports audio/visual communication:

- September 3, 2015 6:00 P.M. via Blackboard Collaborate’s General Collaboration Session.
- At the end of the course in a for group presentations; however, this may be replaced with an in-person presentation for the whole class.

COURSE WEEKLY RHYTHM

Because online courses do not necessarily have a “fixed” meeting day, our first week will “start” on Monday, August 31th and officially “finish” on Sunday, December 13th. I will go over the details of the course schedule during our first week live, online meeting.

TECHNOLOGY REQUIREMENTS

1. Well-functioning computer with broadband Web access.
2. A computer operating system and web browser certified or at least compatible to support the new Blackboard 9.1: <https://mymasonportal.gmu.edu>
3. You must forward your Mason email to your primary email account in order to receive urgent notifications from me or the University. Student email accounts are now being outsourced to Microsoft and student emails will have a masonlive.gmu.edu address. More information for students is at: <http://masonlive.gmu.edu/faqs.html>
4. You require to use VCL (Virtual Computing Lab) to complete assignments & learning activities. More information for students is at: <https://www.vcl.gmu.edu/index.php>

TEXTBOOK

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

LEARNER OUTCOMES

SYST 618 is a concentration course for the Architecture-Based Systems Integration, Air Transportation Systems, Systems Engineering of Software-Intensive Systems, Systems Engineering Analysis and Systems Management programs. Students learn the material, develop a system design, and also know how to apply and connect the artifacts together by semester's end. The result is a valuable skill that enables the students to model and analyze complex systems using the state-of-the-art model-based systems engineering approaches.

As a result of this course, participants will be able to:

- Given a real system, formulate it using model-based systems engineering approaches
- Understand the modeling process
- Understand the structure and behavior of the model
- Understand the techniques that could be used to integrate/generate models

PREREQUISITES:

SYST 520 (System Design and Integration), or by permission of the instructor.

WORKLOAD

Student success in this course is priority one. We have a great deal to cover in a relatively short period of time, so please keep on track. The nature of this course is such that playing "catch up" will prove to be extremely challenging. Read the first two bullets on this DE Experience page: <http://masononline.gmu.edu/faqs/>. Expect to log in to this course at least four times a week to work on course materials and participate in the discussions. Our most successful students log in *daily for about an hour per day on average*. If there is anything you don't understand, or if work or personal challenges threaten to derail your progress, please drop me a note via Bb course e-mail as quickly as possible or call me, and we'll talk. I can typically respond to you within 48 hours.

COURSE REQUIREMENTS, PERFORMANCE-BASED ASSESSMENT, AND EVALUATION CRITERIA

A. Requirements:

Grade Component	Weight	Focus
Homework Assignments*	30%	Core tenets in the textbook: <ul style="list-style-type: none"> • Homework 1 (Due: 9/27/2015) • Homework 2 (Due: 10/ 4/2015) • Homework 3 (Due: 11/ 8/2015) • Homework 4 (Due: 11/22/2015) Late submissions are not accepted.
Group Project	40%	Developing a system design of your choice <ul style="list-style-type: none"> • 30% correctness • 20% design ideas • 20% model integration • 30% classmate evaluation See delivery dates in schedule below. Group deliverables and final project due December 10, 2015.
Exams*	30%	Material discussed in class: <ul style="list-style-type: none"> • 50% Exam 1 (Due: 10/18/2015) • 50% Exam 2 (Due: 12/18/2015) Final exam will be cumulative in that it may include all the topics covered in class. There is no make-up exam.

***NOTE:**

- Due Dates for individual assignments are on Sunday at midnight of the respective weeks.
- Group project deliverables are due on the Thursday night at midnight of the respective weeks.
- The stated dates above are tentative, and are subject to change per the progress of the class. See schedule below for details.

B. Criteria for Evaluation

The instructor will evaluate all assignments.

C. Grading Scale

Letter Grade	Numerical Range
A+	97-100
A	92-96
A-	90-91
B+	88-89
B	82-87
B-	80-81
C+	78-79

C	72-77
C-	70-71

COURSE EXPECTATIONS

- Students are required to use system, online, self-help resources, in addition to the instructor's resources and peer support to solve problems related to the access, download, and operation of course Web 2.0 tools to complete assignments.
- Each student is expected to complete all readings and class exercises as assigned by the instructor.
- To enable individualization of the course to the needs of each student (either remedial or advanced activities), special arrangements on requirements and assignments may be negotiated in writing with the instructor.
- Late submissions are not accepted. You can submit homework directly to me via email or upload to Blackboard.
- The class schedule may change as the course progresses.

VOLGENAU SCHOOL OF ENGINEERING STATEMENT OF EXPECTATIONS

Student Expectations

- Students are expected to exhibit professional behavior and dispositions. See <http://gse.gmu.edu/facultystaffres/profdisp.htm> for a listing of these dispositions.
- Students must follow the guidelines of the University Honor Code. See <http://oai.gmu.edu/the-mason-honor-code-2/> for the full honor code.
- Students must follow the university policy for Responsible Use of Computing [See <http://universitypolicy.gmu.edu/1301gen.html>].
- Students can find the student privacy policy at <https://registrar.gmu.edu/students/privacy/>.
- Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See <http://ods.gmu.edu/>].
- Students are responsible for the content of university communications sent to their George Mason University email account and are required to check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
- GMU's Social Media "best practices" guidelines: http://webdev.gmu.edu/Social_Media_Guidelines

Campus Resources

- The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See <http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>].
- Students enrolled in online courses at Mason have easy access to Distance Education Library resources [See <http://masononline.gmu.edu/student-resources/library/>].
- The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See <http://writingcenter.gmu.edu/>].

Religious Holidays

A list of religious holidays is available on the University Life Calendar page (<http://ulife.gmu.edu/calendar/religious-holiday-calendar/>). Any student whose religious observance conflicts with a scheduled course activity must contact the Instructor at least 2 weeks in advance of the conflict date in order to make alternative arrangements.