



# SIE 696 Special Topics in Advanced Systems and Industrial Engineering

## Advanced Model-Based Systems Engineering

Location and Times: TBD

### Description of Course:

Advanced topics in model-based systems engineering (MBSE), which is the formalized application of modeling to support system requirements, design, analysis, verification and validation activities beginning in the conceptual design phase and continuing throughout development and later life cycle phases. The course examines and compares extent approaches to the generation and use of such models and current research in this subfield of systems engineering.

### Course Objectives and Expected Learning Outcomes:

Upon completion of this course, students will be able to:

1. Demonstrate mastery of the core tenets of MBSE,
2. Distinguish between and leverage various approaches to MBSE,
3. Plan, lead, and execute a project using MBSE,
4. Assist organizations in adoption of MBSE, and
5. Conduct meaningful research related to MBSE.

### Prerequisites:

1. Advanced Standing in the College of Engineering
2. SIE 4/554A – The Systems Engineering Process

### Instructor and Contact Information

Instructor: Dr. David Gross

Office: ENG 129

Phone: 404-775-7522 (personal cell, text encouraged)

Email Address: davidcgross@email.arizona.edu

Home Page: <http://www.sie.arizona.edu/david-gross>

**Office Hours:** TBD and by arrangement. Also, I maintain an open door policy, such that if my office door is open you are welcome to come in and talk about anything you need.

### Course Text:

[Model-Based Systems Engineering with OPM and SysML](#), 1st ed. 2016 Edition, by Dov Dori

### Absence and Class Participation Policy

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available

at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. Students who miss class due to illness or emergency are required to bring documentation from their health-care provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences.

## Course Format and Teaching Methods

All course information is located on the course homepage, which is in Desire2Learn at <https://d2l.arizona.edu/>.

Detailed information on using the Desire2Learn course website is available at <https://d2l.arizona.edu/>.

The course will utilize lecture, in-class discussion, individual homework assignments, a midterm, and a semester research paper.

The Desire2Learn course website organizes the course into modules. Each module contains archives of classroom lectures & discussions, presentations, notes and other instructional materials on each session's topic, and assignments. Each module includes one or two class meetings.

Module 1 includes a course calendar showing topics by session along with other dates of interest.

During the scheduled class meetings, the instructor will deliver lectures via live video-audio connection in a "Live Classroom" environment. The lectures will emphasize the important concepts and selected techniques from the textbooks and the instructor's point of view. Students will have an opportunity to ask questions during these class meetings.

These class meetings will be recorded and archived on the Desire2Learn course website.

Online & Distance Learning students are encouraged to attend the scheduled class meetings and use the archives to review lectures.

Between class meetings, students study the appropriate textbook chapters, references, and complete assignments.

The instructor may record and post additional lectures beyond the scheduled class meetings as needed to assist the class in understand the material.

Students should visit the course's D2L website often (not just during scheduled class meetings) for announcements, other important instructions, and to participate in online discussions.

Students should submit work for the assignments the related D2L assignment drop folder named as: `course-assignment-yourname.filetype`

Where:

"course" is SIE-696-aMBSE-SP18

"assignment" is the name of the assignment, e.g., HW-1, Midterm

"yourname" is your name (for individual assignments) or your group's name (e.g., "group-1")

And "filetype" is the usual extension for the file (e.g., "docx" for MS Word).

Work not using this naming convention will be penalized one letter grade.

## Course Schedule:

See separate SIE-696-aMBSE-Calendar-SP18.

## ~~Final Examination or Project~~

~~The date and time of the final exam or project, along with links to the Final Exam Regulations, <https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>, and Final Exam Schedule, <http://www.registrar.arizona.edu/schedules/finals.htm>~~

## Grading Scale and Policies

University policy regarding grades and grading systems is available at <http://catalog.arizona.edu/policy/grades-and-grading-system>

This course's grading scale is:

<u>Grade:</u>	<u>Standard</u>	<u>Description</u>
A	$90\% \leq x$	excellent
B	$80\% \leq x < 90\%$	good
C	$70\% \leq x < 80\%$	satisfactory
D	$60\% \leq x < 70\%$	poor
E	$x < 60\%$	failure

Where "x" = (points earned divided by points available X 100%) in the course.

The instructor reserves the right to award a higher grade than earned at his sole discretion.

This course's graded work includes:

<u>Assignment</u>	<u>Points Available</u>
Homework (10)	100 points
Midterm	100 Points
Research Paper Proposal	10 Points
Research Paper Update	30 Points
<u>Research Paper (final)</u>	<u>60 Points</u>
Total	300 Points

**Requests for incomplete (I) or withdrawal (W)** must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively.

**Dispute of Grade Policy:** Students disputing a grade on any assignment must do so within two days (48 hours) of the graded work being returned. Note: unexcused absences will not extend this deadline.

## Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).

Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

Some learning styles are best served by using personal electronics, such as laptops and iPads. These devices can be distracting to other learners. Therefore, students who prefer to use electronic devices for note-taking during lecture should use one side of the classroom.

The use of personal electronics such as laptops, iPads, and other such mobile devices is distracting to the other students and the instructor. Their use can degrade the learning environment. Therefore, students are not permitted to use these devices during the class period.

## **Threatening Behavior Policy**

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

## **Notification of Objectionable Materials**

~~This course will contain material of a mature nature, which may include explicit language, depictions of nudity, sexual situations, and/or violence. The instructor will provide advance notice when such materials will be used. Students are not automatically excused from interacting with such materials, but they are encouraged to speak with the instructor to voice concerns and to provide feedback.~~

## **Accessibility and Accommodations**

Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact the Disability Resource Center (520-621-3268) to establish reasonable accommodations. For additional information on the Disability Resource Center and reasonable accommodations, please visit <http://drc.arizona.edu>.

If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate.

Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

## **Code of Academic Integrity**

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

The University Libraries have some excellent tips for avoiding plagiarism, available at <http://new.library.arizona.edu/research/citing/plagiarism>.

*Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent.* Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

## **UA Nondiscrimination and Anti-harassment Policy**

The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Our classroom is a place where everyone is encouraged to express well-formed opinions and

their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

### **Additional Resources for Students**

UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>

Student Assistance and Advocacy information is available at <http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

### **Confidentiality of Student Records**

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

### **Subject to Change Statement**

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.