

SYLLABUS

Class Sessions:

Day: Wednesday
Time: 3:30 – 6:40
Room: TBA
Class Number: SAE 541

Contact Information:

Instructor: Dr. Michael Sievers: michael.sievers@usc.edu
Office hours: By Appointment Only
Office phone: TBA
TA: TBA
Course website TBA

COURSE DESCRIPTION

Systems engineering is an essential part of achieving success for system products, services, and processes in important domains such as Aerospace & Defense, Transportation, Medical, and Energy Management. As such systems become increasingly complicated and complex, fundamental concepts and rigor become increasingly important throughout the system life cycle: from concept evaluation through retirement. This class provides both theoretical and practical knowledge needed for conceptualizing, designing, supporting, and evaluating today's and tomorrow's systems.

LEARNING OBJECTIVES

- Introduce students to Systems Engineering support of design processes, architecture concepts, operations concepts, systems integration, and life-cycle support concepts
- Explore means for performing trade studies and evaluating risk
- Introduce system Verification, Validation, Quality, Test, Specialty Engineering, Security, and Mission Assurance concepts
- Discuss representative systems that highlight course concepts

Readings: Key Publications Each Week

Lectures and required reading: Will be posted each week on D2L

Grades:

Your grade is primarily based on a midterm and a final exam. The exams account for 90% of the class grade, and homework accounts for the remaining 10%.

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IF YOU NEED HELP:

- Office hours, phone numbers, and e-mail addresses are listed at the top of this syllabus.
- Please e-mail the instructor to discuss any questions or issues. The usual turnaround time for emails is 24 hours. Please remind us if you don't hear from us within that timeframe.

ADDITIONAL INFORMATION:

- Policies and procedures for submitting homework and exams (via DEN for all students) are available on the GAPP website (<http://gapp.usc.edu/graduate-programs/den/getting-started/policies-procedures>). *Students are responsible for understanding and following these policies and procedures.*
- There have been previous attempts of students to copy someone else's text into their exams or homework. *Never copy text in to your file without marking it with a citation. Never attempt to copy text into your file and then "edit it into your own words."* All text you turn in that comes from somewhere else must be marked as a quotation. All the ideas you turn in that come from someone else must be cited. The default punishment for plagiarism by a graduate student is failing the course, and expulsion is possible.

Exams will be checked for plagiarism and similarity to other exams using Turnitin.
The university will be informed of suspected academic integrity violations
Please visit <https://sjacs.usc.edu>

DELIVERY: All deliverables for the course must be submitted to the D2L dropbox system.

GRADING: Your grade is primarily based on a midterm and a final exam. The exams account for 90% of the class grade, and homework accounts for the remaining 10%.

LATENESS: Work submitted after the time it was due will be docked 10% of the maximum possible score for the first 24 hours. For every additional day it is late, it will be docked a further 10% daily. You can request an extension ahead of the deadline for an assignment. **Most assignments are due on the day of the class lecture; extension requests must be received no later than 9 am on the day before the class lecture.**

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UNIVERSITY LEVEL ISSUES

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students requesting academic accommodations based on a disability must register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the instructors (or the TA) as early in the semester as possible. DSP is in STU 301 and is open 8:30 am–5:00 pm, Monday through Friday. The phone number for DSP is (213) 740-0776.

STATEMENT ON ACADEMIC INTEGRITY:

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 13.00, while the recommended sanctions are in Appendix A: <https://scampus.usc.edu/university-student-conduct-code/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards (SJACS) for further review should there be any suspicion of academic dishonesty. The Review process can be found at: <http://sjacs.usc.edu/>.

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Schedule of Class Sessions: The schedule is subject to change. Changes will be announced in class.

Lecture	Session number: Planned topics
1 May 15	<ul style="list-style-type: none"> • Course Introduction/Overview
2 May 22	<ul style="list-style-type: none"> • Systems Engineering Processes Overview & Life Cycles
3 May 29	<ul style="list-style-type: none"> • Mission/Business Analysis, Stakeholders, Needs, Scope, & CONOPS
4 June 5	<ul style="list-style-type: none"> • Requirements Analysis and Development
5 June 12	<ul style="list-style-type: none"> • Functional Analysis and Allocation
6 June 19	Juneteenth – no class
7 June 26	<ul style="list-style-type: none"> • Architecture Definition / Design Definition
8 July 3	<ul style="list-style-type: none"> • Trade Study and Risk Analysis
9 July 10	<ul style="list-style-type: none"> • Cyber-Physical Systems
10 July 17	<ul style="list-style-type: none"> • Specialty Engineering, Security, Mission Assurance
11 July 24	<ul style="list-style-type: none"> • Fault-tolerant and Resilient Systems
12 July 31	<ul style="list-style-type: none"> • Role of Model-Based Systems Engineering
TBA	<ul style="list-style-type: none"> • Final Exam Available
TBA	<ul style="list-style-type: none"> • Final Exam Due