

Spring 2020 SYLLABUS

Contact Information:

Instructor: Mr. Ken Cureton, cureton@usc.edu
Instructor Dr. Michael Sievers, michael.sievers@usc.edu
Office hours: By Appointment Only
Course website: <https://courses.uscdcn.net/d2l/home/17307>
Course location: SCT 1501K (1150 S. Olive St. Los Angeles, 90015, Ste 1501K)

COURSE DESCRIPTION

Systems architecting is an essential aspect of systems engineering. As systems become increasingly complicated and complex, fundamental concepts and rigor become increasingly important. SAE-541 provides both theoretical and practical knowledge needed for conceptualizing, designing, and evaluating today'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 fault-tolerance and resilience concepts
- Introduce system Verification, Validation, Quality, Test, Specialty Engineering, Security, and Mission Assurance concepts
- Identify Cyber-Physical Systems and Model-Based Systems Engineering implications for Systems Engineering
- Discuss representative systems that highlight course concepts

Prerequisite(s): None

Readings: Key Publications Each Week

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

Grades:

Your grade is based on three exams and homework. The exams account for 90% of the class grade. Weekly homework assignments will account for the remaining 10%.

IF YOU NEED HELP:

E-mail addresses are listed at the top of this syllabus. Please contact your instructors either during class or through email and we will set up a time for a discussion. The usual turnaround time for emails is 24 hours. If you don't hear from us within that timeframe, please send us a reminder.

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 that you turn in that comes from somewhere else must be marked as quotation. All the ideas that you turn in that come from someone else must be cited.

Exams and homework will be checked for plagiarism. University will be informed of suspected academic integrity violations. The default punishment for plagiarism by a graduate student is failing the course, and expulsion is possible.

Please visit <https://sjacs.usc.edu>

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

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 that it is late, it will be docked a further 10% per day. 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 9am on the day before the class lecture.**

Schedule of Class Sessions: The exact schedule and topics are subject to change based on availability of lecturers. Changes will be announced in class.

Date	Week	Planned topics
1/16	1	Course Overview / Introduction to Systems Engineering Concepts / Value of Systems Engineering (Cureton)
1/23	2	Systems Engineering Processes Overview & Life Cycles (Cureton)
1/30	3	Mission & Business Analysis / Stakeholders, Needs, Scope, and CONOPS (Cureton)
2/6	4	Requirements Analysis and Development (Cureton) – take-home exam-1 assigned
2/13	5	Functional Analysis and Allocation (Sievers) – take-home exam-1 due
2/20	6	Architecture Definition / Design Definition (Cureton)
2/27	7	Trade study and Risk Analysis (Sievers)
3/5	8	Systems Analysis and Control (Cureton)
3/12	9	Implementation, Integration, & Transition, Interface Analysis (Cureton)
3/19	10	Spring recess – no class
3/26	11	Cyber-physical systems (Sievers) – take-home exam-2 assigned
4/2	12	Verification, Validation, Quality, Test (Sievers) – take-home exam-2 due
4/9	13	Specialty Engineering, Security, Mission Assurance (Sievers)
4/16	14	Fault-tolerant and resilient systems (Sievers)
4/23	15	Role of Model-Based Systems Engineering (Sievers)
4/30	16	Operation, Maintenance, Disposal (Cureton) – take-home exam-3 assigned
5/7		Final Exam Week – no class – take-home exam-3 due

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710

campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.