SAE 549: Systems Architecting Spring 2017

Class Session: Monday, 3:30 pm – 6:10 pm, OHE 120

Class Section: 32319D (DEN/Off-campus) and 32349R (On Campus)

Contact Information:
Instructor: Prof. Azad M. Madni  Teaching Assistant: Edwin Ordoukhanian
Office hours: By Appointment Only  Office hours: By Appointment Only
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E-mail: Azad.Madni@usc.edu  E-mail: Ordoukha@usc.edu

We encourage you to e-mail us if you have any questions and difficulties with understanding course materials. The usual turnaround time for emails is 24 hours. If you don’t hear from us within that timeframe, please send us a reminder. Always include the TA in any email sent to the instructor.

Course Learning Objectives:
- To improve students’ ability to think critically, ask the right questions, and apply the right methods when architecting various types of systems.
- To improve students’ understanding of the role of system architects and their relationship to systems engineers and transdisciplinary systems engineering.
- To introduce the students to new, advanced multidisciplinary topics (e.g., systems thinking, systems modeling, psychological principles in systems architecting, biologically-inspired architectures, agent-based modeling, human capabilities and limitations) relevant to complex systems architecting.
- To introduce the students to key concepts in performing trade-off analysis which is important to both systems architecting and engineering.

Readings and Notes:
- Weekly lecture notes will be posted on the Desire to Learn (http://www.courses.uscden.net)
- Required Reader:
- Required Text:
- Recommended Reading:

Grade
Your grade will be based on three exams. All exams will be administered online through Desire 2 learn. Each exam will account for 33.33% of your final grade.

Exams
- The exams will consist of multiple questions that will test students’ knowledge about the fundamentals of systems architecting, complex systems, and systems thinking. These exams will be on all the subjects
covered in previous lectures and assigned readings. These will be timed exams (2 hours and 40 minutes) and will be conducted during class time. The first exam will be on Monday February 27, 2017. The second exam will be on Monday April 10 2017. The third exam will be on Monday April 24, 2017.

- You are not allowed to collaborate on the exams. The default punishment for unauthorized collaboration and cheating on the exams is F for the course.

UNIVERSITY LEVEL ISSUES

- Statement for Students with Disabilities:
  Any student requesting academic accommodations based on a disability is required to 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 me (or to TA) as early in the semester as possible. DSP is located in GFS 120 and is open 8:30 a.m.–5:00 p.m., 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 own 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 located 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 for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.
**Schedule of Class Sessions:** The exact schedule is likely to change, based on availability of guest lecturers. Dates of readings may change to align with other schedule adjustments. Changes will be announced.

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<tr>
<th>2017</th>
<th>Lecture Topics</th>
<th>Readings</th>
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| Jan 9 | 1. Intro to SAE Program, the course, the instructor, and systems architecting  

“Preface” of Rechtin, 1991  
2. Chapter 1, 2, and 3 of Rechtin, 1991  

Submit student bio by 3:30 PM Friday Jan 13 2017 |
| Jan 16 | University Holiday                                        |                                                                          |
2. Chapter 15 from Rechtin 1991 |
| Feb 6  | Guest Lecture                                             |                                                                          |
| Feb 20 | University Holiday                                       |                                                                          |
| Feb 27 | **Exam #1**                                               |                                                                          |
| Mar 13 | Spring Break                                             |                                                                          |
| Mar 27 | 8. Guest Lecture                                         |                                                                          |
3. Chapter 11 from Rechtin 1991 |
| April 10| **Exam #2**                                              |                                                                          |
### SAE 549: Systems Architecting

#### Spring 2017

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<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
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<tr>
<td>April 24</td>
<td>13. Exam #3</td>
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### Assigned Readings List

You can download these papers from Google Scholar or USC Libraries for free.