

What to expect for the Research Paper

❑ FORMAT:

- Microsoft Word (or equivalent)-- PDF of WORD File is acceptable

❑ LENGTH:

- Paper should be at least 8 pages (excluding references, appendices, and cover page), single-spaced, in 12-point type (Times New Roman font), single column with standard margins (1" top and bottom, 1.25" left and right)
 - This is just a suggestion– you will not lose points for using a different font or different margins; we will CONVERT your paper to this format to evaluate your paper's content!

❑ DELIVERY:

- Paper must be submitted via Desire to Learn (D2L) system no later than **May 6 2019, Midnight Pacific Time**
- Links for submitting the assignments will be available under the "Assignment" section of D2L (<http://courses.uscden.net>)

❑ GRADING:

- A good paper grade requires writing a paper that is instructive or of general interest to system architects and engineers, including those who may not be necessarily interested in the particular topic you analyze
 - To obtain a high grade, your paper must be of quality suitable for publication in a Journal or in Conference Proceedings

Topics

Topic Categories:

- Automated (Self-Driving) Cars
- Smart Phones or Smart Tablet Computers
- Space Telescopes
- Robotic Systems (including Unmanned Space Exploration)
- Manned Space Transport
- Passenger Aircraft
- Airborne Platforms (Fighter / Bomber Aircraft / Helicopter / Unmanned Aerial Vehicles)

Choose a **SPECIFIC SYSTEM** from the categories listed above

- Submit a maximum 1 page abstract for your chosen system for approval
- Major changes in topic after being approved also require Instructor approval

Content

- ❑ **Describe and analyze the architecture of your selected system in terms of any or all of the class concepts presented in lectures**
 - **Description must include some sort of Architecture Diagram showing boundaries and external interfaces**
- ❑ **Analysis to discuss how the architecting process led to architecture**
- ❑ **The architecting process should address:**
 - The key tradeoffs
 - The steps taken
 - The questions asked
 - The people involved
 - The options generated
 - The decisions made
 - And heuristics used or applicable
- ❑ **Focus on the Architecture and the Architecting Process, not just the design and components of the system**
 - Not required, but it's OK to show the design/components to help in describing the architecture and the architecting process

SAE 549 Research Paper

Process Specifics

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To obtain full credit for each, you must provide at least one detailed paragraph for each major category

- Key Tradeoffs:**
 - What trades were considered in the Architecture Tradeoff Analysis (ATA)?
- Steps Taken:**
 - What architecting process was used? What were the process steps?
- Questions Asked:**
 - Key questions (often from stakeholders) which required trades/analyses in order to provide satisfactory answers?
- People Involved:**
 - Chief Architect(s)? Design Team(s)? Stakeholders? Users?
- Options Generated:**
 - Options resulting from architecting process, including any Real Options?
(note that these are not Trade Options, but may be results of Trade Studies & Analyses)
- Decisions Made:**
 - From the questions asked?
- Heuristics Used or applicable:** *(goal: 4 or more)*
 - Descriptive, Prescriptive?
(note that you must explicitly state each heuristic in quotes)

SAE 549 Research Paper Outline

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- ❑ **No specific OUTLINE is required, however the Paper must have:**
 - A Title Page
 - An Abstract
 - An Introduction or Background or System History, etc. to introduce the chosen system
 - Architectural Analysis (according to process specifics on the prior page)
 - A Conclusion or Summary
 - References (either as Footnotes on bottom of pages or as a List of Citations at the end of the Paper)
- ❑ **No specific order of the Architectural Analysis is required**
 - However, the paper must clearly indicate each of the Process Specifics listed on the prior page)
 - Some ways to accomplish this (not required, just suggestions) include:
 - Section Headers
 - Cross-reference List
 - Underlined key words
- ❑ **Any Appendices are Optional**

SAE 549 Research Paper References and Citations

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- ❑ A list of references is essential
- ❑ Make sure you properly and appropriately cite lecture notes and course readers
- ❑ Your paper must be based on the references you have read and not your personal ideas
- ❑ All the text that you turn in that comes from somewhere else must be marked as quotation (*including from other papers that you wrote!*)
- ❑ All the ideas that you turn in that come from someone else must be cited
- ❑ Do NOT speculate; have enough references to present clear and valid statements
- ❑ Do NOT use uncontrolled websites or blogs as a reference
- ❑ Do NOT quote excessive amount of text from other references
- ❑ Do NOT write your paper based on one reference

Cautions Regarding Your SAE 549 Research Paper

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- ❑ There have been previous attempts of students to copy someone else's text into their papers 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”
- ❑ The default punishment for plagiarism by a graduate student is failing the course, and expulsion is possible
- ❑ Final paper will be checked via automated similarity scanning software
 - The system will compare your paper with its database and all internet sources and will compute a similarity percentage
 - High similarity percentage (above 25%) will have major negative impact on your paper grade
 - The system *will discover* any attempt to copy from other sources!
- ❑ Final Paper submission after the deadline (**May 6 2019, Midnight Pacific Time**) gets an automatic F on the final paper grade

Questions Regarding the Research Paper?

- ❑ If you have any question regarding the Research Paper:
 - **DO NOT call or e-mail questions!**
 - **Please use the Research Paper Discussion Board BEFORE the Due Date**
 - **Remember that all questions and all answers will be visible to all students, so please be sure to review the Research Paper Discussion Board before submitting your final paper!**
 - We will attempt to answer questions in a timely manner but you will likely NOT receive a quick answer!
 - **Please do not ask for instructor or student review of outlines, partial drafts, or final papers**