

Spring Final Review (SFR) Assignment

ASEN 4028, Senior Projects II: Design Practicum

Spring 2014

1.0 Document Scope

This document specifies the required elements and deliverables for the oral Spring Final Review assignment.

2.0 Review Objectives

The Spring Final Review (SFR) is the final oral presentation of your senior project. At the SFR, you are required to show how and to what extent the project goals have been accomplished. The system architecture and subsystem designs are briefly summarized while any major changes since TRR are discussed. However, the focus of the SFR is on **verification and validation** of your project. As such a clear presentation and interpretation of your test results in the context of your design and functional requirements is the central focus of the SFR. A successful SFR stems from a comprehensive understanding of the project and an ability to close the design loop by connecting test results to design decisions and performance estimates that were made during the fall semester.

The SFR presentation should address the following questions, in order:

- What is the purpose of the project and what were its specific objectives and measures of success?
- What is the design solution, and how does it work?
- What were the critical project elements for meeting the success criteria?
- What were the associated key design requirements and how well did the design verify them?
- How was the overall performance validated?

Accordingly, the presentation should have the following structure. Evaluation weights are given in parentheses.

- Project Purpose and Objectives (5%).
 - Describe the field of application, the problem addressed, and the potential impact of your project. Typically, this overview will include a CONOPS, updated to help explain the project as quickly and clearly as possible.
 - Review the levels of success defined for your project. Name or label these clearly so that later test results can be directly interpreted in terms of project success.
- Design Description (15%) :
 - This is a top level description of the overall outcome of your design efforts. It should show what the whole system looks like, its key parameters (dimensions, mass, data rates, etc.), what the major elements or subsystems are, and most importantly, how it works. Include a functional block diagram. This provides the context and terminology for more detailed descriptions later in the presentation.

- Highlight major changes made since TRR, and briefly explain why they were made.
- Identify the elements in the design that are critical for project success (critical project elements), and explain why.
- Test Overview (15%):
 - Describe the testing tasks in the project: what tests were conducted, specifically what each test was designed to determine (relate to requirements), and how and where the tests were conducted. Organize the discussion to focus on what tests were most important and why (relate to project success). Do not spend much time on simple acceptance tests, but dwell on more informative characterization and model validation tests, since these convey more understanding of the important engineering aspects of project success.
- Test Results: (45%):
 - Present test results in a concise format that explains what the results are and how they compare to what was expected from prior analysis/modeling, and how they compare to project requirements, i.e. the test data should show how well your design requirements have been satisfied. Don't forget to include estimates of uncertainty in the data, and its implications on requirement verification.
 - Describe how the tests provide a validation of your project functional requirements. Did you achieve what your customer said they wanted in the PDD? If not, provide an engineering explanation of why, i.e. back up your explanation with engineering reasoning, data, etc. In this course, achieving all functional requirements is not as important as understanding why (and being able to convey it).
- Systems Engineering (10%)
 - Summarize the systems engineering approach in the project
 - Identify the main systems engineering issues encountered in the project
 - Note the key lessons learned at the systems engineering level (as opposed to lessons from subsystem design)
- Project Management (10%):
 - Summarize the project management approach, and note key management successes or difficulties encountered (lessons learned).
 - Provide a comparison of the planned and actual budget. Explain any significant differences.
 - Calculate how much effort has been expended in the development of your project, assuming it was carried out by entry level aerospace engineers (current average yearly salary of \$65,000 for 2080 hours work, exclusive of benefits). Include a typical overhead rate of 200%. What would be the resulting "industry" cost to your customer?

3.0 Deliverables

3.1 Final Review Presentation Package

Each group must submit their electronic Final Review Presentation Package in the form of a PowerPoint presentation. DO NOT FORGET LINKED FILES, e.g. video files which must be in the same folder! This presentation must include all the required elements listed in section 2.0.

Provide the PAB with a printout of your presentation in the usual 6 slides/page format, nine copies total.

3.2 Delivery Instructions

All deliverables must be submitted to the SFR dropbox on D2L.

3.3 Date and Time

All materials are due by 11:59, Monday, April 21, 2014.

3.4 No Changes to the Submittal

No changes will be allowed to your presentation materials after the due date and time. You will be presenting from the version of the data package that is submitted. No supplemental material may be distributed at the presentation, with the exception of project hardware components to show during the presentation.

3.5 Presentation Schedule and Format

Presentations will be scheduled during allotted class lecture and lab times as announced or listed on the updated course calendar, including Tuesday, 4/22, 12:15 – 2:00, Wednesday, 4/23, 4:00-4:50, Thursday, 4/24, 12:15 – 2:00, Tuesday, 4/29, 12:15 – 2:00, Wednesday, 4/30, 4:00-4:50, and Thursday, 5/1, 12:15 – 2:00. The presentation order will be provided one week before presentations begin. Contact the course coordinator if your team or customer has a presentation time/day preference.

Each group will be allotted a total of **50 minutes** for their presentations. It is recommend that you prepare for a **35 minute presentation**, leaving 15 minutes for questions from the PAB. *The 50 minute limit will be strictly enforced.*

Teams must expect questions interjected by PAB to clarify issues that arise during your presentations. Further discussions, however, are deferred for the time left at the conclusions of your presentation. Major concerns raised by the PAB must be addressed in the Project Final Report.

The presentations must include the major sections defined in section 2 of this document. Each of these major sections must be clearly identified by name in the presentation.

4.0 Grading

Each group will receive a team grade for this assignment, based on an all PAB group grades in the categories defined in section 2 above. Note that the PAB will evaluate both the engineering quality of the presentation materials and the engineering quality of its explanation in determining your grade. Individual grades will be then be obtained from peer evaluations, advisor evaluations, and PAB consensus. The mean of the individual grades in a group will equal the original team grade for SFR.