

Assignment A5 – Preliminary Design Review (PDR)

Summary

In this fifth and final assignment you will build on the concept you selected in assignment A4 and complete a preliminary design data package, corresponding to the expectations as stated in the Cansat 2016 mission guide. This will culminate in a 30 minute Preliminary Design Review (PDR) presentation of your proposed system.

The description of this phase, cited from the Cansat 2016 mission guide is as follows:

“Phase two is the preliminary design. Teams are to develop designs, prototype, test concepts and generate a preliminary design review (PDR) slide package using the provided template. Teams will submit PDR slides in only PDF format at the designated due date. Teams that do not meet the due date or do not submit in the proper PDF format will be dropped from the competition. A schedule will be made available on when to present a subset of the slides. Teams will have a half hour to discuss a subset of the PDR slides.”

This assignment is worth 1/5 (20%) of your final grade. The final deliverables must be uploaded as a single PDF file with the name: *A5_Team#_2015.pdf*.

In addition to your team number and name, all team members who contributed must be clearly identified by name and email address on the first page of your submission.

1. PDR Data Package [70 points]

The PDR is a “multi-disciplined technical review to ensure that the system under review can proceed into detailed design, and can meet the stated performance requirements within cost (program budget), schedule (program schedule), risk, and other system constraints”. The CanSat PDR shall demonstrate:

- An understanding of the CanSat mission requirements¹
- Allocation and derivation of system and subsystem requirements
- Definition of the CanSat concept of operations²

¹ For CanSat requirements rely on the set you developed for A2, refine as necessary.

² For Conops (and stakeholder analysis) rely on what you did in A1. Refine as needed.

- Overview of preliminary design that meets specified requirements³
- Results of, or identification of, necessary trades to support preliminary design. While it is ideal to have completed trades prior to the preliminary design, it is not necessary.
- Results of, or identification of, necessary prototyping or testing efforts necessary to support or finalize the preliminary design.⁴
- Preliminary budget
- Detailed development schedule

2. PDR Presentation [30 points]

Preliminary design reviews will be conducted via webex and coordinated by the team lead(s) with the faculty and TAs. The PDR presentation shall be 30 minutes or less in duration including time for questions. Presentation reviewers shall be permitted to ask questions during the presentation (i.e., questions are not held until the end of the presentation). Part of the grade is the ability of the team to answer detailed questions. The PDR shall follow the presentation template posted on the CanSat Competition website. The presentation in PDF format is the only deliverable, no separate report.

A separate email will be sent regarding scheduling of the PDR presentations which will take place *between Monday November 23, 2015 and Wednesday November 25, 2015*. Teams will not be invited to attend each other's presentations, however, after the conclusion of the grading and ranking process for A5, all PDR presentations will be accessible.

At the end of assignment A5 the top three teams from each school will be announced by November 26, 2015 in order to allow sufficient time for those teams who wish to register for the actual Cansat 2016 competition by November 30, 2015

Grading Rubric and Time Commitment

1. PDR Data Package	max 70 Points
2. <u>PDR Presentation</u>	<u>max 30 Points</u>
Total	max 100 Points

Time commitment: # of team members x 3 weeks x 4 hrs/week/person
 For a team of 5 this corresponds to about 60 person-hours

³ Your PDR level design should be traceable to the concepts you developed and selected in assignments A3 and A4. If there are any trade studies or sensitivity analysis you conducted to support your design choices, you should include them in the PDR presentation package.

⁴ It is not expected that for purposes of this class 16.842 / ENG-421 that you build any physical prototypes of your CanSat preliminary design. If however you choose to do so, including some simple approaches using materials such as cardboard, acrylic or any 3D printed parts to demonstrate your packaging concept / layout, we will not prevent you from doing so, but the creation of a physical prototype is completely optional and not expected to achieve full points in this assignment.

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