LECTURE THIRTEEN: Mid - Course Design Review Results

Remark: Clearly, this lecture should reflect the real experience of the course instructor as pertains to a given program. The following however, are what we faced at the University of California at Riverside during the Spring of 2001.

Introduction

The general results of Mid-Course Design Review are discussed in class. It should be pointed out that despite repeated announcement some students have left out important sections in their presentations. The following issues, left out by some, are very important and must be included not only in the final report, but also we believe that in due time in the final presentation.

For Final Report

We shall not repeat the extensive instructions, from the lecture notes on various issues related to this class. However, please be advised that this is a design course and by definition is a culmination of your entire undergraduate program. Every project must have discussions on all issues described in Lecture Notes One, Four, Five, Six, and Seven so far, and whatever else we will be adding to these notes regarding the final report. What some of you have left out in your presentations and must be included in your final reports are as follows. ***Note however that, how, and in which sections to describe these items are given in the notes.***

Problem Statement, you must explain in technical terms whatever you are trying to design. Please do not assume that your problem is well known or everyone knows that. Do not assume that others can appreciate the complexity of your project.

Design Specifications, every project has a set of specifications, which are generated based on the problem statement and all relevant design criteria. These specifications in whatever shape and form, numeric or otherwise, must be defined in a manner that leave no ambiguity. You cannot design without a proper set of specifications. Also derive design constraints based on the problem specifications. For instance, if you want to maneuver a 3Kg object that has a specific geometry, then this requirement translates into a specific range of torque that has to be generated by a motor, which in turn translates into a specific operational range for voltage or current corresponding to that motor. Based on this quantitative analysis you select a motor, *per se,* that meets these specifications. This choice, *or lack of it,* inherently imposes a

Design Constraint, which means, one must address or anticipate a set of realistic design constraints when the design specifications are **not** met. These constraints can be on the algorithms or hardware.

Technical Approach, the final report must include this section.

Cost, as imbedded under the section in ***Budget,*** must be included in the final report.

Test Plan, describe test procedures and results to verify the design and should be included.

Lessons Learned, is the unavoidable part of any design process and must be addressed.

Elements of Design, referring to all issues that are described in this course such as marketing, ethics, which inherently impose design constraints on every engineering project, and these issues must be analyzed and reviewed in the final report, together with many more that will be described in future lectures.

Again, please note that the above list is only a reminder of issues that were left out by some (in our class), and is a partial list of issues, which you must address in your final report. In other words, to prepare the final report one must include all sections that are described in the notes, while paying a particular attention to the above list.

Faculty Comments on Past Presentations

Here again, the course instructor must provide specific suggestions to students in a given program. In our presentation, one major issue that was raised by the faculty members was that some of the students just read from a piece of paper, which shows they have not yet mastered the subject to the point that they can talk about it from their heart. This situation must be rectified for the final presentations. Also, do not switch back and forth between speakers in your presentations.

Overall, our class did an excellent job, and we had corrected all our problems for final presentations.

Other Lessons Learned

(1) Based on administrative experience, we believe that it is better to request ***two*** copies of intermediate report, instead of one initially suggested. One copy remains in the student activity file for each group, and the other copy will be returned to students with possible suggestions.
(2) Another issue that must be noted is the following. Some groups changed their slides as they watched earlier presentations. In this process, unfortunately they forgot to change their corresponding report – a situation that must not occur. In future we will be more restrictive about handing over slides.
(3) Despite major efforts to accommodate everyone, a few groups did not benefit from the presence of their advisors. In future, perhaps we must schedule this presentation event as early as the time when projects are selected and the list of participating technical faculty advisor becomes known.
(4) Overwhelmingly, students agreed that the best time for this presentation was during the first week of the second term, because they benefited from the time spent on their preparation during their break.

Additional Presentation Issues

Again, this is our experience at University of California at Riverside during the Spring of 2001. We believe this information may be helpful for the future classes and that is why we are sharing those in this textbook. In our Memo to students regarding their Mid-Course Presentations, we gave specific instructions to them to consult with their technical faculty advisors regarding their preparations. However, some faculty members were indicating that they have not seen the slides and/or the students have left out important information in their presentations. Please meet with your technical faculty advisors weekly, to discuss technical issues and ask them to review your final presentations' slides.

The following list is the essence of the comments, which we had received during our Mid-Course Design Review, and should be carefully considered by all students.

(1) Students should not complain about, nor blame, the hardware given to them. All equipment malfunction should be reported as early as possible. Identify alternative hardware or approaches as early as you can.
(2) Do not be informal, and stress the fact that you will complete the project. You will not be allowed to complain about anything and in particular these peripheral issues during your final presentations.
(3) Do not lose sight that this is a ***technical presentation*** and not a made for TV production.
(4) Do not focus on minor details, and do not assume that everyone knows your problem. The real challenge is to keep a balance of how much or how little you must talk about an issue. Learning this balancing act is both an education and an art!
(5) Again, present your problem statement and specification list clearly and explicitly.
(6) Those of you who discussed cost should know that one-time (non-recurring) cost is different from per- unit (recurring) cost and we will discuss this matter in Lecture Seventeen.
(7) All graphs and figures as well as tables and charts should be labeled properly as discussed in next lecture.
(8) Clearly state who did what in your future presentations and reports.

Final Thought

Although we are open to any last minute ***super performance*** by any one of you, we are quietly compiling a grade based on your performance thus far, which is based partially upon the following factors. The logging in your laboratory notebook, your recent presentation and intermediate reports are among those factors to be considered in this process. These factors will be incorporated with those corresponding to final presentation, and final report, to come up with the final course grade. Certainly, your attendance and other matters discussed in class are also being monitored and incorporated in the final grade.

Closure

The class ends with the following remark. You must build eventually a project that works. So, please do not try to be too ambitious and extend yourself very thinly in several directions. There is nothing worse than saying what went wrong, instead of saying what you have accomplished. Please do not go that way. Or in the words of Professor T.J. Higgins, "Never explain why you didn't do it, no one is interested in that!"

Essential thoughts in this lecture

Issues.	Applicability to your project, if any.
Each and every piece of these lecture notes forms a tile on the final mosaic of this course. Try to assemble those such that it portrays your contributions to the underlying project as best as possible, and your learning of issues discussed.	Obvious! However, you may claim that, for instance, your project has nothing to do with certain issues discussed in class. If that is the case, then you must justify your claim.
Anything else?	Write about it.