Texas A&M University
Department of Computer Science
Spring 2007

CPSC 483: Computer System Design

Section 501:	TR	3:55 - 5:10PM	HRBB 104 (Lecture)
	TR	1:00 - 3:00PM	HRBB 218 (Lab)
Section 502:	TR	3:55 - 5:10PM	HRBB 104 (Lecture)
	MW	4:00 - 6:00PM	HRBB 218 (Lab)

Instructor: Ricardo Gutierrez-Osuna, rgutier@cs.tamu.edu, 520A HRRB, 845-2942

TAs: Amar Rasheed, aa6102@cs.tamu.edu

URL: http://courses.cs.tamu.edu/rgutier/cpsc483_s07/

Catalog Description

Engineering design; working as a design-team member, conceptual design methodology, design evaluations, total project planning and management techniques, design optimization, systems manufacturing costs considerations; emphasis placed upon student's activities as design professionals. Prerequisites: CPSC 431 and 462 and senior classification.

Textbook and references

No official textbook is required. Material will be drawn from the literature, manufacturer's datasheets and user manuals. A highly recommended introduction to the engineering design process is the textbook by Barry Hyman entitled *Fundamentals of Engineering Design*, 2nd Ed., (Prentice Hall, 2003).

Detailed Course Description

CPSC 483 is a project-oriented course aimed at developing system integration skills. Students work in groups of 3-4 people to complete a significant engineering design project. Every project requires complete implementation, documentation and demonstration of a computing system design with both hardware and software components. The focus is not only on the final product but also on design methodology, management process and teamwork.

Each team will be required to manage its own efforts to complete its project in a timely manner. Group members will be required to keep individual journals recording both their efforts as well as their personal impressions of the project. Students will be graded based on both the quality of the group product and their individual contributions.

Every team will be required to schedule a weekly meeting with the course instructor and the TAs, preferably during the official lab hours. These meetings must be attended by every group member. Since the projects will be student managed, the exact nature and style of these meetings is at the group's discretion. However, every member of the group is expected to participate.

During final exams week, each group will make a public presentation describing and demonstrating their work. These presentations will be open to the university community and will be graded. Specific details on the nature of these presentations will be provided as we approach the end of the semester.

Course objectives

To prepare students for engineering practice with a major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

Expected outcomes

It is expected that successful participation in the course will allow the student to demonstrate:

- an ability to apply knowledge of mathematics, science, and engineering (3.a)
- an ability to design and conduct experiments, as well as to analyze and interpret data (3.b)
- an ability to design a system, component, or process to meet desired needs (3.c)
- an ability to function on multi-disciplinary teams (3.d)
- an ability to identify, formulate, and solve engineering problems (3.e)
- an understanding of professional and ethical responsibility (3.f)
- an ability to communicate effectively (3.g)
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (3.k)

Grading Policy

The final grade you will receive in the class will be based on points accumulated during the semester. Thus, both continued progress (the process) and the quality of your product (and other deliverables) will determine your grade. Although the bulk of your grade is based on the performance of your team, individual performance will also be gauged.

- **Project Proposal (15%):** These points will be based on (1) the originality, creativity and feasibility of the proposed work, the analysis of alternative solutions, the consideration of economic and societal aspects, the project management approach (10%), and (2) the quality of the oral presentation (5%). *The expected contents and grading criteria for the project proposal (both written and oral components) have been posted on the course webpage.*
- **Bi-weekly Reports (10%):** This grade will be based on your team's ability to maintain the project on schedule, as well as on the quality of the bi-weekly written reports. The bi-weekly report should be incremental, and should specifically address the following:
  (1) Any major accomplishments during this time period, including figures with results
  (2) Any major design decisions during this time period, describing alternatives and rationale for selection among them,
  (3) Any major problems that may jeopardize completion of the project, and alternatives to overcome them, and
  (4) An overview of the plan of work for the following two weeks.

- **Critical Design Review (10%)**: The CDR is a mid-semester evaluation of your project. The grade will be based on your progress to date, and the quality of the oral presentation and accompanying written report. *The expected contents and grading criteria for the CDR (both written and oral components) have been posted on the course webpage*.
- **Final Communication (15%):** This grade will be based on the quality of the final presentation (5%), as well as the contents and professional finish of the documentation (10%). *The expected contents and grading criteria for the final communication (both written and oral components) have been posted on the course webpage*.
- **Project Grade (20%):** A final grade will be assigned to your project based on the completion of all the objectives stated in the proposal, as well as on a live demonstration in front of the class. The complexity of your project and the size of your team will be factored in.
- **Individual Performance (30%):** Points in this category are awarded based on assessments of your personal contribution to the team efforts:
    - Notebook (10%): A grade will be assigned to your personal design notebook based on:
        - The regularity of your entries throughout the semester. Make sure that you begin each annotation with the date of entry.
        - The evidence of an engineering design process, including but not limited to schematics, block diagrams, circuits, pseudo-code, tables of experimental results, and mathematical derivations.
        - The clarity, legibility and organization of your annotations.

      Samples of good, average and poor notebooks from previous years will be made available at the beginning of the semester.
    - Participation (10%): The instructor and TAs will evaluate your attendance to meetings, participation in the discussions, and participation in team efforts.
    - Peer Review (10%): You will be asked to evaluate and comment on the performance of each of your team members.

NOTE: Grades will not be assigned until all project deliverables have been turned in, all borrowed items (e.g., keys, books, equipment) have been returned to their proper location or their owner, and the workstations in HRRB 218 have been thoroughly cleaned up.

Attendance Policy

Not attending weekly meetings harms the other members of your group and makes it much more difficult for the instructor to assess your contributions to the group effort. Therefore, attendance, punctuality and active participation in the weekly meetings are required. Failure to attend a meeting or late arrivals (more than 15 minutes late) will reflect in your individual grade. Emergencies, however, do happen. Lateness or absence can be excused if there is a valid reason. Illness, job interviews out of town, death in the family, inclement weather or accidents for commuters, etc., are valid reasons. Oversleeping, a term paper due, an exam to cram for, etc., are not valid reasons. Ultimately, the instructor reserves the right to determine what constitutes a “valid reason” on a case by case basis. If you know you’re going to be late or miss a class, please let the instructor know (e-mail, phone call). Also let your teammates know, so that they may plan for your absence and make the best use of their time.

Scholastic Dishonesty

Please review Section 20 of the TAMU Student Rules (http://student-rules.tamu.edu/) for a list of examples of scholastic dishonesty. In particular, be aware of the issues of *plagiarism* and *fabrication of information*. The use of existing software implementations or hardware designs should be discussed with the instructor prior to being incorporated into the project. Proper credit must be given to the original source of concepts, designs, software, technical documents, scientific literature, etc.

Course Schedule and Milestones

Week	Date	Classroom meeting	Material due dates
1	01/16	Course introduction	
	01/18		Resumes
2	01/23	Teams are formed	
	01/25		
3	01/30		
	02/01		
4	02/06	Proposal presentations	Project proposals
	02/08	Proposal presentations	
5	02/13		
	02/15		
6	02/20		Biweekly report
	02/22		
7	02/27		
	03/01		
8	03/06	CDR presentation	Critical Design Review
	03/08	CDR presentation	
9	03/13	Spring Break	
	03/15	Spring Break	
10	03/20		
	03/22		
11	03/27		Biweekly report
	03/29		
12	04/03		
	04/05		
13	04/10		Biweekly report
	04/12		
14	04/17		
	04/19		
15	04/24		Biweekly report
	04/26		
16	05/01		
	05/03		
17	05/08	Final presentations/demos	Final report
	05/10	Final presentations/demos	Final report