Prof. Vadhva **CpE 191/EEE 193B** **Sp 2016**

Senior Project I

Objectives of Course:

This course centers on developing hardware and software project planning and engineering design skills. Emphasis is placed on design philosophies, problem definition, project planning and budgeting, written and oral communication skills, working with others in a team arrangement, development of specifications and effective utilization of available resources. The team project will be presented to the CPE faculty and students at a prearranged seminar. 2 units.

Grading:

-Grades will be based on your project documentation, presentation, meeting scheduled milestones, quizzes, plus a qualitative evaluation and team member evaluations.

Grade Proposal

Complete a 1-page proposal for your project letter grade. Requirements as followed,

A Grade - Complete System
B Grade - Enhanced System
C Grade - Minimum System (at least 70% of project complete)
Sign-off section for all team members and instructor.

Each grade level must include:

1. Functionality of hardware block by block, labeled in numerical order.
2. Functionality of software block by block, labeled in numerical order.
   Must demonstrate functionality

Weekly Reports; Due on Mondays 6:00 PM

Project Requirements

1. Project must show intelligence, i.e., CPU, controller, VLSI, complex state machine, etc.
2. Must be 30-50% software.
3. Part of your grade will be based on new ideas and technology.
4. At least 50% original design.

Deliverables by the end of the semester

1. Demonstration of functioning project
2. Testing documentation
3. Documentation binder.
4. Users manual
4. Peer evaluations.

If your project does not work, you don't graduate!
Your project must be at least 80% original design, and 30-50% software.

General Course Information:

Instructor: Prof. Suresh Vadhva
Office: RVR 5022
Email: Vadhva@csus.edu

Key Dates:

Week 3:	Draft Project Proposal (Feb 8)
Week 4:	Final Project Proposal & Approval (Feb15)
Week 4:	Draft WBS & Schedule (Feb 22)
Week 4:	Peer Evaluation Confidential (Feb 22, email)
Week 5:	Proposal Presentatio (Feb 24)
Week 6:	Final WBS & Schedule use Miscrosoft Project (Feb 29) printed copy (Mar 2)
Week 8:	Peer Evaluation Confidential (Mar 14, email)
Week 9:	Design review. (Mar 30)
Week 9:	WBS & Schedule update (Mar 28) and printed copy (Mar 20)
Week 11:	Draft Test plans both hardware and software (Apr 11)
Week 12:	WBS & Schedule update (Apr 18) and printed copy (Apr 20)
Week 12:	Peer Evaluation Confidential (Apr 18, email)
Week 12:	Project inspection. (April 20)
Week 12:	Project inspection. (April 20)
Week 15:	Project Presentations
	Wednesday May 11 **2:00 -6:00 PM Venue RVR 3001**
Week 15:	Peer Evaluation Confidential (May 16, email)
Week 16:	Final Demo (Wednesday May 16 , starting at 2:00 PM)
Week 16	Final Documentation (Due Friday, May 20),

Attendance is required for lectures and group meeting.

Ownership of Projects:

Non Sponsored Projects:
The entire project (hardware, software, mechanical components and any support devices or software) belongs to the group regardless of individual contributions- moneteray, technical, or donations.
Members who leave the group for any reason, forfeit their rights to the project.
Individual members of the group cannot be sponsors of the project.

Funded Sponsored Projects:
Sponsored projects are the property of the sponsor upon completion
Individual members of the group cannot be sponsors of the project.
GRADE
DEMONSTRATED PERFORMANCE EXPECTATIONS

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- Project Completions
- Project Complexity
- Quality of documentation
- Lecture and meeting attendance
- Peer Evaluations
- Project Presentation
- Project Demonstration
- Ethics research Paper and Presentation
- Team members work effectively with one another, sharing the workload and responsibilities.
- The project team is effectively managed by the team's project manager.
- The project team meets at least once weekly to review progress, to update the schedule and work plan. Time on each work assignment is collected, new assignments are made and meeting minutes are kept.
- The project team meets weekly with the their faculty adviser, providing accurate status on work in progress and the team's schedule. Documents are reviewed and discussed, and all changes to the team's work plan and schedule are discussed and should be approved.
- Development work follows the team's management plan, including the team's work plan and schedule.
- The project team implements an effective quality assurance process. For example, all work products are formally reviewed and approved by the group prior to submission to faculty adviser.
- Meetings with project sponsor/users are well-planned and effectively managed with results and follow-up well documented.
- The project sponsor is informed about project status and progress throughout the development of the product..
- Team members work effectively with one another, sharing the workload and responsibilities.

WBS and Project Schedule Requirements

1. List 25-30 hardware & software tasks. 30-50% software tasks.
2. Assign task per team member.
3. List 4-5 demo milestone dates. Remember, demo milestones are worth 60% of your grades.
4. Milestones must be scheduled during the last 12 weeks, and no less than 2 weeks apart.
5. Examples of milestones:
    A. Research complete/design-phase started
    B. Design-phase complete/proto-phase started
    C. Proto-phase complete
    D. Software design complete, etc…
6. We will discuss details of demos within each team.
7. Overview schedule for EEE 193A/CpE-190: list 4-5 major milestones.
8. Must be in Time-Line format with inter-dependencies. Milestone dates & description section listed on front page.
9. Sign-off section includes all team members and instructor.

Documentation Requirements

Indexed documents must include the following:

- Project Abstract
- Introduction
- Product Proposal both Fall and Spring Semesters
- Project WBS and Schedule including milestones, (Spring and Fall Semesters).
- Funding Proposals submitted
- Task assignment per team member
- User Manual (how to operate your project)
- Design documentation both semesters
- Block diagram & documentation at block level for software, both semesters.
- Block diagram & documentation at block level for hardware, both semesters.
- Software: flowcharts, pseudo-code, and documentation to subroutine level, both semesters.
- Hardware: schematics and documentation to component level, both semesters.
- Mechanical: mechanical drawings and documentation, both semesters.
- Test plan for software
- Test plan for hardware
- Integration plans
- Accomplishment
- Summary
- References

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Final Presentation Guidelines

1. Oral presentation:
   - Each team will have 17 – 20 minutes including demo.
   - Each team member is required to present orally, 3min/person.
   - Each member must own at least one topic for oral presentation

2. Some core topics are (you can add more to your presentation):
   - What you are designing and hardware block diagram.
   - How software is interfaced with hardware and software block diagram.
   - WBS and Schedule
   - Difficulties your team had and what you did to overcome them.
   - Where your design is at, what left to be done, and if you can finish your goal.

3. Hardware/Software Demo:
   - Say what the hardware will do before going into detail.
   - Explain what is happening with software for hardware to perform.
   - Explain what is going on inside hardware as you demo. Example: the robot is turning because it sensors sensed the wall and the software algorithm is computing the next opening…
   - You will need two people for hardware/software demo, one person will perform demo, the other explaining what is happening.

Your Grade is based on:

1. Ease of comprehension of your presentation. Use top-down approach.
2. Smooth transition from team members, i.e. good flow in presentation.
3. Presentation materials: slides, easy-to-read block diagrams, functional hardware/software, and no hiccups.
4. Professionalism.
5. Ability to answer questions satisfactorily.
6. Meeting your allotted time.
7. Ability to attract the audience. Make it interesting.
8. Team must verbally practice the presentation at least 2 to 3 times or until the whole team is able to perform the presentation within the allotted time and achieve the criteria above. Questions will be held until end of presentation.