CptS 423 - Software Design Project II

Course Information:
CptS 423 Software Design Project II - Spring 2015
3 credit hours
Prerequisites: CptS 421, certified major in Computer Science, Computer Engineering, or Electrical Engineering.

Homepage:
The home page for this course is hosted at the WSU, EECS Socialcast platform.
https://eecs-wsu-edu.socialcast.com/
Grades will be posted on Blackboard.

Class Meeting Times:
CptS 423 class will meet only once during the first lecture (on Tuesday January 13th at 13:25 PM in EME 52). The instructor will meet with each individual team weekly for the rest of the semester. The team mentors will join these meeting through conference calls. Weekly meetings will start on Monday Jan 19th.

Meeting Locations:
The room EME 107 will be used by the CptS 423 Senior Design teams. The teams will have some space in Sloan 353. For weekly meetings, we will use one of the following rooms: EECS conference room (EME 102A), instructor's office (EME 102D), CptS423 classroom (EME-52).

Instructor:
Name: Sakire Arslan Ay
Office: EME 102D
Telephone: (509)335-4089
E-mail: arslanay@eecs.wsu.edu
Office Hours: Tu, Th, F, 11am-12pm

Text Book:
There is no required textbook for CptS423. The **recommended** textbooks/references are:
- Object Oriented Software Engineering Using UML, Patterns and Java, 3rd Edition, by Bernd Bruegge and Allen H. Dutoit, Prentice Hall, 2010.
- How We Test Software at Microsoft, by Alan Page, Ken Johnston, Bj Rollison, Microsoft Press, 2008.
- IEEE Standards for Software Engineering

Course Overview:
Senior design courses allow senior-level students to integrate their software engineering knowledge and produce a useful engineering artifact. Students practice major activities in software development process, including communication, planning, modeling and design, construction, and deployment. It serves as a final preparation for students entering into industry. Students get experience in working as teams, participating in project planning and scheduling, writing reports, giving presentations, and dealing with uncertainties in a professional manner.
This is a two-semester senior design sequence. The first semester (CptS 421) is a three-credit course in which the design teams are formed; mentors are interviewed; and the design process and project development are started. A series of assignments are completed that results in written documents, audio/visual presentations, and an alpha prototype implementation. The second semester (CptS 423) is a three-credit course in which the latter phases of the project is documented, project design is completed and tested, and the final software product is presented to external constituencies such as industry representatives, other students, and faculty in general.

Student Learning Outcomes:
In CptS 421/423, students will engage in projects that require them to perform all steps in the software development lifecycle. Outcomes of instruction include:
- experience in large-scale software development;
- communication with clients and other stakeholders;
- gathering of project requirements;
- designing of software according to requirements;
- implementing the design;

- performing adequate verification, validation, and testing procedures;
- delivering a professional quality software that meets the client's requirements;
- writing product specifications, documenting different phases of the project;
- using software development and maintenance tools
- planning and developing project timelines;
- demonstrating an awareness of professional responsibilities;
- negotiating team dynamics;
- making presentations, using audio/visual tools, at different stages of the project.

Teams:

Teams will initially consist of 3 to 5 students and the team will receive their primary technical guidance from a mentor provided by a sponsoring company. It is important that you are placed onto a project that will utilize your unique engineering skills. Similarly, it is important that you have engineering skills to bring to your team.

Evaluation of Student Work: Both team *process* and subsequent products will be evaluated. Process and products will be evaluated based on the team's abilities to:

1. Propose a design for the software, and clearly identify the design goals.
2. Clearly articulate the design of each subsystem after a through exploration of multiple solution paths.
3. Narrow down design choices in ways that refine concepts and lead to focusing on the most promising design solutions.
4. Analyze the proposed design for compliance with design goals.
5. Communicate in an organized and professional manner with multiple audiences.

Yellow Slip: Students in CptS423 must demonstrate competency at 1) functioning within teams and 2) understanding professional and ethical responsibilities. The yellow slip is a way for team members to draw the instructor's attention to a member who exhibits behavior that contradicts these competencies. Until semester grades are submitted to the WSU Registrar, students can issue a "yellow slip" to a team member and email it to the instructor. The result of a yellow slip can be severe enough to change the letter grade.

Student Work Load for CptS 423:

CptS 423 is a 3-credit course. The 3-credit designation normally implies that on average the student is expected to spend 3hrs ("lectures") + 6hrs ("homework") = 9 hours per week working on this course. The 9 hours per week will be spent in the following activities: 1) meeting with the instructor ; 2) meeting with the team and the mentor,; 3) completing writing/presentation assignments; 5) reading the technical literature related to your design project; 6) attending the sponsor company visits arranged by your mentor; 7) helping with project management; 8) engaging in the design process; 9) organizing team headquarters including obtaining pertinent hardware and software; 10) planning for and obtaining approval for a preliminary description of the demonstration prototype;

There would be four writing assignments and two presentation assignments in CptS 423. Please see Appendix A for a complete list of assignments.

Writing Assignments: There would be three writing assignments in CptS423. Please see Appendix A for a complete list of assignments.

Senior Design Poster and Poster Presentation: Each project team shall prepare a poster for the team project and present it at the annual EECS Open House on April 23, 2015. Hundreds of practicing engineers attend the EECS Open House, therefore it is a great opportunity to demonstrate your work. A team of judges from industry will evaluate all EECS senior design posters. Winners of the poster competition will be announced in the evening at the EECS awards banquet. Detailed guidelines on the poster preparation and poster session will be available on Socialcast.

Your poster will mainly be evaluated based on the quality, content and design of your poster. A percentage of your poster grade will be based on your teams' performance during the poster presentation session. The instructor will evaluate and grade your presentation. Scores from the industry judges will NOT directly factored into your course grade.

Weekly Review Meetings:

Each team will meet once a week with the instructor and the project mentor, where all team members will report the progress for the past week and present the plan for the upcoming week. Each team member will prepare 1 or 2 slides summarizing their progress and plan. The team liaisons should upload the slides onto Socialcast as a single file (both Power Point and PDF files are fine). The instructor will evaluate and grade the progress within the past week based on the weekly meeting presentations and the activity at Socialcast and GitHub. If a team member cannot attend due to a valid excuse, s\he should notify the instructor and the team members and report his/her progress on Socialcast. Skipping a meeting without

notification will result in a score of "0" for weekly evaluation. Students with more than three **unexcused** absence in weekly meetings will receive a course grade of "F".
For some teams we may occasionally skip weekly meetings. If so, you will report your progress for the weeks since your last meeting.
Miscellaneous Advice: The most successful CptS421/423 teams schedule face-to-face team meetings at least on a weekly basis and they insist on 100% team attendance at these meetings.

Grading:
All CptS423 material will be graded based on a scale from 1 to 5. "Score 5" means your work satisfies all the expectations. Above 5 is to recognize exceptional work. Extra credit will be given up to 0.5 points.
All graded items (including writing assignments, presentations, demonstrations, meeting reports) will be evaluated using rubrics, which would be available at the Socialcast course page. Students should use the appropriate rubric to guide their work.

Weighting of Graded Components:

1. Writing Assignment #1: Test Plans for Beta Prototype ..... 10 % (Team Grade)
2. Writing Assignment #2: Solution Approach – 2nd Revision ..... 3 % (Team Grade)
3. Writing Assignment #3: Test Case Specifications and Results ..... 15 % (Team Grade)
4. Writing Assignment #4: Final Report ..... 25 % (Team Grade)
5. Presentation: Senior Design Poster and Poster Presentation ..... 20% (Team Grade)
6. Weekly Progress Evaluations by the Instructor ..... 15 % (Individual Grade)
7. Mentor Evaluations ..... 12% (Individual Grade)

100 %

Peer Grading: At the end of the semester, each student will fill-in and submit a "peer evaluation" form. Students will be asked to provide feedback about the contributions of their teammates to the project and to the assignments. The assignment scores (above) will be adjusted according to peer evaluations, i.e.,
adjusted assignment grade = team assignment grade X percentage of contributions
The instructor reserves the right to adjust the peer evaluation scores if the instructor and the mentor agree that the scores were prejudiced (either too high or too low).

Letter Grades:

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F
Total Score	93% - 100%	90% - 93%	86% - 90%	83% - 86%	80% - 83%	76% - 80%	73% - 76%	70% - 73%	66% - 70%	60% - 66%	0% - 60%

Socialcast and GitHub:
We will use the Socialcast enterprise social networking platform for easy communication between the instructor, students, and mentors. In addition, all course material (instructor prompts and student work) will be posted and managed on Socialcast. The instructor will communicate with the class primarily via announcements posted at the Socialcast course group page. Each individual team will also have a private group on Socialcast, where members of that team can discuss their ideas and ask questions to their mentor. The instructor and the industry mentor will peer in and monitor the team's progress through the team's Socialcast stream.
All teams need to host their source code on GitHub in their assigned repositories.

Protecting Intellectual Property (IP):
Teams have an obligation to protect IP they develop and IP that the mentor and sponsor share with them. WSU employees, including faculty, staff and graduate students are legally bound to protect intellectual property. Do not post IP at non-password-protected websites. Questions about IP should be directed to your mentor or directed to WSU attorneys trained in IP issues. Similar comments apply to information that government and military entities label as "sensitive" or "classified". Ask the instructor if you need contact information for WSU professionals working with these issues.

Academic Integrity:
Academic integrity will be strongly enforced in this course. All work submitted for grading is to be original. Material submitted that is not original must be cited as described in technical writing text books. Any student caught cheating on any assignment will be given an F grade for the course and will be reported to the Office Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions."

Students with Disabilities:
Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center. For more information contact a Disability Specialist on your home campus:
Pullman or WSU Online: 509-335-3417
http://accesscenter.wsu.edu, Access.Center@wsu.edu

Campus Safety:
Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended that you review the Campus Safety Plan (http://safetyplan.wsu.edu/) and visit the Office of Emergency Management web site (http://oem.wsu.edu/) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.

Appendix –A : CptS423 Assignments

Assignment Generic Name	Assignment Descriptor	Tentative Deadline	Average number of pages	Terse summary of the prompt given to students for these assignments:
Writing Assignment 1	Test Plans for Beta-Prototype*	Feb 6th	3 pages + appendices and images as needed	Document the scope, approach, resources, and schedule of testing activities. The requirements and the components to be tested should be identified. Each test should be documented with a "Test Case Specification".
Writing Assignment 2	Solution Approach-2nd Revision*	Feb 20th	5 pages + appendices and images as needed	Second revision of your Solution approach document.
Writing Assignment 3	Test Case Specifications and Results*	March 9th	6 pages + appendices and images as needed	Provide test case specifications and report the beta-prototype test results.
Writing Assignment 4	Final Report*	May 4th	10 pages + appendices and images as needed	This written report covers all team activities during the entire fall and spring semesters.
Presentation Assignment	Poster Session	April 23rd		The CptS423 poster presentations will be at the annual EECS Open House. Hundreds of practicing engineers attend the EECS Open House. A team of evaluators from industry will evaluate all EECS senior design posters (including CS senior design posters). The demonstration prototype is an integral part of your poster session. Winners of the poster competition will be announced in the evening at the EECS awards banquet Note: Twenty-four hours before the poster session the department will upload your poster and your project summary on the EECS website so the judging panel and other professionals can see your work and give feedback to the team during the poster session. The team liaison is responsible for delivering your Power Point poster to the instructor by the announced deadline.

* CptS423 is a "writing in the major" course.