Contacts

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Description

CS491, the Industry-Sponsored Senior Design Project is a two-semester course, six credit course. Three credits count as CS Electives; three credits count as Senior CS Electives.

The goal of the course is to provide students with real-world development and project management skills by working with actual companies on real, non-academic projects. This approach helps the students develop the hard and soft skills needed to launch a successful career.

Industry sponsors submit a number of projects for the students to choose from. For each of these candidate projects, the sponsor provides an RFP (request for proposal).

Each student submits their project preferences. Every effort is made to align the students with their preferences. The students are then broken into teams. Each student team functions as if it were a small company that is contracted to the sponsor to perform the given project.

The student teams respond to the sponsors' RFPs with written proposals, in which each team describes its proposed solution to the project. The team and the sponsor meet and agree to the work to be performed, and then, over the course of two semesters, the team designs, implements, and delivers their solution.

Along the way, the team learns how to apply many of the skills learned in CS321, as well as the technical skills relevant to the team's particular project. Past projects have involved:

- Full stack development
- Operating System hardening
- Secure networking devices (cybersecurity defense)
- Data acquisition and analysis
    - Effect of weather on WiFi
    - Mitigating and minimizing ground traffic delays at airports
- Social media comment generators used to study the effects of sentiment on national policy
- AIs used to help weed out corruption and fraud in the regulated drug markets
- Game-theory systems and AIs to help plan for all manner of geopolitical scenarios

There are only a few lectures per semester. The majority of the class meetings are reserved for mentor meetings (to help guide the teams' progress on their projects) and for team meetings (so that the teams can spend that time working on the projects themselves). The class lectures are largely dedicated to the "soft skills" that one needs in order to excel in a professional environment.

Classwork is assigned and collected via BlackBoard. There are no tests. There is one book to read, followed by a team discussion. There are two presentations to give (both updates on the team's project status). There is a final paper to be done by each team, documenting the project. Each team is also asked to write a brief version of this paper in IEEE format.

Learning Outcomes

- Customer interactions
- Project management
- Teamwork
- Application of the skills acquired in CS321
- Application and acquisition of technical skills (vary with project)

Textbook

"The Five Dysfunctions of a Team", Patrick Lencioni, Jossey-Bass, 2002

A PDF of the book will be provided via BlackBoard, or you can download it at https://epdf.pub/the-five-dysfunctions-of-a-team.html.

Alternatively, you can buy a copy at Amazon for under $20,

Topics

- Proposals
- Requirements Traceability Matrix
- Teamwork
- Ethics
- Managing customers
- Development environments

Grading Policy

The course is graded on the Undergraduate Special scale. This scale allows for A+, A, A-, B+, B, B-, C+, C, C-, D, and F, as well as AB, IN, IP.

At the end of the first semester, students' grades will be calculated and sent to each student, but the semester's grade will as IP. At the end of the second semester, the second semester grade is recorded in the usual way, and the first semester's "IP" is replaced with the grade the student earned in the first semester.

Honor Code

All students are expected to abide by the GMU Honor Code and the CS Department's Honor Code policies. This policy is rigorously enforced. Review the university and department honor code and present any questions regarding the policies to instructor. Cheating on any assignment will be prosecuted and result in a notification of the Honor Committee as outlined in the GMU Honor Code.

Suggestions and Additional Policies

This class requires that students be self-motivated and able to work on teams. There are very few assignments (aside from reporting on the progress of your project) and no tests. The project is the work.

Disability Accommodations

Students with a learning disability or other condition (documented with GMU Office of Disability Services) that may impact academic performance should speak with me ASAP to discuss accommodations.