CS-UY 4523 (17099) - Design Project (DP II)

(Version 1)
Spring 2016

Instructor's name & title

Professor Strauss, CCP
Department of Computer Science,
NYU – Tandon School of Engineering

Office

2MT 10.048

Phone

(646) 997-3308

Office hours

M 12:00 - 1:00 pm
W 2:30 - 3:30 pm
(or by appointment)

e-mail

fs817@nyu.edu

Laboratory and Laboratory Monitor

Software Engineering Laboratory (SEL) - RH 225

Course Information

Course level

Senior

credits

3.0

Class hours

M 10:30 am – 11:50 am – 2MT 9.007
W 10:30 pm – 11:50 am – 2MT 9.007
JAB474

Prerequisites

CS-UY 4513 (Software Engineering – DP I)

Course Description

This is the second course in a two-course design project sequence (DP I and DP II). This a project coursed in which a student or several students work as a group with a faculty member and/or graduate students on a current topic in computer science. Each term a project course with a particular theme is offered by the Department of Computer and Information Science. A faculty member will assign individual or group

projects to students in the class. The project will be highly structured and will be under close supervision of the faculty. It is expected that students will make use of the design and project management skills learned in CS 4513, software engineering. Alternatively, students can work with a faculty member to develop an individualized project of mutual interest. A Written design report, project demonstration and 30 minute formal (per team member) oral presentation is required. Informal project team presentations will be conducted throughout the semester with the instructor.

Objectives

Projects are evaluated for quality and completeness: project planning and management (documentation and execution), requirements specification, design and architecture specification, conformance with standards and implementation completeness.

Project demonstrations are conducted in the CIS Software Engineering or Parallel and Distributed Processing Laboratories. These laboratories are comprised of state-of-the-art 3 tier technologies (hardware, networking, and application development tools) with required software (middleware, languages, database management systems, capacity and performance tools, and a full complement of automated life cycle development tools). Currently the laboratory is based on fixed base resources (application and database servers, clients, and networking).

Students are encouraged to gain knowledge about how they solve software problems through "best practices", in which they not only perform the work, but are analyzed how it was accomplished. To achieve the goal of the senior project to operate within time, cost and resource constraints the following criteria is used in selecting a project:

- The problem is within the context of a larger development effort. This requires establishment and tracking of project scope and interfacing with the external environment.
- Clients outside the development team are the intended users of the software systems.
- Students have the opportunity to demonstrate individual achievement. Each team member has a unique set of documented roles throughout the project life cycle. These roles are selected and the project organization are developed by the project team and specified in the project plan.
- Project presents a significant state-of-the-art technical challenge.
- Students have the opportunity to apply knowledge and skills gained in previous courses.

- The content of the system is implemented in the laboratory environment.

Core Competencies

- Opportunity to demonstrate that state-of-art software engineering techniques. Student design and implement a computer based software system covering life cycle phases of requirements engineering, architecture, analysis, design, and implementation.
- Written and oral presentation skills are demonstrated using a series of formal documents and presentations. Students will document their systems to software engineering, the software development life (project proposal, project plans, requirements specification and analysis, design description and implementation), project demonstration and formal project presentation (see above). A formal oral project presentation will be conducted at the end of the project.
- Software design techniques include Object-Oriented, function-based and real-time systems.
- Demonstrate software quality and reliability, software life cycle support processes including testing (verification and validation), software reviews, configuration management, and defect detection and correction strategies

General content

This course introduces the software engineering life cycle processes and techniques for the management, development, and documentation of medium and large software systems. Design techniques include Information Engineering, Object-Orientation, and quality/complexity measures. Testing methods such as path testing, exhaustive test models, and construction of test data. Software engineering tools and project management techniques are presented. Student projects involve team software development and tracking.

Portfolio

CS 4523 uses a "Portfolio" system instead of a final examination. Students create a project that demonstrates some of the key concepts they have learned this year and then they present it to a panel of their peers and teacher(s). Their project is evaluated based on how well they followed the guidelines, presented the information, and ability to answer questions on the spot. Judges are given a rubric, based on the criteria above, to guide their evaluation.

Methods of instruction

The primary method of instruction is classroom and online lectures and project team meetings supplemented with related technology and software engineering materials such as IEEE processes and standards, SEI/CMM practices, PSP, best practices, visual tools, configuration management, team dynamics, and quality.

Attendance and Participation

See policy statement

Collaboration on Programming Assignments

See CIS department policy statement

Systems Project

As describe above, an essential requirement of this course is the systems project. Virtually all analysis and design activities are carried out in project teams, or groups in which communication and cooperation are vital to success. The group project is intended to give you experience in performing systems development activities as part of a team.

I will be available for consulting with groups at all stages of the project. **Do NOT fall behind!** The project will be divided into milestones and are specified on the project schedule below.

Project Presentation

Each project team is required to delivery a formal in class presentation describing the technical details of their project focusing on design through implementation life cycle phases and the development process. The presentation delivery, format, and content should be based on material covered in CS 4513 and presentation preparation course (EG at Poly or other course such as public speaking). Presentation worksheets will be distributed to assist teams in the development of their presentations. Each team members is expected to participate in the presentation. Presentation details are:

- Type: Formal presentation
- Participation: All team members must participate (30 minutes/member)
- Audience: Instructor (acting as project manager), class, faculty and administration
- Dress: Business (formal or casual)
- Format/Media: PowerPoint or other delivery mechanism (i.e. Web based)
- Content:

- Overview, team member introductions
- Project process/management
- Requirements review (Use Cases, written requirements)
- Design (detailed design using UML, final component architecture)
- Implementation (implementation and deployment architecture, coding, design patterns)
- Future work - Open Issues/Extensions
- PIR (what did we do right? What did we wrong? What would we do differently?)
- Conclusions

- Open question/Answers – Instructor and class
- Submission: Presentations are to be posted to the team grading forum on my.poly (Blackboard) and included with project documentation on CD media.

Project Schedule/Milestones

Milestone	Due date
Project Team Selection Form	February 3
Project Proposal	February 10
Requirements and Analysis Documentation (RAS)	February 24
Project Plan (SPMP)	March 2
Design Description (SDD) - Initial	March 23
Design Document Final (w/Code)	April 13
Implementation/Demonstration	Starts April 20
Formal Oral Presentations	April 20 – May 4
Project Portfolio	Plus final week (See posted schedule)