CS 4523 A - Design Project

(Version 1)

Fall 2020

Instructor's name & title

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Laboratory and Laboratory Monitor

Software Engineering Laboratory (SEL) - RH 223

Teaching Assistant

Course Information

Course level *credits*

Senior 3.0

Class hours

Prerequisites

CS-4513 - Software Engineering

Course Description

This is the second course in a two-course design project sequence. 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 CSE Software Engineering laboratory. The laboratory is a state-of-the-art 3 tier technology (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). Application Platforms such as Azure and AWS can be used for the project implementation.

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. Students 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.

Grading

More than 3 unexcused absences or missed quizzes will result in a reduction in attendance and participation grading points.

Project Proposal	Must be completed
Requirements/Analysis Specification (SRS)	10
Software project Management Plan (SPMP)	10
Software Design Description (SDD) (initial SDD with initial code)	40
Presentation/Demonstration (Capstone competition or VIP May replace the presentation)	35
Attendance/participation is required	5%
Total	100%

Methods of instruction

The primary method of instruction is online sessions, interactive 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.

Methods of instruction

The primary method of instruction is online lectures supplemented with related videos, assignments, readings, and projects

My stress in this course is on the process of learning. If you strive to understand and apply the concepts you learned in class, you will be successful in it. Asking questions and doing is the best way to learn. There are no stupid questions. You are not in class to impress me but to learn and develop one step closer to being an independent researcher. Asking a lot and early is the way to go. Do not wait for five minutes before homework due time/quiz/project presentation to ask a question because I will not have sufficient time to go into details with you.

All course material will be posted on NYU Classes. Lecture topics can change without notice depending on the students enrolled and their backgrounds.

Class Attendance

Students are expected to attend all lectures and participate in class discussions. For excused absences see the NYU Tandon Policies and Procedures. More than 3 unexcused

absences or missed quizzes will result in a reduction in attendance and participation grading points.

See excused absence policy statement below **(modified for the fall semester)**

Class Participation

Class participation includes actively engaging in class dialog and discussions and formal oral presentations.

Collaboration on Programming Assignments

See **https://engineering.nyu.edu/campus-and-community/student-life/office-student-affairs/community-standards-and-procedures**

Systems Project

As described 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 deliver a formal in-class, online, or prerecorded 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 courses such as public speaking). Presentation worksheets will be distributed to assist teams in the development of their presentations. Each team member 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 another 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 assignment menu on NYU Classes and all project documentation on CD media.

Project Schedule/Milestones

Milestone	Due date

NYU Tandon Policies and Procedures

(Additional Policies are posted on NYU Classes and Tandon website)

(Policies and procedures may be modified for the fall 2020 semester)

Henry and Lucy Moses Center for Students with Disabilities

New York University is committed to providing equal educational opportunity and participation for students with disabilities. We work with NYU students to determine appropriate and reasonable accommodations that support equal access to a world-class education. https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html

Academic Code of Conduct

Plagiarism, cheating, sharing of examination answers, submitting work done by others as your own, and all other forms of deception proscribed in University rules are forbidden. For the sake of your dignity and self-esteem, it is better to get a low grade than to engage in dishonesty. (see NYU/Tandon Policy for additional details). https://engineering.nyu.edu/campus-and-community/student-life/office-student-affairs/policies/student-code-conduct

Excused Absence

An absence can be excused if you have missed no more than **10 days of school.** If an illness or special circumstance has caused you to miss more than two weeks of school, please refer to the section labeled Medical Leave of Absence.

Students may request special accommodations for an absence to be excused in the following cases:

- Medical reasons
- Death in the immediate family
- Personal qualified emergencies (documentation must be provided)
- Religious Expression or Practice

If illness or an accident causes you to miss a class (or classes) or an exam, you should do the following:

- Notify the Office of Student Affairs by email of your absence, the reason for the absence, how long you think you may be away, and supporting documentation.

Medical documentation should state:

- Exact dates of absence
- Estimated of the length of your absence
- Return Date

**If medical documentation does not list the above, your request for excused absence will be considered incomplete, which may delay processing the request. **

Students should not provide anyone except the Office of Student Affairs with a copy of your medical documentation. If a professor requests a copy, refer them to the Office of Student Affairs. This is to protect the confidentiality of your medical information.

Instructors need to know when you are experiencing an issue that might interfere with your studies. However, it is also important that your personal matters be kept confidential.

Therefore, the Office of Student Affairs is the office designated to receive documentation regarding privacy concerns. An official verification notice must be sent to the Office of Student Affairs **within two weeks of the absence**, after that time Student Affairs cannot advocate on your behalf. https://engineering.nyu.edu/campus-and-community/student-life/office-student-affairs/policies#chapter-id-30199

Policy Regarding Observing Religious Holidays

The School of Engineering's policy requires students to provide Deanna Rayment, the Coordinator of Student Advocacy, Compliance, and Student Affairs with written notification 14 days in advance of the days to be taken off using the online form.

Tandon Academic Calendar

The Academic Calendar provides all relevant holidays, breaks, commencement, school start/end dates as well as Registration and bursar dates.
https://www.nyu.edu/registrar/calendars/university-academic-calendar.html

Learning Analytics

"Learner engagement, both in class and online, is an important element of this course. I will be looking at our class interactions both in person and digitally in order to tailor the course to best meet your learning needs and make improvements to the course design overall. In-person, this means "reading the room" by looking at how students engage with different course materials and activities. Online this means digitally "reading the room" by looking at information about how students engage with different course materials and activities."

University Policies on Sexual Misconduct

Please consult the following link for information on sexual assaults and sexual harassment: http://nyu.edu/titleix

Reporting an Incident of Sexual Assault, Harassment, or Other Sexual Misconduct. Anyone may report an alleged incident to any of the following:
NYU Department of Public Safety (718-260-3537; 212-998-2222)
The Title IX Coordinator (212-998-2352) or via the web at https://www.nyu.edu/about/policies-guidelines-compliance/equal-opportunity/harassment-and-discrimination/submitcomplaint.html

- A Residence Life and Housing staff member (212-998-4600)
- The Associate Dean of Student Affairs in the Tandon School of Engineering (718- 260-3773)

- The Office of Student Conduct and Community Standards (212-998-4311)
- The Student Health Center (212-443-1000)
- The Wellness Exchange (212-443-9999)
- Or another campus official from the contact listed