

Master Course Syllabus
School of Engineering and Computer Science
Washington State University Vancouver

CS 421

Software Design Project II

3 Semester Hours

(2 lecture hours, 3 laboratory hours)

Catalog Description

Large-scale software development in a team environment; software design and implementation, project management, testing and integration; teamwork skills, communication, source code management, documentation and presentations. Continuation and completion of CS 420 project.

Prerequisite Courses

- CS 420 with a C or better
- Senior Standing
- Admitted to the major in Computer Science

Prerequisite Topics

- Experience with an object-oriented programming language (e.g., Java or C++)
- Experience with a software design tool (e.g., Rational Rose, Poseidon, Visio)
- Technical Writing
- Experience with the software development process (requirements analysis, specification, design, implementation, testing)
- Use of UNIX or Windows environment for coding, compilation, debugging and testing

Measured Course Outcomes

Students taking this course will:

1. Implement a solution design through proficient use of software frameworks or tools. (Contributes to performance criterion 2-b.)
2. Verify and validate a software solution against design specifications and project requirements, respectively. (Contributes to performance criterion 2-c.)
3. Communicate effectively in writing with the project sponsor. (Contributes to performance criterion 3-a.)
4. Deliver a well-organized presentation to the project sponsor. (Contributes to performance criterion 3-b.)
5. Interact with team members and the project sponsor (and staff) in a professional manner. (Contributes to performance criterion 3-c.)
6. Define project goals and tasks as a team. (Contributes to performance criterion 5-a.)
7. Share responsibilities with other members of the team to achieve goals and complete tasks. (Contributes to performance criterion 5-b.)
8. Make effective contributions to the design, testing, or integration of a computing solution as a team member. (Contributes to performance criterion 5-c.)

Required Textbooks

No Required Textbook.

Reference Material

UML Distilled, Martin Fowler, Addison Wesley Inc. Software Engineering, Ian Sommerville, Addison-Wesley. Software Engineering, A Practitioner's Approach, Roger Pressman, McGraw Hill.

Major Topics Covered in the Course

1. Students work on a large software project that requires the coordinated efforts of a team to be successful.
2. Software Engineering in a team environment will include the following topics: a. Team management b. Project planning c. Version control & configuration Management d. Integration testing
3. Students will experience, as a team, each phase in a software process model that must include: a. Software requirements and specification b. Object oriented design and programming c. Testing, debugging, and optionally maintenance

Projects

Programming Project Area	Weeks
Completion of project initiated in CS 420 15	

Design, Implementation and Analysis

The analysis of project requirements is performed by students in CS 420. The solution design is also intended to be performed in CS 420, however, inevitable changes to requirements and increased understanding of the problem area will result in some redesign and refactoring of prior design work. This course introduces students to team based software engineering with emphasis on requirements analysis, specification, object-oriented design, implementation and testing (unit and integration). Students, as a team, incrementally develop a software product to give them hands-on experience with software engineering principles. The objective is to experience particular methods in each phase of the software development lifecycle. This course is the second course in a two course series. Implementation, validation and verification are the primary technical activities of the team in this course.

CS2013

This course provides coverage of CS2013 knowledge areas. Values listed are minimum course hours dedicated to the topic, percentages indicate the fraction of CS2013 knowledge area topics covered (acceptable values are: <25%, 25-75%, >75%, or 100%).

Area	Tier 1	Tier 2	Elective
SE/Software Processes	1 (<25%)	1 (<25%)	
SE/Software Project Management		3 (>75%)	

Area	Tier 1	Tier 2	Elective
SE/Software Tools and Environments		5 (>75%)	
SE/Software Requirements Engineering		2 (<25%)	
SE/Software Design		3 (<25%)	
SE/Software Construction		9 (>75%)	
SE/Software Verification and Validation		9 (>75%)	
SE/Software Evolution		2 (25-75%)	

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