CPSC270
Software Engineering & Project Design
Syllabus

Instructor: Dr. Durell Bouchard
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Course Objectives

In previous courses, you have learned how to create programs, organize them with data structures, and analyze their computational complexity. These topics and skills provide the foundations for all other computer science classes. Real-world software projects are vastly more extensive and more complicated than the programs you created for these classes. Fortunately, there is an entire sub-discipline of computer science, software engineering, concerned with making the software development process more manageable. The techniques and tools you learn in this class will help you succeed in upper-level computer science classes, and more importantly, in software development when you graduate.

Intended Learning Outcomes: At the end of the course the successful student will be able to

1. design and implement large software projects using a suitable software process model.
2. review code for design, readability, and computational complexity.
3. create appropriate and thorough test cases for a software implementation.
4. use and understand the features of an integrated development environment including compiling, debugging, testing, and version control.

Course Content

Prerequisites: CPSC250

Text: *Clean Code: A Handbook of Agile Software Craftmanship*, by Robert C. Martin, Prentice Hall, 2008.

Project: The focus of the course is a semester-long software development group project. This project is designed to allow you to put together all of the software engineering tools and skills you have learned throughout the semester to develop a mobile app.

Activities: Activities during class give you a structured experience in software engineering and increase your ability to use and understand the tools available for software development. The activities connect the reading and lectures to software development and prepare you for the project.

Assignments: We will have regular small programming assignments that are designed to reinforce class concepts. These assignments are an opportunity for you to demonstrate that you are ready to apply what you have learned to the project.

Co-curricular: The Department of Mathematics, Computer Science, and Physics is offering a series of lectures designed to engage the campus community in discussions of ongoing research, novel applications, and other issues that face these disciplines. You may submit to Inquire up to two papers reflecting on a talk you attend for extra credit.

Grading: Course grades are assigned based on the following weights and scale:

Grade Weights

Category	Weight
Project	34%
Activities	32%
Assignments	32%

Grade Scale

Grade	Range	Grade	Range
A	93-100	C	73-76
A-	90-92	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	F	0-59

Course Policies

Attendance Policy: If you have a temperature of 100.4 or higher or other COVID symptoms, don't come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. For your absence to be excused, you must permit Health Services to notify me that you have consulted them about COVID symptoms. If Health Services informs you that you should isolate and not attend class for multiple days, tell me to make a plan to keep you current in the course. All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will be excused. Still, you will need to do the work and graded assignments even if we extend your deadline.

Class attendance is vital to your success in this course; the material covered during missed sessions is the responsibility of the student. Conversations in class illuminate the published class

materials and are subject to evaluation on subsequent tests and quizzes. If you anticipate being unable to attend class, email me before class to be excused.

Masks: The College has issued a mask mandate for the semester that requires masks to be worn in common indoor spaces such as our classroom. You must wear a mask in this class. If you arrive without a mask, you will not be allowed to stay and may lose credit for attendance or in-class work. The The bookstore sells masks if you need to make a quick purchase. If the mandate is extended, you will be required to continue to wear a mask.

Late Work: If you anticipate being unable to meet a deadline, email me before the deadline to request an extension. Unexcused late work will receive no credit.

Academic Integrity: Collaboration is a fundamental part of learning. You are encouraged to discuss and learn from one another while working on the activities. Collaboration on the group project, however, is different. Here your contributions must be attributed appropriately. Copying someone else's work or turning in someone else's work is NEVER allowed. Using someone else's work or ideas as your own is plagiarism and an academic integrity offense. It is accepted that you have read and understood the standards for academic integrity at Roanoke College. If you are ever uncertain about how the policy pertains to any assignments in this course, please ask me for clarification.

Subject Tutoring: Subject Tutoring, located on the lower level of Fintel Library (Room 5), is open 4-9 PM, Sunday-Thursday. Subject Tutors are highly trained, current students who offer free, one-on-one (and small group) tutorials in over 80 courses taught at Roanoke College, including: Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, and Social Sciences. Check out all available subjects and schedule 30- or 60-minute appointments at <www.roanoke.edu/tutoring>. If you have a question, feel free to stop by, or contact us at subject_tutoring@roanoke.edu or 540-375-2590. See you soon!

Accessible Education Services: Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Becky Harman, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by email at aes@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Becky Harman at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

Diversity: I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class.

Preferred Name/Pronoun: I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester to make appropriate changes to my records.

Course Schedule

This course expects you to spend at least 12 hours of work each week inside and outside of class.

Date	Topic
Wednesday, January 19	Introduction
Friday, January 21	Web Page - HTML
Monday, January 24	Web Page - CSS
Wednesday, January 26	Web Page - Layouts
Friday, January 28	Web Page - Responsive Layout
Monday, January 31	JavaScript - Introduction
Wednesday, February 2	JavaScript - Continued
Friday, February 4	JavaScript - Objects
Monday, February 7	JavaScript - Async
Wednesday, February 9	JavaScript - App
Friday, February 11	JavaScript - App Continued
Monday, February 14	React - Introduction
Wednesday, February 16	React - State
Friday, February 18	React - Lifting State
Monday, February 21	React - App
Wednesday, February 23	React - App Continued
Friday, February 25	React Native - Introduction
Monday, February 28	React Native - Design
Wednesday, March 2	React Native - Navigation
Friday, March 4	React Native - Animation
Spring Break	
Monday, March 14	React Native - Async
Wednesday, March 16	React Native - Storage
Friday, March 18	Project - Ideas
Monday, March 21	Project - Requirements
Wednesday, March 23	Project - Mockup
Friday, March 25	Project - Design Document
Monday, March 28	Testing - Jest
Wednesday, March 30	Testing - Jest Async
Friday, April 1	Testing - Jest Mock
Monday, April 4	Testing - Testing Library

Date	Topic
Wednesday, April 6	Clean Code
Friday, April 8	Clean Code - Names
Monday, April 11	Clean Code - Functions
Wednesday, April 13	Project
Monday, April 18	Clean Code - Comments
Wednesday, April 20	Clean Code - Formatting
Friday, April 22	Clean Code - Objects
Monday, April 25	Clean Code - Errors
Tuesday, April 26	Clean Code - Unit Tests
Thursday, April 28 (8:30AM - 11:30AM)	Project Presentations