

## CMSC 451 Senior Projects I Syllabus

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**Catalog listing:** CMSC 451  
**Course Level:** Undergraduate  
**Prerequisites:** Senior standing in the computer science department; 24 credits in computer science, including CMSC 355 and CMSC 401; UNIV 200 or HONR 200 or equivalent.  
**Instructor:** Robert Dahlberg, Ph.D.  
**Office:** E4234  
**Phone:** 630-215-8124 (Cell)  
**Fax:** 804-828-2771  
**email:** dahlbergra@vcu.edu  
**Classroom:** Virtual Classroom – Remote Zoom Meetings  
Tuesdays - 05:30 pm-06:45 pm  
**Class website:** Blackboard  
**Office Hours:** By Appointment. Email professor  
Each project team will meet with their Faculty Advisor each week (the project team and Faculty Advisor will determine a time)  
**Communication:** **email** – use **CMSC 451** in the subject line  
**Slack channel:** This is a public forum  
**Schedule a Zoom meeting**

### 1.0 – Overview (Catalog Course Description):

Continuous courses; 1 lecture 3-3 credits. **Prerequisites:** senior standing in the computer science department; 24 credits in computer science, including CMSC 355 and CMSC 401; UNIV 200 or HONR 200 or equivalent; completion of CMSC 451 to enroll in CMSC 452. Capstone project or experience for the computer science major; research and presentation methods in computer science; ethical, legal and social issues in computing; and professional responsibilities of computer scientists. Each student will participate, as part of a team, in a project or other experience approved by the course coordinator or sponsored by another computer science faculty member. Each student will write and revise a research paper on a technical topic associated with his or her project or experience. During the first semester, students will submit a detailed written description of their proposed project, requirements, architecture, design and an initial working prototype and will present orally some aspect of what they have learned and/or done during the first semester. (The courses in this sequence cannot be counted as upper-level CMSC electives for students graduating under bulletins prior to 2008-09.)

### 2.0 – Course Structure:

Lecture hours/week –	3	Beginning & end of Semester, and as needed
Tutorial hours/week –	1	Meeting with Faculty Advisor once a week

## What are tutorials?

A traditional teaching methodology used at [Oxford](#).

### 3.0 – Course Goals

Upon successful completion of this course, the student will be able to:

1. Identify the best IT tools, i.e. programming language, development environment, database tools and operating system relevant to the project
2. Analyze a problem and design, develop, debug, and document a computer program.
3. Function effectively in a team
4. Communicate in writing and orally about the project.

### 4.0 – ABET Criteria Addressed:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement and evaluate a computer-based solution to meet a given set of computing requirements in the context of the program's discipline.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

### 5.0 – Major Topics Covered:

#	Topics
1	Responsibilities of an IT professional and GitHub
2	Requirements Engineering and Requirement Artifacts
3	Proposal Writing – technical writing
4	Agile Development & Project Management
5	High level Design Documents and Artifacts -- Dataflow Diagrams (DFD), Process flows, Swim lane Diagram
6	High level Design Documents and Artifacts – Infrastructure Architectures
7	Detailed Design Artifacts – ER Models, UML Structural and Behavioral Diagrams, Pseudo Code
8	Continuous Integration – Agile Development Framework
9	Design Patterns - Clean Code
10	Detailed Design Documents and Artifacts
11	DEVOPS
12	Intellectual Property

### 6.0 – Textbook(s):



Pocket Book of Technical Writing for Engineers and Scientist by Finkelstein Jr., Leo, Third Edition. New York: McGraw-Hill. ISBN: 978-0-07-319159-1.

## 7.0 – Class Schedule:

- Lecture: Remote Zoom Video Conference
- Tutorials Remote Zoom Video Conference

## 8.0 – Evaluation:

Grades will be assigned in collaboration with your course instructor, sponsor, and your team mates. An average of those grades will be assigned to the evaluated student.

### Areas of evaluation:

Fall Deliverables	Grade %
Github set-up for each Project	5%
Weekly Project Status Report based on Github	10%
Class Attendance on Thursdays at 5:30pm	10%
Meetings with Mentors – weekly deliverables for Mentors	10%
Project Requirements Document	15%
Design Document	10%
Working Prototype	35%
Course Evaluations from team mates	5%
	100%

Your total earned in the course will result in a grade using the following scale: 90-100% an A/A-, 89-80% a B/B-, 79-70%, C/C-, 69-60%, D/D-, and lower than 60 earns an F.

**Project PROTOTYPE must work and be acceptable to a mentor(s), faculty advisor and course instructor to pass the course.** Missing any deliverable will result in a grade of **Incomplete**. Incompletes must be resolved before the first week of the next school term, or a grade of F will be assigned.

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**Class registration required for attendance**

Students may attend only those classes for which they have registered. Faculty may not add students to class rosters or Blackboard. Therefore, if students are attending a class for which they have not registered, they must stop attending.

### **Honor System: upholding academic integrity**

The VCU Honor System policy describes the responsibilities of students, faculty and administration in upholding academic integrity, while at the same time respecting the rights of individuals to the due process offered by administrative hearings and appeals. According to this policy, "Members of the academic community are required to conduct themselves in accordance with the highest standards of academic honesty, ethics and integrity at all times." In addition, "To support a commitment to the Honor System, all members of the VCU community are required to:

- Adhere to the Honor System policy and its procedures;
- Report any suspicion or knowledge of possible violations of the Honor System;
- Answer truthfully when called upon to do so regarding Honor System matters;
- Maintain appropriate confidentiality regarding related to Honor System matters."

More information can be found at in the [VCU policy library](#).

### **Important dates**

You can view important dates for the semester in the [academic calendar](#).

### **Managing stress**

Students may experience situations or challenges that can interfere with learning and interpersonal functioning including stress, anxiety, depression, alcohol and/or other drug use, concern for a friend or family member, loss, sleep difficulties, feeling hopeless or relationship problems. There are numerous campus resources available to students including University Counseling Services (804-828-6200 MPC Campus, 804-828-3964 MCV Campus), University Student Health Services (MPC 804 828-8828, MCV Campus 804 828-9220) and the Wellness Resource Center (804-828-9355). 24 hour emergency mental health support is available by calling 828-1234 and asking to speak to the on-call therapist or utilizing the National Suicide Prevention Lifeline (1-800-784-2433).

### **Mandatory responsibility of faculty members to report incidents of sexual misconduct**

It is important for students to know that all faculty members are mandated reporters of any incidents of sexual misconduct/violence (e.g., sexual assault, sexual exploitation and partner or relationship violence). This means that faculty cannot keep information about sexual misconduct/violence confidential if you share that information with them and they must report this information immediately to the university's Title IX Coordinator. In addition, department chairs, deans, and other unit administrators are required to report

incidents of sex or gender-based discrimination to the university's Title IX Coordinator. Once a report is made, you will receive important information on your reporting options, on campus and off campus resources and remedial measures such as no-contact directives, residence modifications, and academic modifications. If you would prefer to speak with someone confidentially for support and to discuss your options for reporting, contact:

- VCU's Wellness Resource Center 804.828.9355 | [myoptions@vcu.edu](mailto:myoptions@vcu.edu) | [thewell.vcu.edu](http://thewell.vcu.edu)
- Greater Richmond Regional Hotline (Community program) 804.612.6126 | 24-hour hotline
- VCU's Counseling Services 804-828-6200

For more information on how to help, please [click here](#). The Policy on Sexual Misconduct/Violence and Sex/Gender Discrimination, can be found in the [VCU policy library](#). For more information about the University's Title IX process, please visit [equity.vcu.edu](http://equity.vcu.edu).

### **Military short-term training or deployment**

If military students receive orders for short-term training or for deployment/mobilization, they should inform and present their orders to Military Student Services and to their professor(s). For further information on policies and procedures contact Military Student Services at 828-5993 or access the corresponding policies.

### **Student conduct in the classroom**

According to the [Faculty Guide to Student Conduct in Instructional Settings](#), "The university is a community of learners. Students, as well as faculty, have a responsibility for creating and maintaining an environment that supports effective instruction. In order for faculty members (including graduate teaching assistants) to provide and students to receive effective instruction in classrooms, laboratories, studios, online courses, and other learning areas, the university expects students to conduct themselves in an orderly and cooperative manner." Among other things, cell phones should be turned off while in the classroom. The Student Code of Conduct also prohibits the possession of or carrying of any weapon. For more information see <http://register.dls.virginia.gov/details.aspx?id=3436>.

### **Student email policy**

Email is considered an official method for communication at VCU because it delivers information in a convenient, timely, cost-effective, and environmentally aware manner. Students are expected to check their official VCU email on a frequent and consistent basis in order to remain informed of university-related communications. The university recommends checking email daily. Students are responsible for the consequences of not reading, in a timely fashion, university-related communications sent to their official VCU

student email account. This policy ensures that all students have access to this important form of communication. It ensures students can be reached through a standardized channel by faculty and other staff of the university as needed. Mail sent to the VCU email address may include notification of university-related actions, including disciplinary action. Please read the policy in its entirety at the [VCU Policy Library](#).

### **Student financial responsibility**

Students assume the responsibility of full payment of tuition and fees generated from their registration and all charges for housing and dining services, and other applicable miscellaneous charges. Students are ultimately responsible for any unpaid balance on their account as a result of the University Financial Aid Office or their third party sponsor canceling or reducing their award(s).

### **Students representing the university – excused absences**

Students who represent the university (athletes and others) do not choose their schedules. Student athletes are required to attend games and/or meets. All student athletes should provide their schedules to their instructors at the beginning of the semester. The Intercollegiate Athletic Council strongly encourages faculty to treat missed classes or exams (because of a scheduling conflict) as excused absences and urges faculty to work with the students to make up the work or exam.

### **Students with disabilities**

Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, as amended, require that VCU provide "academic adjustments" or "reasonable accommodations" to any student who has a physical or mental impairment that substantially limits a major life activity. To receive accommodations, students must register with the Office of Student Accessibility and Educational Opportunity on the Monroe Park Campus (828-2253) or the Division for Academic Success on the MCV campus (828-9782). Please also visit the [Student Accessibility and Educational Opportunity website](#) and/or the [Division for Academic Success website](#) for additional information.

Once students have completed the registration process, they should schedule a meeting with their instructor (s) and provide their instructor (s) with an official accommodation letter. Accommodation letters will outline the required classroom accommodations. Additionally, if coursework requires the student to work in a lab environment, the student should advise the instructor or a department chairperson of any concerns that the student may have regarding safety issues related to a disability. Students should follow this procedure for all courses in the academic semester.

### **Withdrawal from classes**

Before withdrawing from classes, students should consult their instructor as well as other appropriate university offices. Withdrawing from classes may negatively impact a student's financial aid award and his or her semester charges. To discuss financial aid and the student bill, visit the [Student Services Center](#) at 1015 Floyd Avenue (Harris Hall) and/or contact your financial aid counselor regarding the impact on your financial aid.

### **Faculty communication about students**

VCU instructional faculty, administrators and staff maintain confidentiality of student records and disclose information in accordance with the Family Educational Rights and Privacy Act (FERPA). This means that VCU officials may disclose student record information without the consent of the student in certain situations. To support university operations, for example, VCU officials share information about students with other educational officials as necessary to perform their job duties. FERPA permits this disclosure to school officials who have a legitimate educational interest in the student information. In addition, VCU officials have obligations to report information shared by a student depending on the content of that information, for example, in compliance with VCU's policy on the duty to report ([policy.vcu.edu](http://policy.vcu.edu)). Unless FERPA permits a certain disclosure, VCU generally requires consent from a student to disclose information from their education record to another individual. You may find additional information on the VCU FERPA website: <http://rar.vcu.edu/records/family-educational-rights-and-privacy-act/>.

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