CMSC 355: Fundamentals of Software Engineering

Spring, 2022

Syllabus

Catalog Listing:	**CMSC 355 – Fundamentals of Software Engineering**
Course Level:	Undergraduate
Prerequisites:	Students must have completed CMSC 256 or EGRE 246 with a grade of C or better
Instructor:	Dr. Robert Dahlberg
Office:	Engineering Building East – Room E4234
E-mail:	dahlbergra@vcu.edu
Classroom:	Engineering Building East - Room E2214 Tuesdays & Thursdays 11:00 am - 12:15 pm
Office Hours:	**In person:** Immediately before/after class: 10:30am – 11:00 and 12:15pm – 12:45 Tuesdays and Thursdays **OR via Zoom by appointment**

1.0 – Overview (Catalog Course Description):

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 256 or EGRE 246, either with a minimum grade of C. Provides an overview of the software engineering process and software life-cycle models. Gives a detailed study of the analysis, specification and design phases. Students will work in teams to gain experience in software development methodology, developing specification and design documents and developing a prototype.

2.0 – Course Structure:

· Lecture hours/week – 3
· Lab hours/week – 0

3.0 – Course Goals

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

1. Understand the software lifecycle and different software development methodologies

2. Express requirements and design of a software system

3. Work as a team to develop software products using agile software development methodologies

4. Understand software quality and be able to effectively test software

5. Perform software maintenance and use appropriate tools

6. Use effective software architectures and design patterns

4.0 – ABET Criteria Addressed:

a. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.

b. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

c. An ability to function effectively on teams to accomplish a common goal

5.0 – Major Topics Covered:

- o Software development lifecycle
- o Framework of the software process
- o Requirement engineering
- o Software architecture and design
- o Software modeling via UML
- o Software verification and validation
- o Agile software development
- o Design patterns
- o Software Maintenance

6.0 – Textbook(s):

No required textbook. Extensive notes and online reading materials will be provided.

7.0 – Class Schedule:

· **Lecture:** Tuesday/Thursday   11:00pm – 12:15pm in Engineering Building East – E2214

8.0– Evaluation:

General instructions:

There are few individual assignments in this course, but the majority of assignments are team projects. Significant amount of time outside class meetings will likely be required for the successful completion of the projects, including ample time spent communicating and planning with the team. Students will be graded on their individual contribution to the team project, using a combination of peer and individual ratings in the project status reports. Several mechanisms will be used to detect students that fail to contribute significantly to the team project; those students will not get full credit for their team's project(s).

Grading:

Category	Percentage Weight
Bi-weekly Quizzes	30%
Team Project & teamwork	50%
Class participation, attendance, individual assignments and team meetings with instructor	20%

Grades will be posted on Canvas in a timely manner, and include appropriate feedback and weights. Students are encouraged to meet with professor, individually or in teams. Zoom meetings are preferred, so we can share documents and code.

Attendance policy:

Attendance is expected from all students in the course. To encourage attendance, the instructor will use periodic, short, in-class exercises, which will be graded as either acceptable or non-acceptable.

Grading scheme:

    A: >= 90%
    B: >= 80% and < 90%
    C: >= 70% and < 80%
    D: >= 60% and < 70%
    F: < 60%

Please consult external resources for VCU policies regarding academic honesty, students with disabilities, student conduct in the classroom, withdrawal from classes, and others.