CMSC 355: Software Engineering: Specification and Design

Syllabus

Catalog Listing:	CMSC 355 – Fundamentals of Software Engineering
Course Level:	Undergraduate
Prerequisites: C or better	Students must have completed CMSC 256 or EGRE 347 with a grade of

1.0 – Overview (Catalog Course Description):

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 256 or EGRE 347, 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 - REAL Designation:

This course [has been approved] by the REAL Council as a: REAL Level 2 Course/Experience and offers the following two REAL components:

- Hands-on learning that engages the student in applying or exploring disciplinary knowledge in real-world or simulated contexts.
    - Students will work on a semester-long group project to identify needs, plan a design and execute a technical solution for a software problem. This effort will take at least 3 hours per week times 14 weeks. This experience directly reinforces the goals of this course listed above, especially 1, 2, 3, 4, and 6.
- Reflection
    - Throughout the semester-long course project, students will be evaluating themselves and their peers in their teamwork skills. They will also be mentored periodically throughout the semester by the professor in these skills. At three points during the semester, student will discuss in an assignment their skills at teamwork and will get feedback from their professor on these skills and their discussion of the skills. This will count as a portion of their project grade in this course.

6.0 – Major Topics Covered:

· Software development lifecycle

· Framework of the software process

· Requirement engineering

· Software architecture and design

· Software modeling via UML

· Software verification and validation

- Agile software development
- Design patterns ·

Software maintenance

7.0 – Textbook(s):

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

8.0 – Class Schedule:

Lecture: M,W,F 2:00pm – 2:50pm

Please consult the slides of Lecture 01 for further details.

9.0– 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:

Categroy	**Percentage Weight**
Midterm Exam	30%
Project	30%
In-Class Activities	20%
Research Corner	20%

Grades will be posted on Canvas in a timely manner and include appropriate feedback and weights.

Attendance policy:

Attendance is expected from all students in the course.

Grading scheme:

A: >= 90%

B: >= 80% and < 90%

C: >= 70% and < 80%

D: >= 60% and < 70%

F: < 60%

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Students should visit http://go.vcu.edu/syllabus and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.