LAU
School of Arts and Sciences

Department of Computer Science & Mathematics

Course Name:	**CSC 490 – Software Engineering**
Class Time and Location	MWF 2:00-2:50 PM Online
INSTRUCTOR	Charbel Daoud
Course Coordinator	Danielle Azar
Course Co-coordinator	Nashat Mansour
Credits Hours:	3
Semester:	Fall 2021

INSTRUCTOR

Charbel Daoud
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Office Hours: TR 8:00-11:00 PM

CURRENT CATALOG DESCRIPTION

This course presents the techniques for developing reliable, and cost-effective, medium-to-large-scale object-oriented and classical software. It also involves project development to implement these techniques. Topics include the software life-cycle and process models, the software requirements elicitation, specification, and validation techniques, the design techniques for object-oriented and classical software (architectural, and component, level design and the basic unified modeling language diagrams), software testing (black box and white box testing techniques), unit, integration, validation, and system testing, as well as the basic software project management and quality issues, and the documentation and technical writing, and the use of CASE tools.

PREREQUISITE/CO-REQUISITE

CSC 310 Algorithms and Data Structures, Co-Requisite: CSC375 Database Management Systems.

COURSE TYPE

Required ☒ **E**lective ☐ **S**elective **E**lective ☐

COURSE LEARNING OUTCOMES

At the completion of this course, the student will able to:

1. Demonstrate an understanding of the software development life cycle and basic process models.
2. Demonstrate an understanding for requirements elicitation, specification, and validation techniques.
3. Demonstrate an ability to manage a small size project.
4. Demonstrate the ability to use CASE and various software tools.
5. Demonstrate an ability to develop professional documents.
6. Demonstrate an ability to design medium-scale programs.

TEXTBOOK

Ian Sommerville, *Software Engineering*, 10th edition, Addison Wesley publications, 2015, ISBN-10: 0133943038 ISBN-13: 978-0133943030

TOPICS COVERED IN THE COURSE

1. Definition of Software Engineering
2. Socio-technical systems
3. Critical systems
4. Software process
    a. Software development life cycle
    b. Generic software process models

        i. Waterfall model
        ii. Evolutionary development
        iii. Component-based
    c. Process activities
        i. Software specification
        ii. Software design and implementation
        iii. Software validation
        iv. Software evolution
    d. CASE technology
5. Project management
    a. Project planning
    b. Project scheduling
    c. Risk management
6. Requirements
    a. Functional and non-functional requirements
    b. User requirements
    c. System requirements
    d. The software requirements document (IEEE/ANSI 830-1998 requirements standard)
7. Requirements engineering processes
8. System models
    a. Data-flow models
    b. Composition or aggregation models
    c. Architectural model
    d. Classification models
    e. Stimulus-response model /state-transition diagram
9. Architectural design
10. Object-Oriented design
11. Verification and Validation
12. Software Testing

TEACHING/LEARNING METHOD

Lectures, project.

REFERENCES

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COURSE GRADING AND PERFORMANCE CRITERIA (SUBJECT TO 5% VARIATION)

Project Phase 1	25%
Project Phase 2	25%
Written Exam	35%
Oral final exam[1]	15% **READ THE FOOTNOTE!**

POLICY ON CHEATING AND PLAGIARISM

Students caught cheating on an exam receive a grade of zero on the exam in their first cheating attempt and receive a warning. Students caught cheating for the second time in the same course will receive a grade of "F" in the course and a second warning.

Plagiarism on assignments and project work is a serious offense. If plagiarism is detected, a student will be subject to penalty, similar to the cheating case, which ranges from receiving a zero on the assignment/project concerned to an "F" in the course in addition to a warning.

[1] A student's performance on the oral exam will affect his/her grade on the project. The oral exam aims at showing how much of the project each student did. It should also reflect whether the student understands how he/she has incorporated the material learnt in class into the project.

UNIVERSITY ATTENDANCE POLICY

Missing one third of classes implies that a student has to drop the course (It is the student's responsibility to drop the course).

WITHDRAWAL POLICY

WI is equivalent to Early Withdrawal

WP is equivalent to Withdrawal/Pass

WF is equivalent to Withdrawal/Fail

1. A student who withdraws after the Drop/Add period and by the end of the 5th week of classes (10th day of classes for Summer Modules) will obtain a "WI" on that particular course.

The student may process such request directly through the Registrar's Office.

2. A student who withdraws from a course between the 6th week and the end of the 10th week of classes (18th day of classes for Summer Modules) will receive either a "WP" or a "WF". "WP" or "WF" will be determined by the instructor based on the achieved academic performance in that course till the time of withdrawal.

3. The "WI" and the "WP" will not count as a Repeat; whereas the "WF" will count as a Repeat.

4. "WI", "WP" and "WF" will not count towards the GPA calculation.

Deadline for the "WP" and "WF" withdrawal from courses: check university calendar (It is the student's responsibility to drop the course)

COURSE ONLINE EVALUATIONS

Completion of the online course evaluations is important for feedback and improvement. Students are highly encouraged to complete the course evaluations at the end of the semester.

TIPS FOR SUCCESS

- Actively participate in class.
- Don't wait until the last minute to start your assignments or to study for an exam.
- Keep up with homework and course activities.
- **Please communicate with me if you have any questions/ difficulties/challenges**.

ADDITIONAL REMARKS

- **Reading the textbook is a must**.
- Deadlines for the assignments **must be respected**.
- Make-ups and Incomplete: students are not automatically entitled to make-ups; F will be given until reasons (in writing and within three days of absence) are presented and approved by the instructor. **It is extremely difficult that I accept to give make-ups.**
- Some of the exam questions will be based on class discussion and assignments.
- **No mobile phones in the classroom**.
- All assignments are to be submitted on Blackboard Learn and on a CD.
- You are responsible for all announcements made on Blackboard Learn and in class.

RELATIONSHIP BETWEEN COURSE OUTCOMES AND PROGRAM OUTCOMES

ASSESSMENT PLAN FOR THE COURSE

Rubrics are used to assess the course.