جامعة المجمعة
Majmaah University

Course Specifications

Institution:	College of Science at Az Zulfi
Academic Department :	Computer Science and Information
Programme :	Computer Science and Information Program
Course :	Software Engineering 1 (CSI-325)
Course Coordinator :	Dr. Zeiad El-Saghir
Programme Coordinator :	Dr. Yosry Azzam
Course Specification Approved Date :	23 / 12 / 1435 H

A. Course Identification and General Information

1 - Course title : Software Engineering 1		Course Code: CSI-325	
2. Credit hours : 3 credit hour (2 lecture + 2 Exercise)			
3 - Program(s) in which the course is offered: Computer Science and Information Program			
4 – Course Language : English			
5 - Name of faculty member responsible for the course: Zeiad El-Saghir			
6 - Level/year at which this course is offered : 6th level			
7 - Pre-requisites for this course (if any) : • Programming 2 (CSI 221)			
8 - Co-requisites for this course (if any) : • None			
9 - Location if not on main campus: College of Science at Az Zulfi			
10 - Mode of Instruction (mark all that apply)			
A - Traditional classroom	√	What percentage?	80 %
B - Blended (traditional and online)	√	What percentage?	10 %
D - e-learning		What percentage?	……. %
E - Correspondence		What percentage?	……. %
F - Other	√	What percentage?	10 %

Comments :

One-tenth of the course instruction is dedicated to students' self-learning where they are asked to read the course book, solve problems in their homes, and do experimental work using some dedicated SW programs that simulate the real HW kits.

B. Objectives

What is the main purpose for this course?

This is a course on the fundamental concepts and principles that underlie current and emerging methods, tools, and techniques for the cost-effective engineering of high-quality software systems. Software engineering (SE) is concerned with all aspects of software development, from the early stages of system specification to maintaining the system after it has gone into use. This includes technical processes of software development as well as activities such as software project management and the development of tools, methods, and theories to support software development. This is NOT a "programming" course; it focuses instead on surveying some of the critical aspects of SE that may be less familiar to students of computer science, such as identifying a development

process appropriate to the circumstances, eliciting and documenting requirements, identifying appropriate design techniques, employing effective verification and validation strategies (e.g., reviews and inspections, formal methods) throughout the software lifecycle.

Here are several course goals:

- To help students to develop skills that will enable them to construct software of high quality and to function effectively on teams to accomplish a common goal.
- To make students aware of key aspects of current software engineering approaches.
- Elicit, analyze and specify software requirements through a productive working relationship with project stakeholders.
- To create models of software data and processes using structured modelling approaches.
- To demonstrate skills of software documentation, quality assurance and evaluation, and testing as part of software development.
- Communicate effectively through oral and written reports, and software documentation
- Demonstrate professionalism including continued learning and professional activities.

Briefly describe any plans for developing and improving the course that are being implemented :

1. Increasing the ability of the students to implement the methods and practices that are presented in the course.
2. Formative exams during the term with a feedback to the students, so these examinations can be used as a method of learning..
3. Using group discussion through the internet with course attending students.
4. Updating the materials of the course to cover the new topics of the field.
5. Help students to develop their knowledge about the topics that are presented in the course.

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
1. Introduction to Software Engineering: Software Engineering principles - Professional software development - Software Characteristics - Software Applications - Software engineering ethics - Computer-Aided Software Engineering (CASE).	**2**	**8**

2. Software processes: Software process models, process activities, Computer-Aided Software Engineering. System Models: Using Process Models in a Project, Project Management Process, and Software Standards. Practical processes applications using suitable CASE tools.	**3**	**12**
3. Software Requirements Engineering: Process of Requirements Engineering, Requirements Documentation and review, SRS Validation, Requirements Management. Practical requirements applications using suitable CASE tools.	**3**	**12**
4. Software Design: Architectural Design, Structured Design Methodology, Design Documentation, Verification for Design. Practical design applications using suitable CASE tools.	**3**	**12**
5. System Coding, Testing, and Maintenance: Programming Style, Coding Internal Documentation, Structured Programming, Code Verification, Unit Testing, Testing Principles, Levels of Testing, Structural Testing, Functional Testing, Test Plan, System Operation and Maintenance. Practical coding, testing, and maintenance applications using suitable CASE tools.	**4**	**16**

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	**30**	**-**	**30**	**-**	**-**	**60**
Credit	**30**	**-**	**15**	**-**	**-**	**45**

3. Additional private study/learning hours expected for students per week.

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The private self-study of my students is crucial for this course. It includes:

- reading carefully the topics in the textbook or reference book,
- solving the exercises that are assigned in each chapter,
- browsing the websites that concerned with the course,
- discussing the course topics with the instructor in his office hours,
- watching the video lectures of other instructors who presented related topics worldwide.

The total workload of the student in this course is then: 60 + 5 * 15 = 135 work hours.

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Acquire knowledge of software engineering fundamentals and their practical application.	Lectures Lab demonstrations Case studies Individual presentations	Written Exam Homework assignments Lab assignments Class Activities Quizzes
1.2	Understand of best practices and standards in the field of software engineering, including all the activities of the software development life cycle activities and CASE tools.		
2.0	**Cognitive Skills**		
2.1	Identify and analyze user needs, design, implement, develop and evaluate computer-based systems to meet desired needs.	Lectures Lab demonstrations Case studies Individual presentations Brainstorming	Written Exam Homework assignments Lab assignments Class Activities Quizzes
3.0	**Interpersonal Skills & Responsibility**		
3.1	Present a short report in a written form and orally using appropriate scientific language, and use current techniques, skills, and tools necessary for software engineering.	Small group discussion Whole group discussion Brainstorming Presentation	Written Exam Homework assignments Lab assignments Class Activities Quizzes

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
4.0	**Communication, Information Technology, Numerical**		
4.1	Work in groups and Communicate effectively with a range of audiences.	Small group discussion Whole group discussion Brainstorming Presentation	Written Exam Homework assignments Lab assignments Class Activities Quizzes
5.0	**Psychomotor**		
5.1	**.....**	.....	.....
5.2	**.....**	.....	.....

5. Schedule of Assessment Tasks for Students during the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	First written mid-term exam	6	15%
2	Second written mid-term exam	12	15%
3	Presentation, class activities, and group discussion	Every week	5 %
4	Homework assignments	After Every chapter	5 %
5	Final Lab Exam	15	20%
6	Final written exam	16	40%
7	Total		100%

D. Student Academic Counseling and Support

Office hours: Sun – Wed: 12 PM - 2:00 PM
Office call: Sun – Wed: 12 PM - 2:00 PM

Email: z.abdoun@mu.edu.sa

E. Learning Resources

1. List Required Textbooks :

- Ian Sommerville, Software Engineering, 9th Ed, Addison-Wesley, 2011.

2. List Essential References Materials:

- Roger S. Pressman, Software Engineering: A practitioner's Approach, 6th ed, McGraw-Hill Science, 2009.

3. List Recommended Textbooks and Reference Material :

- ANNALS OF SOFTWARE ENGINEERING JOURNAL.
- IEEE TRANSACTIONS ON SOFTWARE ENGINEERING JOURNAL.
- SOFTWARE ENGINEERING JOURNAL.

4. List Electronic Materials :

- http://nptel.ac.in/courses.php?branch=Comp
- https://www.coursera.org/

5. Other learning material :

- Video and presentation are available with the instructor.

F. Facilities Required

1. Accommodation

- Classroom and Lab, as those that are available at college of science at Az Zulfi.

2. Computing resources

- Smart Board.

3. Other resources

- None.

G. Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Questionnaires (course evaluation) achieved by the students and it is electronically organized by the faculty member on his personal site.
- Student-faculty management meetings.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :

- Discussion within the staff members teaching the course
- Departmental internal review of the course.

3 Processes for Improvement of Teaching :

- Periodical departmental revision of methods of teaching.
- Monitoring of teaching activates by senior faculty members.
- Training course.

4. Processes for Verifying Standards of Student Achievement

- Comparison Graphs to indicate student achievements in comparison to other departments.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :

- Course evaluation.
- Exam evaluation.
- Improvement plan.

Course Specification Approved
Department Official Meeting No (6) Date 23 / 12 / 1435 *H*

Course's Coordinator		Department Head	
Name :	Dr. Zeiad El-Saghir	***Name :***	Dr. Yosry Azzam
Signature :		***Signature :***	Yosry Azzam
Date :	…./ … / …… *H*	***Date :***	…./ … / …… *H*