Course Specifications

Course Title:	**Software Engineering**
Course Code:	**ICS 221**
Program:	**Information and Computer Sciences**
Department:	**Computer Science and Information**
College:	**College of Science at Az Zulfi**
Institution:	**Al- Majmaah University**

Table of Contents

A. Course Identification

1. Credit hours:	(3) (2 Lec + 2 lab)
2. Course type	
a.	University ■ College □ Department √ Others □
b.	Required ■ Elective □
3. Level/year at which this course is offered:	**5**
4. Pre-requisites for this course (if any)**:**	**ICS 211 - Object-Oriented Programming**
5. Co-requisites for this course (if any)**:**	NIL

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	✔	80
2	**Blended**	✔	10
3	**E-learning**	✔	5
4	**Correspondence**	--	--
5	**Other**	✔	5

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	60
2	**Laboratory/Studio**	--
3	**Tutorial**	--
4	**Others** (specify)	--
	Total	60
Other Learning Hours*		
1	**Study**	45
2	**Assignments**	15
3	**Library**	00
4	**Projects/Research Essays/Theses**	05
5	**Others** (specify)	00
	Total	(60+75 = 135)

***** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course is aimed at helping students build up an understanding of how to develop a software system from scratch by guiding them thru the development process and giving them the fundamental principles of system development with object-oriented technology using UML. The course will initiate students to the different software process models, project management, software requirements engineering process, systems analysis and design as a problem-solving activity, key elements of analysis and design, and the place of the analysis and design phases within the system development life cycle.

2. Course Main Objective

The main objective of this course is to provide students with an overall foundation of software engineering to effectively and efficiently design and implement systems. Topics to be covered include: Introduction, requirements engineering, system design and implementation, software testing, models project planning and agile software development.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge:**	
1.1	Acquire knowledge of software engineering fundamentals and their practical application	**K1**
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.	**K2**
2	**Skills :**	
2.1	Identify and analyze user needs, design, implement, develop and evaluate computer-based systems to meet desired needs	**S1**
2.2	demonstrate the ability to develop a high-quality software system while working in a project group	**S2**
3	**Competence:**	
3.1	to identify software development needs and challenges that require various engineering solutions, and formulate such solutions	**C1**
3.2	capable to develop their software projects using modern engineering techniques and tools.	**C2**

C. Course Content

No	List of Topics	Contact Hours
1	The Process of Software Development 1. Introduction to Software Engineering 2. Software Processes	6
2	Feasibility Studies 1. Source Code Management 2. Feasibility Studies 3. Project Management	6

3	Requirements	6
4	Usability	6
5	System Architecture and Design	6
6	Object Oriented Design	6
7	Reliability and Performance	3
8	Risk in Software Development	3
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	To enable students to understand the methods of engineering requirements	Classroom discussions, using reading and listening texts, Using visual representations of new vocabulary	Written Exam Homework assignments Class & lab Activities Quizzes
1.2	To help students to be aware of key aspects of current software engineering approaches.		
2.0	**Skills**		
2.1	To enable students to Create and specify the software design using a software requirement specification, an Accepted design methodology (e.g., structured or object-oriented).	Group discussions, Brainstorming Presentations	Home works and assignments
2.2	To enable students to Use tools necessary for analyses and design activities		
3.0	**Competence**		
3.1	Enable students to Use a software testing strategy	Group discussions Case Studies Brainstorming Presentations	Written Exam Homework assignments Class & lab Activities Quizzes
3.2	Enable students to project planning and software development.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	20%
2	Second written mid-term exam	12	20%
3	Class activities, group discussions, Presentation	Every week	10%
4	Homework + Assignments	After every chapter	10%
5	Final written exam	16	40%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : Office hours - Office call – Email – Mobile – BlackBoard

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Software Engineering: Modern Approaches, Second Edition, Eric J. Braude and Michael E. Bernstein, Waveland Press, Inc.; 2 edition, February 15, 2016, ISBN- 10: 1478632305, ISBN-13: 978-1478632306
Essential References Materials	Software Engineering :Ian Sommerville, Pearson; 10 edition (April 3, 2015), ISBN-10: 0133943038, ISBN-13: 978-0133943030
Electronic Materials	w.ece.rutgers.edu/~marsic/books/SE/links/
Other Learning Materials	https://www.geeksforgeeks.org/software-engineering/

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1. Classrooms with required digital aids and to support traditional method of teaching using blackboard. 2. Classrooms with proper lighting and air conditioning system integrated with the sound System /audio system. 3. Classroom with smart board interface, display screen and a computer to aid the sessions
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart Board with supporting software / computers with updated versions of software as required to understand the subject concepts with quality headphones.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N/A

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Teaching	Students Classroom Observation Committee Professional Development Unit External Reviewers – accreditation committee	Formal Classroom Observation - Direct Student Surveys - Indirect

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Assessment	Curriculum and Test Development Unit Curriculum Committee Assessment Committee External Reviewers	Faculty Feedback - indirect Student Feedback – indirect Course Reports
Extent of Achievement of Course Learning Outcomes	Quality Assurance Unit Curriculum and Test Development Unit	Course Reports Annual Program Review

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	