COMSATS University Islamabad, Lahore Campus

COURSE HANDBOOK

1	**Course Title**	Introduction to Software Engineering
2	**Course Code**	CSE291
3	**Credit Hours**	4(3,1)
4	**Semester**	FALL 2019
5	**Resource Person**	Humaira Afzal ,Saman Safdar
6	**Supporting Team Members**	None
7	**Contact Hours (Theory)**	3 hours per week
8	**Contact Hours (Lab)**	3 hours per week
9	**Office Hours**	

10 Course Introduction

The main objective of this course is to construct a solid foundation for understanding and application of principles, techniques and technologies utilized in the development of good software systems by individual or teams. The objective of this course is to learn contemporary techniques to develop as well as manage the development of industrial strength software.

11 Learning Objectives

1. Upon completion of the course students would have acquired an in-depth knowledge of software development processes and the role of design in the software development life-cycle.
2. Students should have understanding about systems modelling, analysis and design across both architectural and behavioral specifications.
3. Students should have learned the Modelling and development methodology, Principles and techniques for the engineering of large software projects.
4. Students should have learned the Fundamental principles of formal specifications.
5. Students should have clear understanding about software testing approaches.

12 Course Contents

Introduction to Software Engineering, Process Models, Linear Sequential, Prototyping, RAD and Spiral Models, Requirement Engineering, Requirement Elicitation Techniques, Software Requirement Specification, Analysis Modelling, Data Modelling, ERD, Behavioural Modelling, Data Flow Model, Software Design Concepts and Principles, Object oriented analysis and design, Software Architecture, Software Testing Fundamentals, Types of Testing

13 Lecture Schedule

Weeks	Topic of Lecture	Text
Week 1	Orientation and general discussion of course structure Grading policy and Assignments Introduction • What is Software, Software Engineering, Software Crisis/History of software Engineering • Software Applications • Software construction and management	• Chapter 1 from Text Book 1 • Assigning SE projects to students and introduction to Tools
Week 2	Software Process models • SDLC, Waterfall, Incremental, Prototype, Spiral	• Chapter 2& 3 from Text Book 1 Assignment 1:

		• Introduction to MS Project Tool • Task division using Gantt Chart • Task: Preparation of Project Proposal as per CUI FYP Template
Week 3	RAD, Agile Development, Extreme Programming, Component Assembly Model	• Chapter 2& 3 from Text Book 1 Assignment 2: • Create prototypes of Project by using BalSamiq tool
Week 4	Requirements Engineering • Definitions • Types of Requirements • Steps of Requirement Engineering	• Chapter 4 from Text book 1 Assignment 3: • Preparation of SRS of Project by using Case Complete Tool
Week 5	System Modelling: Context Modelling: Context Diagram Activity Diagram	• Chapter 5 from text book 1 Assignment 4: • Introduction to MS Professional Visio • Draw Context and Activity Diagrams of the assigned projects using MS Professional Visio
Week 6	Sessional 1, Solution of paper discussed	Sessional 1 Lab
Week 7	Student week	
Week 8	System Modelling Interaction Modelling : Use Case Diagram	• Chapter 5 from text book 1 Assignment 5 • Draw Use Case of the assigned projects using MS Professional Visio
Week 9	System Modelling Interaction Modelling : Sequence Diagrams	• Draw Sequence Diagrams of the assigned projects using MS Professional Visio
Week 10	Behavioural Modelling: State Transition Collaboration Diagram	• Draw State Transition and Collaboration Diagrams of the assigned projects

		using MS Professional Visio
Week 11	• Behavioural Modelling: Data Flow diagrams • Software Architecture and design	• Draw Data Flow Diagrams of the assigned projects using MS Professional Visio
Week 12	Sessional II, Solution of paper discussed, Software Verification and Validation	
Week 13	Structural Modeling: Class Diagrams and their relationships Software Testing Verification vs Validation	• Draw Class Diagrams of the assigned projects using MS Professional Visio
Week 14	Testing Strategies: Bottom Up Vs Top Down testing Black Box Vs White Box, High Order Testing Equivalence Portioning and Boundary Value Analysis	Project Presentation
Week 15	Software Configuration Management Change and version management	Project Presentation
Week 16	Advanced topics in Software Engineering	

14 Course Assessment

The assessment of this module shall have following breakdown structure for Theory and Lab:

First Sessional Test	10%
Second Sessional Test	15%
Quizzes/Assignments	25%
Terminal Examination	50%

The minimum pass marks for each course shall be 50%. Students obtaining less than 50% marks in any course shall be deemed to have failed in that course. The correspondence between letter grades, credit points, and percentage marks at CIIT shall be as follows:

Grades	Letter Grade	Credit Points	Percentage Marks
A	(Excellent)	4.0	90and above
A-		3.7	85-89
B+		3.3	80-84
B	(Good)	3.0	75-79
B-		2.7	70-74
C+		2.3	65-69
C	(Average)	2.0	60-64
C-		1.7	55-59
D	(Minimum passing)	1.3	50-54
F	(Failing)	0.0	Less than 50

15 Assessment Schedule

Week 2	1st Assignment
Week 3	1st Quiz
Week 9	2nd Assignment

	Week 10	2nd Quiz
	Week 13	3rd Assignment
	Week 14	3th Quiz
	Week 16	Final Presentation

16. Format of Assignment

All the assignments should be typed on A4 paper, with typed front page according to following format.
Reg. # :_____
Name : _____
Course Title : _____
Section : _____
Assignment # : _____
Submitted to : _____
Date : _____
(Font size 16, Times New Roman)

17.	**Text Book**	1. Software Engineering 9th edition by Sommerville 2. Software Engineering A Practitioner's Approach by Roger S. Pressman, Edition: 7th
18.	**Reference Books**	1. The Unified Modeling Language User Guide by Booch, Rumbaugh, and Jacobson 2. Applying UML and Patterns 2nd edition by Craig Larman

19. Plagiarism

Plagiarism involves the unacknowledged use of someone else's work, usually in coursework, and passing it off as if it were one's own. Many students who submit apparently plagiarised work probably do so inadvertently without realising it because of poorly developed study skills, including note taking, referencing and citations; this is poor academic practice rather than malpractice. Some students, particularly those from different cultures and educational systems, find UK academic referencing/acknowledgement systems and conventions awkward, and proof-reading is not always easy for dyslexic students and some visually-impaired students. Study skills education within programmes of study should minimise the number of students submitting poorly referenced work. However, some students plagiarise deliberately, with the intent to deceive. This intentional malpractice is a conscious, pre-mediated form of cheating and is regarded as a particularly serious breach of the core values of academic integrity. **Plagiarism** can include the following:

1. collusion, where a piece of work prepared by a group is represented as if it were the student's own;
2. commission or use of work by the student which is not his/her own and representing it as if it were, e.g.:
    a. purchase of a paper from a commercial service, including internet sites, whether pre-written or specially prepared for the student concerned
    b. submission of a paper written by another person, either by a fellow student or a person who is not a member of the university;
3. duplication (of one's own work) of the same or almost identical work for more than one module;
4. the act of copying or paraphrasing a paper from a source text, whether in manuscript, printed or electronic form, without appropriate acknowledgement (this includes quoting directly from another source with a reference but without quotation marks);
5. submission of another student's work, whether with or without that student's knowledge or consent;
6. Directly quoting from model solutions/answers made available in previous years;
7. cheating in class tests, e.g.

a. when a candidate communicates, or attempts to communicate, with a fellow candidate or individual who is neither an invigilator or member of staff
b. copies, or attempts to copy from a fellow candidate
c. attempts to introduce or consult during the examination any unauthorised printed or written material, or electronic calculating, information storage device, mobile phones or other communication device
d. Personates or allows him or her to be impersonated.

8. Fabrication of results occurs when a student claims to have carried out tests, experiments or observations that have not taken place or presents results not supported by the evidence with the object of obtaining an unfair advantage.

These definitions apply to work in whatever format it is presented, including written work, online submissions, groupwork and oral presentations.

20. Attendance Policy

Every student must attended 80% of the lectures/seminars delivered in each course and 80% of the practical/laboratory work prescribed for the respective courses. The students falling short of required percentage of attendance of lectures/seminars/practical/laboratory work, etc., shall not be allowed to appear in the terminal examination of this course and shall be treated as having failed this course.

21. Field Trips/Case Studies/Seminars/Workshop

N/A