NATIONAL UNIVERSITY
of Computer & Emerging Sciences, Lahore

Department of Computer Science

SE 2001 –Software Requirements Engineering

FALL 2023

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Course Information

Program: BS **Credit Hours:** 3 **Type:** Core
Pre-requisites (if any): None
Course Website (if any): slate will be used for announcements and course material
Class Meeting Time: Section A: M, W 1730 – 1850 Section B: M, W 1430 – 1550
Class Venue: Section A: CS-11 Section B: CS-2
Exams: See Date sheet

Course Description/Objectives/Goals:

Objective of this course is to introduce the BS Software Engineering (SE) students with the software Requirements Engineering (RE) process and its need in different software systems. The students will be familiarized with the activities of the RE process i.e. inception, elicitation, elaboration, validation, prioritization, specification, management. Different techniques to carry out the listed RE activities will be discussed in this course and the students will be taught how to express and model software systems' requirements in natural language and using tools such as data flow diagram, decision table, state diagram etc.

Course Learning Outcomes (CLOs):

At the end of the course students will be able to:	**Domain**	**BT* Level**
Understand the need to expressing requirements for software systems	C	2
Understand the requirements engineering activities	C	2
Express the requirements in natural language	C	3
Express the requirements using appropriate requirements modeling tool	C	3
Distinguish between functional and non-functional requirements	C	3
Apply different requirements elicitation techniques to derive requirements for software systems	C	3

* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain.

Bloom's taxonomy Levels: 1. Knowledge, 2. Comprehension, 3. Application, 4. Analysis, 5. Synthesis, 6. Evaluation

Course Textbook(s)

1. Philip A. Laplante, Requirements Engineering for Software and Systems, 2nd Edition, CRC
2. Roger S. Pressman, Software Engineering A Practitioner's Approach, 8th Edition. McGrawHill
3. Shari PFleeger, Joanne Atlee, Software Engineering: Theory and Practice
4. Ian Sommerville, Software Engineering, 9th Edition
5. Karl Wiegers, Joy Beatty, Software Requirements: Best Practices. Microsoft

Additional references and books related to the course:

6. Elizabeth Hull, Ken Jackson, Jeremy Dick, Requirements Engineering. Springer
7. Robertson and Robertson, Managing the Requirements Process

Tentative Weekly Schedule

Week	Topics to be covered	Readings
1	Software Requirements, Introduction and Need of Software Requirements Engineering (SRE), Problems in SRE, SRE Activities	[1] Chapter 1 [2] Chapter 8 [3] Chapter 4
2	SRE Process, Stakeholders, SRE and Software Lifecycle, SRE Process Models and Software Process Models	[2] Chapter 4, 5, 8 [3] Chapter 4 [4] Chapter 2, 3, 4
3	Types of Requirements (Functional/Non-Functional), Writing Requirements, Characteristics of Requirements, Quality of Requirements. RE Activities: Inception	[1] Chapter 4 [2] Chapter 8 [3] Chapter 4 [4] Chapter 4
4	RE Activities: Elicitation. Scenarios, Stories, Personas. Elicitation Techniques (Brainstorming, Card Sorting, Ethnographic Observation, Apprenticeship, Interviews, Introspection etc.)	[1] Chapter 2, 3 [2] Chapter 8 [3] Chapter 4 [4] Chapter 4 [5] Chapter 6
5	Elicitation Techniques (s.a. Questionnaire/Surveys, Repertory Grids, Task Analysis, Viewpoints etc.)	[1] Chapter 3
6	**Mid I**	
7	RE Activities: Elaboration. Use Case Diagram, Sequence Diagram, Activity Diagram	[2] Chapter 9, 10, 11 [3] Chapter 4 [4] Chapter 5
8	RE Activities: Elaboration. Swim-lane Diagram, State Diagram, ER Diagram, Class Diagram, CRC Cards	[2] Chapter 9, 10, 11 [3] Chapter 4 [4] Chapter 5
9	RE Activities: Elaboration. Data Flow Diagram, Decision Table	[2] Chapter 9, 10, 11 [3] Chapter 4

		[4] Chapter 5
10	RE Activities: Specification. Writing Requirements. Writing Use cases, user stories. Requirements Documents and their quality. RE in Agile	[1] Chapter 4, 7 [2] Chapter 8 [5] Chapter 8
11	Guest Lectures	Additional Resources
12	**Mid II**	
13	RE Activities: Validation, Negotiation. Prioritization Techniques. Conflicting Requirements	[2] Chapter 8 [4] Chapter 4 Additional Resources
14	RE Activities: Management. Traceability. Tools in Requirements Management	[1] Chapter 8 [2] Chapter 8 [4] Chapter 4
15	Advanced Topics: EARS for specification. Risk Management. Presentations	[1] Chapter 5 Additional Resources
16	Presentation and Guest Lecture	Additional Resources

(Tentative) Grading Criteria

Grading scheme: Absolute

1. Assignments + Class Activities + Project (20%)
2. 5-6 Quizzes (10%)
3. Two Midterm Exam(s) (30%)
4. Final Exam (40%)

Course Policies

1. Quizzes may be un-announced.
2. No makeup for missed quiz or assignment.
3. 80% attendance
4. Zero tolerance to plagiarism. All the parties involved will be awarded negative or Zero in first instance. Repeat of the same offense will result in (F) grade.