National University of Computer & Emerging Sciences (NUCES) CFD Campus
Department of Software Engineering

COURSE OUTLINE

Course Title:	Software Requirements Engineering
Credit Hours:	03
Instructor(s):	Ms. Kanwal Naz kanwal.naz@nu.edu.pk
Semester:	Spring-2026
Course Type	Core

Course Description and Objectives

This course aims at familiarizing students with the complete Requirements engineering process from Stakeholder identification and elicitation processes to Requirements analysis, specification, modeling, validation and negotiation phases. Umbrella activities of Requirements management and traceability will also receive a peculiar focus. In addition to the **t**raditional track of RE, some State-of-the-art and industry-oriented topics have also been included in this course.

Textbooks/ Reference Material

Textbooks:

'**Requirements Engineering: Processes and Techniques'** by G. Kotonya and I. Sommerville, John Wiley & Sons,

Requirements Engineering Fundamentals: A Study Guide for the Certified Professional for Requirements Engineering Exam: Foundation Level – IREB compliant by Klaus Pohl · Chris Rupp, 2nd Edition.

Reference Materials:

1. Requirements Engineering for Software and Systems by Phillip A. Laplante.
2. Managing Software Requirements: A Use Case Approach by Dean Leffingwell, Don Widrig, Addison Wesley: Boston, 2nd edition,
3. Mastering the Requirements Process, Suzanne Robertson, James Robertson, Addison-Wesley Professional; 3rd edition
4. Writing Better Requirements, Ian F. Alexander, Richard Stevens, Addison-Wesley (2002)

Course Learning Outcomes:

CLO-1	Describe the activities involved in the requirements engineering process.
CLO-2	Apply different requirements elicitation, elaboration, prioritization, and validation techniques.
CLO-3	Author requirements in natural language using detailed template.
CLO-4	Distinguish between different types of requirements.
CLO-5	Develop software requirements models using appropriate requirements modelling tool.

Course Learning Outcomes:

Motivation of Requirements Engineering (RE), RE fundamentals, Different types of Requirements, RE process, Requirements elicitation techniques, Requirements Specification using natural language and semi-

formal (Modeling), requirements modeling in context of agile, Requirements quality attributes analysis using different tools, Requirements validation, requirements management, requirements prioritization, requirements-based testing.

Course Schedule (Tentative)

Week	Topics	CLO	Evaluation
1	Requirements Fundamentals: Importance of requirements for system success and failure Requirement Types: Functional, quality, constraints	1,4	
2	Requirements Fundamentals: System context, vision statement Basics of RE process	1	Project Phase-I
3	RE process: Requirements Elicitation	2	Assignment
4	Documenting Requirements: In-formal, semi-formal, formal Quality criteria for requirements documents, individual requirements	2	Quiz 1
5	Natural Language based requirements specification	3	
6	**First Session Exams**		
7	Natural languages listed requirements analysis using different tools.	3	
8	Requirements Specification-Conceptual models: Use case models, Goal Models	5	Assignment
9	Requirements analysis based on Goal models. Requirements Specification in the context of Agile	5	Quiz 2 Project Phase-II
10	Requirements Specification in the context of Agile Requirements Specification: Basics of formal models	5	Project Viva
11	Requirements Validation and Negotiation	1	
12	**Second Session Exams**		
13	Requirements Management Requirements Change management	1	Assignment
14	Requirement Prioritization	1,2	
15	Requirement based testing. Advance topics in RE	1	Project Phase-III
16	Guest Lecture Q/A sessions		Quiz 3

Assessment Criteria(Tentative)

Quiz	10%
Assignments	05%
Class Participation	05%
Project	10%
Midterm-1 Exam	15%
Midterm-2 Exam	15%
Final Exam	40%

Rules & Regulations

- Every Student is required to be punctual at the hours notified for lecture.
- An 80% attendance is necessary to appear in final examination as per university rules.
- Absolute grading scheme will be used in this course.