NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCES

SE2001 – SOFTWARE REQUIREMENT ENGINEERING [BS (SE) – CORE]

COURSE OUTLINE – FALL 2023

Course Code: SE2001 **Course Title:** Software Requirement Engineering

Credit Hours: 3 **Pre-Requisites:** Software Engineering/Basic OOAD concepts

Instructor: Dr. Syed Muazzam Ali Shah (email: muazzam.ali@nu.edu.pk)

Course Description & Objectives:
This course will provide effective techniques for managing the requirements engineering process throughout the software development cycle. The course incorporates different techniques to facilitate effective and efficient communication between users, managers, developers and analysts.

At the end of the course, students must be able to:

- Understand the principles of requirements engineering.
- Identify and understand different stakeholders for the project and their responsibilities in the requirement engineering process.
- Systematically establish, define, and manage the requirements for a large, complex, changing, software-intensive system.
- Understand the central issues in requirement engineering, elicitation, validation and management.
- Identify and effectively use modeling techniques to establish requirement specification for the requirements.
- Examine, evaluate and choose from traditional techniques and further advances in the field.
- Observe principles and techniques required for effective requirements management.
- Have an understanding of various requirement management tools.

Text Books:

- Karl E. Wiegers & Joy Beatty, Software Requirements, Microsoft, Third Edition.
- Suzanne and James Robertson, Mastering the Requirements Process, Third Edition.

Reference Books:

- Dean Leffingwell & Don Widrig, Managing Software Requirements: A unified Approach
- Gerald Kotonya & Ian Sommerville, Requirements Engineering processes and techniques.

Course Organization:

Course Page: FB Course Group: SRE Fall 2023 by Dr. Syed Muazzam Ali Shah

Submission & Communication: Lectures, Group Page coordination & Email: muazzam.ali@nu.edu.pk

Software Requirements: VISIO / ERWIN, Rational Rose, MS Word, Any Req management tool studied in course

Attendance: Attendance should not go below 80%.

Quizzes: Three announced quizzes will be part of this course.

Assignments: Two Assignments shall be given as a part of the course. Timely submission is important!! Assignments shall be posted on group coordination page.

Project: A group of maximum **three** students will produce a software requirement document as a part of this course by applying various requirement elicitation techniques studied during the course. The details of the project with all the milestones and deliverables (probably three) shall be posted on the group page during latest by **on the2nd week.** Group names shall be handed over to the instructor on **3rd week**. The project submission along with the viva/ presentation is due during the last week of semester **[week 16]**. The project is one of the major components of this course and a student shall be assigned a **failing grade in the course if he/she fails to submit the project or fails to comply with the requirements of the project**.

Course Outline:

Topic No	Topic
1	• Introduction to RE & Importance of Requirement Engineering • What, why, who and how of software requirements • Types of Software Requirements
2	• Role of Business Analysts & Practices for Requirement Engineering • Customer perspective of Requirements • Requirement Issues
3	• Role & Scope of Requirement Gathering in different Software Methodologies • The RE Process
4	• Actors & Stakeholder Analysis in RE Process • Establishing Scope & Vision
5	• Requirement Elicitation Process, Stages & Techniques • Establishing & Gathering Requirements
6	• Requirement Analysis & Analysis checklists • Handling incomplete & inconsistent requirements • Requirement Analysis & Negotiation
7	• Modeling Requirements, Modeling Techniques & OO Models • Use case models • Specifying Data Requirements
8	• Documenting Requirements & Requirement Document • Issues in writing requirements • Requirements beyond functionality
9	• Requirement Validation & Reuse • Requirement Validation Techniques
10	• Requirement Management Practices • Requirement Change Management • Requirement Traceability
11	• Prototyping, its types & Approaches
12	• Quality Requirements & Roles • Improving Requirement Processes
13	• Requirement Prioritization • Prioritization Techniques
14	• Software Requirements & risks • Requirements Engineering for Agile Methods and Their Approaches to Requirements Elicitation and Management

Grading Plan:

Quizzes, Assignments & Class Participation: 10%
Project: 10%
Midterms: 30%
Final Exam: 50%