

UIT UNIVERSITY

Department of Computer Science

Course Information Sheet

Course Title	Software Requirements Engineering
Course Code	CSE 202
Credit Hours	3+0
Program	BS CSE
Semester	IV
Session	Spring 2024

1. Course Objectives

To understand requirements engineering process and apply it for elicitation, specification, modeling and analysis of software and system requirements.

2. Course Contents

This course introduces students to the process of requirements engineering and helps them understand important issues in requirements engineering. It will also help them to learn and apply the RE concepts for elicitation, specification, modeling and analysis of software requirements. Important topics include Requirement engineering types, Requirements management and validation of requirements

3. Course Learning Outcomes (CLOs)

CLO No.	CLO Description	Domain and Taxonomy level	Mapped PLO Number	Level of emphasis of the PLO (1=High; 2=Medium; 3=Low)
1	Understand of the importance of following a systematic requirements engineering process	C1		
2	Effectively gather and analyze software requirements for the development of cost-effective and efficient technical solutions	C2		
3	Use system modeling techniques for requirements analysis and requirements presentation	C3		
4	Apply principles of requirements traceability and management to ensure the effectiveness of the software development process.	C4		

Note: Domain = C → Cognitive, P → Psychomotor, A → Affective

4. Weekly Course Plan

Week No.	Course Contents	Reading Material
1	Introduction: to Software Requirements Engineering, System Requirements, Types of requirements, Requirements Problems, FAQs of Requirements	T1: 1- 2
2	System Engineering: Classes of custom systems, Emergent Properties, Software Requirements Engineering Process, System Engineering Activities	
3	The Requirements Document: Requirements document, User of Requirements Documents, Requirements document structure, Users of requirements documents	
4	Requirements document structure: Adapting the standard, Organization XYZ standard, writing requirements, writing essentials, Writing guidelines, Key points	
5	Requirements Engineering Processes: Requirements Engineering Processes Objectives, Processes, Design processes, RE process - inputs and outputs, RE Process Variability, Process models, Coarse-grain activity models, Coarse-grain activity model of RE, RE process activities, Waterfall model of the software process, Context of the RE process, Spiral model of the RE process	
6	Fine-grain Activity Models: Role-action Models, Entity-relation Models, Actors in the RE process, RAD for software prototyping, Role descriptions, Human and social factors, Types of stakeholder, Factors influencing requirements, Process Support, CASE tools for RE, A requirements management system	
7	Requirements management tools, Process improvement, Planning process improvement, RE process problems, Process maturity, Capability maturity model, Maturity levels, RE process maturity model, RE process maturity levels, Good practice for RE process improvement, Examples of good practice guidelines	
8	Requirements Elicitation and Analysis: Components of requirements elicitation, Elicitation activities, Elicitation, analysis and negotiation, The requirements elicitation process, Elicitation stages, Requirements analysis and negotiation, Analysis checks, Requirements negotiation	
9	Midterm Exam	
10	Elicitation techniques: Specific elicitation techniques, Interviews, Scenarios, Soft Systems Methods (SSM), Observation and Social Analysis, Requirements reuse, Prototyping, Requirements analysis, Analysis checklists, Requirements interaction, Requirements Negotiation, Negotiation Meeting	
11	Requirements Validation: Validation objectives, Analysis and validation, Validation inputs and outputs, Requirements reviews, Requirements review process, Review activities, Problem actions, Pre-review checking, Review team membership	
12	Review checklists: Checklist questions, Requirements problem example, Prototyping, Prototyping for validation, Prototyping activities, Data-flow	

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	diagram for Issue, Requirements testing, Test case definition, Test record form, Requirements test form, Hard-to-test requirements.	
13	Requirements Management: Requirements Management, Requirements management tool support, A requirements management system, CASE tools for requirements management, Stable and volatile requirements, Requirements change factors	
14	Requirements Management: Types of volatile requirement, Requirements identification, Requirements identification techniques, Storing requirements Word processor documents	
15	Requirements database: Requirements DB - choice factors, Database choice factors, Change management, The change management process, Change management stages	
16	Change analysis and costing: Change analysis activities, Change request rejection Change processing, Tool support for change management, Traceability: Backwards/forwards traceability, Types of traceability, Traceability tables, Traceability lists, Traceability policies, Factors influencing traceability policies, Factors influencing traceability policies	
17	Requirement specification form: Software requirement specification, Labeling requirements, SRS template, Requirements specification of Agile projects	
18	Final Exam	

5. Textbook and other Reference Material

T1: An introduction to requirements engineering G. Kotonya and I. Sommerville (1998)

T2: Requirements Engineering: Processes and Techniques" by Gerald Kotonya and Ian Sommerville. (2010)

6. Student assessment methods

- Quiz
- Assignment
- Presentation
- Midterm Exam
- Final Exams

7. Weighting of assessments

a. Theory (100 Marks)

20 Marks (Sessional Assessment)
10 Marks Quizzes
10 Marks Assignments
20 Marks (Midterm Assessment)
60 Marks (Final Assessment)