



Template of Course Specification

Faculty: CIT
Department: SE
Program: B.SE

I. General information about the course:					
1. Course Title:	Software Requirements Engineering				
2. Course Code and Number :	SE311				
3. Credit Hours: 3	Lecture	Seminar/Tutorial	Practical	Training	Total
	2	2	--	--	3
4. Study Level and Semester:	Level 3 / Semester 6				
5. Pre-requisites (if any):	Software Engineering (CS325)				
6. Co-requisites (if any) :	---				
7. Program in which the course is offered	B.SC(Software Engineering)				
8. Teaching Language:	English				
9. Study System :	Semester Based				
10. Prepared by :	Course Facilitator (wadee alqubati)				
1. Approval date :					
2. Approved by:	Department				

II. Course Description:
<p>This Course is designed to cover Techniques for eliciting requirements, requirements Engineering Process, Functional and non-functional requirements , System services and constraints , Requirements traceability matrix , Metrics for non-functional requirements , Use case description , Use case and context diagrams , Requirements for agile developments , Requirements for various systems: embedded systems, web-based systems, business systems, etc. This course gives also a brief introduction to formal specifications using specification languages such as Z or B. Students participate in a group project on software requirements analysis and specification and requirements management case tools.</p>
III. Course Aims
<p>This Course aims to:</p> <ol style="list-style-type: none"> 1. Characterize a generic process of software requirements engineering. 2. Understand the difference in requirements engineering for different situations such as information systems and control system. 3. Effectively and efficiently elicit, document requirements, validate, and prioritise requirements. 4. Understand the difference between requirements and design, as well as the inherent difficulty in separating requirements and design. 5. Conduct system modeling through analytical methods. 6. Choose among RE techniques and use an appropriate technique based on the context.

VI. Course Intended Learning Outcomes (CILOs) :	
Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A4. Understand the software process life cycles, for small, medium and large software projects, and different approaches of software development, software project management, risk and quality management, and human-computer interaction.	a1. Recognize the Generic Process and System Modeling for Requirements Engineering a2. Define the key issues of decisions that have to be made about the Requirements Engineering
A5. Recognize the social, professional, legal, ethical, and cultural issues involved in the use of computer technology.	

Intellectual Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B1. Determine and analyze criteria, specifications and requirements appropriate to specific computing problems and formulate strategies to solve them.	b1. Systematize the principal requirements engineering activities of elicitation, analysis and validation, and the relationships between these activities.
B2. Differentiate the various methods of computational thinking, determining their wide relevance and applicability within other domains in everyday life, and being able to employ them in different conditions.	b2. Differentiate between agile and Web-Based Information Systems methods , and propose the appropriate requirements engineering methods and techniques for the solve of domain problem..
B3. Choose the most appropriate methods and tools including deploying appropriate theory, practices, and tools for the specification, design, implementation, and maintenance as well as the evaluation of computer-based systems.	b3. Evaluate and choose between Advanced Traceability, and define the necessary quality attributes that have to be considered when design and implementing solution for the given problem
B4. Criticize systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	b4. Organize the non-functional requirements, and define the necessary quality attributes that have to be considered when design and implementing solution for the given problem.

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
C1. Apply fundamental concepts of computer science, software engineering, human-computer interaction, science and mathematics in the modeling and design of computer systems.	c1. apply the Requirements Engineering for Agile Methods.
C2. Develop a wide range of software through all stages of their life cycle, namely problem analysis, requirements specification, design, construction; verification and evolution using appropriate methods and tools.	c2. apply the Requirements Engineering for Web-Based Information Systems.
C3. Operate computing equipment and software systems effectively and efficiently.	c3. Use Metrics for Traceability .
C4. Evaluate software process and artifacts in terms of software quality and models.	c4. apply the diagram types in the Unified Modeling Language (UML) .
	c5. Use CASE tools and graphical models to represent

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
D1. Communication skills: Make succinct presentations to a range of audiences about technical problems and their solutions. This may involve face-to-face, written communication or electronic communication.	d1. communicate effectively well-informed and well-reasoned positions on these issues, verbally (oral analysis) and in writing (project report) by applying critical thinking reasoning skills.
D2. Teamwork: Be able to work effectively as a member of a development team.	d2. work in a team of software engineering project taking into account the ethical issues related to software development tasks
D4. Self-management skills: Manage one's own learning and development, including time management and organizational skills.	d3. Write project - technical report and present projects/assignments
D5. Professional development skills: Keep abreast of current developments in the discipline to continue one's own professional development.	d4. use the techniques, skills, and modern engineering tools necessary for engineering practice

VI. Alignment of CILOs to Teaching and Assessment Strategies		
First: Alignment of Knowledge and Understanding CILOs		
Knowledge and Understanding CILOs	Teaching Strategies	Assessment Strategies
a1. Recognize the Generic Process and System Modeling for Requirements Engineering	Lectures Group Discussions	Written Exam Observation Report/Screen shots
a2. Define the key issues of decisions that have to be made about the Requirements Engineering	Brain Storming	Viva/Direct Questions Quiz

Second: Alignment of Intellectual Skills CILOs		
Intellectual Skills CILOs	Teaching Strategies	Assessment Strategies
b1. Systematize the principal requirements engineering activities of elicitation, analysis and validation, and the relationships between these activities.	Lectures Lab sessions	Written test Quizzes Lab technical report
b2. Differentiate between agile and Web-Based Information Systems methods , and propose the appropriate requirements engineering methods and techniques for the solve of domain problem..	Case study Assignment	Report
b4. Evaluate and choose between Advanced Traceability, and define the necessary quality attributes that have to be considered when design and implementing solution for the given problem		
b5. Organize the non-functional requirements, and define the necessary quality attributes that have to be considered when design and implementing solution for the given problem.		

Third: Alignment of Professional and Practical Skills CILOs		
Professional and Practical Skills CILOs	Teaching Strategies	Assessment Strategies
c1. apply the Requirements Engineering for Agile Methods.	Lab sessions	Technical Report Worksheets
c2. apply the Requirements Engineering for Web-Based Information Systems.	Homework	Report + Presentation
c3. Use Metrics for Traceability .		
c4. apply the diagram types in the Unified Modeling Language (UML) .	Group Discussions	Observations
c5. Use CASE tools and graphical models to represent		

Fourth: Alignment of Transferable (General) Skills CILOs		
Transferable (General) Skills CILOs	Teaching Strategies	Assessment Strategies
d1. communicate effectively well-informed and well-reasoned positions on these issues, verbally (oral analysis) and in writing (project report) by applying critical thinking reasoning skills.	Grouping	Presentation
	Tips	Observation
	Notes	Report
d2. work in a team of software engineering project taking into account the ethical issues related to software development tasks	Case Study	
d3. Write project - technical report and present projects/assignments		
d4. use the techniques, skills, and modern engineering tools necessary for engineering practice		

VII. Course topics and sub-topics (theoretical and practical) with contact hours and alignment to CILOs					
Topics/Units of Course Contents					
First: Theoretical Aspects					
No.	Course Topics/Units	Sub-topics	No. of Weeks	Contact Hours	CILOs
1	Introduction to software Requirements	1- Introduction to Requirements 2- Introduction to Systems Engineering 3- Requirements and Quality 4- Requirements and the Lifecycle 5- Requirements Traceability 6- Requirements and Modeling 7- Requirements and Testing	1	2	a1, a2
2	Generic Process and System Modeling for Requirements Engineering	1- Developing Systems 2- Generic Process Context 3- Generic Process Introduction 4- Generic Process Information Model 5- Generic Process Details 6- Representations for RE 7- Methods	2	4	a2, b1, b2
3	Writing and Reviewing Requirements	1- Requirements for Requirements 2- Structuring Requirements Documents 3- Key Requirements 4- Using Attributes 5- Ensuring Consistency Across Requirements 6- Value of a Requirement 7- The Language of Requirements 8- Requirement Boilerplates 9- Granularity of Requirements 10- Criteria for Writing Requirements Statements	1	2	a2
4	Requirements Engineering in the Problem Domain	1- What is the Problem Domain? . . . 2- Instantiating the Generic Process 3- Agree Requirements with Customer 4- Analyze and Model 5- Derive Requirements	1	2	b1, b2
5	Requirements Engineering in the Solution Domain	What is the Solution Domain? 2- Engineering Requirements from Stakeholder Requirements to System Requirements 3- Engineering Requirements from System Requirements to Subsystems 4- Other Transformations Using a Design Architecture	2	4	
MID TERM EXAM					
6	Advanced Traceability	1- Elementary Traceability 2- Satisfaction Arguments 3- Requirements Allocation 4- Reviewing Traceability 5- The Language of Satisfaction Arguments 6- Rich Traceability Analysis	2	4	

		7- Rich Traceability for Qualification 8- Implementing Rich Traceability 9- Design Documents 10- Metrics for Traceability			
7	Management Aspects of Requirements Engineering	1- Introduction to Management 2- Requirements Management Problems 3- Managing Requirements in an Acquisition Organization 4- Supplier Organizations 5- Product Organizations	1	2	
8	Requirements Engineering for Agile Methods	1- Agile Methods 2- Traditional and Agile Requirement Engineering 3- Agile Approaches to Requirements Engineering 4- Role and Responsibility of Customers, Developers, and Managers 5- Tools for Requirements Management in AMs	2	4	
9	Requirements Engineering for Web-Based Information Systems	1- Approaches to RE for Development of WBIS 2- Significance of Concerns in RE 3- A Model of Concern-Driven Requirements Evolution	2	4	b3, c1, c2
FINAL EXAM					

I. Teaching Strategies	
Lectures	
Group Discussions	
Case study	
Assignment	
Homework	

Total number of weeks and hours	14	28
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Second: Practical/Tutorial/Clinical Aspects				
Write up practical/tutorial/clinical topics				
No.	Practical/Tutorial/Clinical topics	No. of Weeks	Contact Hours	CILOs
1	Creating Requirements Model	1	2	c2, c3
2	Creating Document View	2	4	b1, c3
3	Case study 1	1	2	b2, c3
4	Case study 2	1	2	b2, c3
5	Case study 3	1	2	b3, c3
6	Case study 4	1	2	c1, c2, c3
7	Case study 5	1	2	c1, c2, c3
8	Creating Traceability View	1	2	c1, c2, c3
9	Creating User Allocation View_1	1	2	c2, c3
10	Case study 6	1	2	c2, c3
11	Case study 7	1	2	d1
Total number of weeks and hours		12	24	

II. Tasks and Assignments :				
No.	Task/Assignment	CILOs	Week due	Mark
1	Assignment 1		10	5 %
2	Assignment 2		12	10 %

III. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	Aligned CILOs
1	Assignments + Reports	12	25	25%	c1, c2, c3, d1
2	Quiz 1 & Quiz 2	4 & 9	5	5%	a1, a2
3	Mid term exam	7	20	20%	b1, b2, b3
4	Final Exam	15	50	50%	All course ILO's
Total			100	100%	

IV. Learning Resources :

(Author, (Year), Book Title, Edition, Publisher, Country of publishing)

Textbooks-not more than 2

1. Elizabeth Hull, Ken Jackson and Jeremy Dick,(2010), Requirements Engineering , 3rd Edition , Springer.

Essential References-not less than 4

1. D. Leffingwell& D. Widrig,(2003),Software Requirements Management – A Use Case Approach.2nd Edition, Addison-Wesley/Pearson,.
2. Peter Zielczynski,(2008), Requirements Management Using IBM Rational RequisitePro. IBM Press.
3. Robertson and Robertson, (2006),Mastering the Requirements Process.2nd Edition, Addison-Wesley/Pearson.
4. Gerald Kotonya& Ian Sommerville,(1998), Requirements Engineering: Processes and Techniques, 1st Edition , J. Wiley, 282 Seiten

Electronic Materials and Web Sites

Non

V. Course Policies (To be determined by Faculty Deanship):	
Based on university regulations, the following aspects should be figured out:	
1.	(Class Attendance) :
2.	(Tardy) :
3.	(Exam Attendance/Punctuality) :
4.	(Assignments & Projects) :
5.	(Cheating) :
6.	(Plagiarism) :
7.	(Other policies) :

Template of Course Syllabus

Faculty : **TIC**

Department: **SE**

Program : **B.SE**

I. General information about the course instructor :							
Name	(Facilitator)	Office Hours (3 Hours Weekly)					
Location & phone number	USTY	Sat	Sun	Mon	Tue	Wed	Thu
Email							

II. General information about the course:						
1.	Course Title :	Software Requirements Engineering				
2.	Course Code and Number :	SE311				
3.	Credit Hours :	Credit Hours				Total
		Theoretical	Seminar/Tutorial	Practical	Training	
		2	2	--	--	3
4.	Study Level and Semester:	Level 3 / Semester 6				
5.	Pre-requisites (if any):	Software Engineering (CS325)				
6.	Co-requisites (if any):	---				
7.	Program in which the course is offered:	B.SC(Software Engineering)				
8.	Teaching Language:	English				
9.	Instruction location:	N/A				

عميد الكلية
د. عبدالقادر العبادي

رئيس القسم
أ. نبيل المخلافي

مسؤول البرنامج
أ. وديع القباطي

المراجع

الموصف

I. Course Description

This Course is designed to cover Techniques for eliciting requirements, requirements Engineering Process, Functional and non-functional requirements , System services and constraints , Requirements traceability matrix , Metrics for non-functional requirements , Use case description , Use case and context diagrams , Requirements for agile developments , Requirements for various systems: embedded systems, web-based systems, business systems, etc. This course gives also a brief introduction to formal specifications using specification languages such as Z or B. Students participate in a group project on software requirements analysis and specification and requirements management case tools.

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III. Course Intended Learning Outcomes (CILOs) :

1. a1. Recognize the Generic Process and System Modeling for Requirements Engineering
2. a2. Define the key issues of decisions that have to be made about the Requirements Engineering
3. b1. Systematize the principal requirements engineering activities of elicitation, analysis and validation, and the relationships between these activities.
4. b2. Differentiate between agile and Web-Based Information Systems methods , and propose the appropriate requirements engineering methods and techniques for the solve of domain problem..
5. b3. Evaluate and choose between Advanced Traceability, and define the necessary quality attributes that have to be considered when design and implementing solution for the given problem
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7. c1. apply the Requirements Engineering for Agile Methods.
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9. c3. Use Metrics for Traceability .
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11. c5. Use CASE tools and graphical models to represent
12. d1. communicate effectively well-informed and well-reasoned positions on these issues, verbally (oral analysis) and in writing (project report) by applying critical thinking reasoning skills.
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أ. نبيل المخلافي

أ. وديع القباطي

IV. Course Contents				
Theoretical Aspect:				
No.	Course Units	Sub-topics	Week due	Contact Hours
1.	Unit-1	1. Introduction to software Requirements 2. Generic Process and System Modeling for Requirements Engineering	Week 3	6
2.	Unit-2	3. Writing and Reviewing Requirements 4. Requirements Engineering in the Problem Domain 5. Requirements Engineering in the Solution Domain	Week7	8
3.	Unit-3	6. Advanced Traceability 7. Management Aspects of Requirements Engineering	Week10	6
4.	Unit-4	8. Requirements Engineering for Agile Methods 9. Requirements Engineering for Web-Based Information Systems	Week 13	6
5.		12.Revision	Week 14	2
Total number of weeks and hours			14	28

Second: Practical/Tutorial/Clinical Aspects :			
Write up practical/tutorial/clinical topics			
No.	Practical/Tutorial/Clinical topics	No. of Weeks	Contact Hours
1.	Creating Requirements Model	1	2
2.	Creating Document View	2	4
3.	Case study 1	1	2
4.	Case study 2	1	2
5.	Case study 3	1	2
6.	Case study 4	1	2
7.	Case study 5	1	2
8.	Creating Traceability View	1	2
9.	Creating User Allocation View_1	1	2
10.	Case study 6	1	2
11.	Case study 7	1	2
Total number of weeks and hours		12	24

V. Teaching Strategies

1. Lectures
2. Group Discussions
3. Case study
4. Assignment
5. Homework
6. Brain Storming

VI. Tasks and Assignments

No.	Task/Assignment	Week due	Mark
1.	Assignment 1 + report	WEEK 12	10
2.	Assignment 2 + report	WEEK 14	15

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 أ.وديع القباطي أ.نبيل المخلافي د. عبدالقادر العبادي

VII. Learning Assessment:				
No.	Assessment Tasks	Assessment day & date	Mark	Weight
1	Quiz 1	WEEK 3	5	5%
2	Quiz 2	WEEK 5		
3	Mid term exam	WEEK 7	20	20%
4	Assignment – 1	WEEK 12	10	10%
6	Assignment – 2	WEEK 14	15	15%
7	Reports	WEEK 14		
8	Final Exam	WEEK 15	50	50%
Total				

VIII. Learning Resources
SKOOB TXET Elizabeth Hull, Ken Jackson and Jeremy Dick,(2010), Requirements Engineering , 3rd Edition , Springer.
SECNEREFER D. Leffingwell& D. Widrig,(2003),Software Requirements Management – A Use Case Approach.2nd Edition, Addison-Wesley/Pearson,. Peter Zielczynski,(2008), Requirements Management Using IBM Rational RequisitePro. IBM Press. Robertson and Robertson, (2006),Mastering the Requirements Process.2nd Edition, Addison-Wesley/Pearson. Gerald Kotonya& Ian Sommerville,(1998), Requirements Engineering: Processes and Techniques, 1st Edition , J. Wiley, 282 Seiten
Electronic Materials and Web Sites: Non

IX. Course Policies (To be determined by Faculty Deanship)	
1.	Class Attendance :
2.	Tardy :
3.	Exam Attendance/Punctuality:
4.	Assignments & Projects:
5.	Cheating:
6.	Plagiarism:
7.	Other policies:

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