

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Department
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Study plan No.	2021/2022	University Specialization		Software Engineering		
Course No.	0114152	Course name		Software specification and design		
Credit Hours	3	Prerequisite Co-requisite		Software Engineering Principles		
Course type	<input type="checkbox"/> MANDATORY UNIVERSITY REQUIREMENT	<input type="checkbox"/> UNIVERSITY ELECTIVE REQUIREMENTS	<input type="checkbox"/> FACULTY MANDATORY REQUIREMENT	<input type="checkbox"/> Support course family requirements	<input checked="" type="checkbox"/> Mandatory requirements	<input type="checkbox"/> Elective requirements
Teaching style	<input type="checkbox"/> Full online learning	<input checked="" type="checkbox"/> Blended learning		Traditional learning		
Teaching model	2Synchronous: <input checked="" type="checkbox"/> 1asynchronous	<input checked="" type="checkbox"/> 2 face to face : 1synchronous		<input type="checkbox"/> 3 Traditional		

### Faculty member and study divisions information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Wael Alzyadat	Assistant Professor			Wael.alzyadat@zuj.edu.jo	
Division number	Time	Place	Number of students	Teaching style	Approved model

### Brief description

Software requirements engineering consists of activities performed to discover what functional and nonfunctional attributes and interfaces a software system should have to satisfy the needs of the customer. It also includes analysis and management activities performed in order to discover flaws in requirements artifacts and to manage the requirements engineering process. Topics include requirements elicitation, prototyping, functional and non-functional requirements, object-oriented techniques, and requirements tracking.
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### Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	1. Requirements Engineering for Software and Systems, Phillip A. Laplante, 3rd Edition, 2017, CRC Press.			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	International Requirements Engineering Board ( <a href="https://www.ireb.org/en">https://www.ireb.org/en</a> )			
Supporting websites				
The physical environment for teaching	<input checked="" type="checkbox"/> Class room	<input checked="" type="checkbox"/> labs	<input type="checkbox"/> Virtual educational platform	<input type="checkbox"/> Others
Necessary equipment and software	1 R- programming language 2 Orange			
Supporting people with				

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Department
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special needs	
For technical support	

Course learning outcomes (S= Skills, C= Competences K= Knowledge,)

No.	Course learning outcomes	The associated program learning output code
<b>Knowledge</b>		
K1	Identifies stakeholders for elicitation of requirements	Mk1, Mk3
K2	Leads identification of emergent properties and requirements throughout the software development life cycle.	Mk2, Mk3
K3	Checks requirements for accuracy, lack of ambiguity, completeness, consistency, traceability, and other desired attributes.	Mk1, Mk2
K4	Performs tradeoff analysis of requirements activities	Mk2
<b>Skills</b>		
S1	Assists requirements engineers with preparation of surveys and other elicitation instruments.	Ms3
S2	Prepares requirements documentation including descriptions of interfaces and functional and non-functional requirements	Ms2, Ms3
S3	Assists in domain analysis	Ms4
	Produce test cases, plans, and procedures that can be used to verify that they have defined, designed and implemented a system that meets the needs of the intended users.	Ms1, Ms3
<b>Competences</b>		
C1	Assists in engaging different stakeholders to determine needs and requirements	Mc1, Mc3
C2	Applying different methods to the project as appropriate to elicit requirements	Mc2
C3	Creates prototypes of different types as needed	Mc3
C4	Assists in applying defined processes for requirements engineering	Mc1, Mc3

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm exam	30%	30%	40%	30%
Participation / practical applications	0	0	10%	30%
Asynchronous interactive activities	30%	30%	0	0
Final exam	40%	40%	50%	40%

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Department
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**Note:** Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, and work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

### Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	Introduction to Requirements Engineering	Lecture	1-23
2	Mission Statement, Customers, and Stakeholders	Lecture	23-40
3	Requirements Elicitation	learning through projects	41-66
4	Writing the Requirements Document	learning through problem solving	69-86
5	Requirements Risk Management	Lecture	86-95
6	Standards for Verification and Validation	Lecture	96-108
7	Formal Methods	Lecture	113-137
8	Requirements Specification and Agile Methodologies	learning through projects	139-155
9	Tool Support for Requirements Engineering	learning through projects	155-168
10	Requirements Management	learning through projects	171-187
11	Value Engineering of Requirements	learning through projects	192-220
12	Basic principles of requirements modeling	Lecture	<a href="https://www.ireb.org/content/downloads/17-syllabus-cpre-advanced-level-requirements-modeling/ireb_cpre_syllabus_requirements-modeling_advanced_level_en_v2.2.pdf">https://www.ireb.org/content/downloads/17-syllabus-cpre-advanced-level-requirements-modeling/ireb_cpre_syllabus_requirements-modeling_advanced_level_en_v2.2.pdf</a>
13	Context modeling	participatory learning	<a href="https://www.ireb.org/content/downloads/17-syllabus-cpre-advanced-level-requirements-modeling/ireb_cpre_syllabus_requirements-modeling_advanced_level_en_v2.2.pdf">https://www.ireb.org/content/downloads/17-syllabus-cpre-advanced-level-requirements-modeling/ireb_cpre_syllabus_requirements-modeling_advanced_level_en_v2.2.pdf</a>
14	Modeling information structures	participatory learning	<a href="https://www.ireb.org/content/downloads/17-syllabus-cpre-advanced-level-requirements-modeling/ireb_cpre_syllabus_requirements-modeling_advanced_level_en_v2.2.pdf">https://www.ireb.org/content/downloads/17-syllabus-cpre-advanced-level-requirements-modeling/ireb_cpre_syllabus_requirements-modeling_advanced_level_en_v2.2.pdf</a>
15	Modeling dynamic views	participatory learning	<a href="https://www.ireb.org/content/downloads/17-syllabus-cpre-advanced-level-requirements-modeling/ireb_cpre_syllabus_requirements-modeling/ireb_cpre_syllabus_requirements-modeling_advanced_level_en_v2.2.pdf">https://www.ireb.org/content/downloads/17-syllabus-cpre-advanced-level-requirements-modeling/ireb_cpre_syllabus_requirements-modeling_advanced_level_en_v2.2.pdf</a>

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Department
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			modeling_advanced_level_en_v2.2.pdf
16	Final Exam		

\* Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.

\*\* Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.

### Schedule of asynchronous interactive activities (in the case of e-learning and blended learning)

Week	Task / activity	Reference	Expected results
1	Requirements Analysis Document Template	<a href="https://personal.utdallas.edu/~chung/SP/RequirementsAnalysisDocumentTemplate.htm">https://personal.utdallas.edu/~chung/SP/RequirementsAnalysisDocumentTemplate.htm</a>	Performs all sections of standards
2	Where's The Checkbox For 'New FBI Computer System Is So Bad I Plan To Go On A Crime Spree'?	<a href="https://www.techdirt.com/articles/20060818/1613226.shtml">https://www.techdirt.com/articles/20060818/1613226.shtml</a>	The impact of requirement
3	No One Expects the Requirements Inquisition: Asking Next-Level Questions	<a href="https://medium.com/analysts-corner/no-one-expects-the-requirements-inquisition-asking-next-level-questions-605cc18b29b2">https://medium.com/analysts-corner/no-one-expects-the-requirements-inquisition-asking-next-level-questions-605cc18b29b2</a>	Recognition among requirement attributes
4	10 Requirements Traps to Avoid	<a href="https://medium.com/analysts-corner/10-requirements-traps-to-avoid-fb103bfeaaac">https://medium.com/analysts-corner/10-requirements-traps-to-avoid-fb103bfeaaac</a>	
5	Modelling requirements with UML: a rigorous approach (Doing requirements well with UML)	<a href="https://www.iaria.org/conferences2007/filesICSEA07/UMLreqs.pdf">https://www.iaria.org/conferences2007/filesICSEA07/UMLreqs.pdf</a>	to apply rigorous requirements methods – thus achieving a more reliable process, and better-quality products
6	Context modeling	<a href="https://www.iaria.org/conferences2007/filesICSEA07/UMLreqs.pdf">https://www.iaria.org/conferences2007/filesICSEA07/UMLreqs.pdf</a>	Implement through

QF01/0408-4.0E	<b>Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Department</b>		
7	Modeling dynamic views	<a href="https://www.iaria.org/conferences2007/files/ICSEA07/UMLreqs.pdf">https://www.iaria.org/conferences2007/files/ICSEA07/UMLreqs.pdf</a>	UML Implement through UML