QF01/0408-4.0E	Course Plan for Master program - Study Plan Development and Updating Procedures/ Department

Study plan No.	**2021/2022**		**University Specialization**		**Software Engineering**	
Course No.	0104715		**Course name**		**Advanced Software quality**	
Credit Hours	**3**		**Prerequisite Co-requisite**			
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	☐ UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	☐ Support course family requirements	☐ Mandatory requirements	✓ Elective requirements
Teaching style	☐ **Full online learning**		☐ **Blended learning**		✓ **Traditional learning**	
Teaching model	☐ **2Synchronous: 1asynchronous**		☐ **2 face to face : 1synchronous**		✓ **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	
Dr.Feras Ahmed Altarawneh	**Assistant professor**	**117**	**325**	**f.altarawneh@zuj.edu.jo**	
Division number	**Time**	**Place**	**Number of students**	**Teaching style**	**Approved model**

Brief description

This course defines the quality of the software, the foundations of quality measurement system, quality management, assurance of quality, planning, quality of product and process quality, software product metrics, management of the quality factors of the software and its effectiveness, global scale ISO 9001, check the software and plans and techniquesfor quality.

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	**"**Software Quality Assurance**",** Claudy Y. Laporte and Alian**,** 2018, 1th Ed., Wiley-IEEE Computer Society.
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1- Software Engineering: A Practitioner's Approach, 8th edition, by R. Pressman, McGraw-Hill. 2015. ISBN-978-0-07-802212-8. 2- Galin D. (2009) *"Software Quality Assurance - From Theory to Implementation",* Addison Wessley, Harlow, England. 3- Chemturi, Murali (2010). "Mastering Software Quality Assurance: Best Practices and Techniques for Software Developers", the Publisher: the Author. *4*- Godbole, Nina S. (2014). "Software Quality Assurance: Principles and Practice", 2nd edition, Alpha Science International, Pangbourne, UK.ttttttrol, 87tdx

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	5- Goodman P. (2004) "Software Metrics: Best Practices for Successful IT Management", Rothstein Asso., Brookfied, CONN, USA			
Supporting websites				
The physical environment for teaching	✓ Class room	☐ labs	☐ Virtual educational platform	☐ Others
Necessary equipment and software				
Supporting people with special needs				
For technical support				

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

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	The knowledge of the fundamental concepts of software quality, quality requirements, and quality culture.	MK1
K2	awareness of the software quality models and standards	MK2
K3	Understanding of the software quality assurance and how to integrate it into software development process.	Mk1
K4	Understanding techniques of review, audits, verification & validation, the software quality metrics and management components of the software quality.	Mk1
	Skills	
S1	An ability to explain of the concepts, requirements, challenges, the culture and cost of the software quality.	MS1
S2	An ability to distinguish and use different software quality models, standards, and several quality factors.	MS1
S3	An ability to use the software quality assurance activities in software development process. .	MS3
S4	An ability to compare, analysis and evaluate varieties tools of the software quality assurance and different quality management standards.	MS1
S5	An ability to apply the audits methods, V & V techniques, and use different metrics for measuring the software quality.	MS3
	Competences	
C1	An ability to develop different quality software in diverse application domains.	MC1
C2	An ability to work with diverse team and communicate effectively	MC1
C3	An ability to learn from, and get expertise from different domains.	MC3

Mechanisms for direct evaluation of learning outcomes

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Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
First exam	0	0	%20	**0**
Second / midterm exam	%30	%30	%20	**30%**
Participation / practical applications	0	0	10	**30%**
Asynchronous interactive activities	%30	%30	0	**0**
final exam	%40	%40	%50	**40%**

Note: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, 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	**Software Quality Fundamental** • What Is Quality? • Software Quality • Error. Fault, and Failure • Software Quality Assurance	**Lecture**	2 - 27
2	**Quality Culture** • Cost of Quality • Quality Culture • Five dimensions of software project • The software engineering code of ethics	**Lecture**	**39 - 56**
3	**Software Quality Requirements** • Software quality models • Definitions of software quality requirements • Requirement traceability during the software life cycle • Software quality requirements and quality plan	**Lecture**	69 - 95
4	**Software Engineering Standards and Models**	**Lecture**	**108 - 129**
5	- Standards, cost of quality , and business models	**Lecture**	835-836

6	**Software Quality Assurance** • Background Issues • Elements of Software Quality Assurance • SQA Processes and Product Characteristics • SQA Tasks, Goals, and Metrics	**Lecture**	449-459
7	**Software Quality Assurance Plan** • SQA Planning • Executing SQAP	**Lecture**	**518 - 537**
8	**Reviews** • Personal review and desk-check review • Standards and models • Walkthrough • Inspection review • Project lunch reviews and project assessments • Agile meeting	**Lecture**	172-195
9	• Measures • Selecting the type of reviews • Reviews and business models • Software QUALITY Assurance Plan	**Lecture**	199-205
10	**Software Audits** - Types of audits - Audits and software problem resolution - Audits process and ISO 9001standard - Audit according to CMMI Audit and SQAP	**Lecture**	215 - 239
11	**Verification and validation** • Benefits and costs of V&V • V&V standards and process models • V&V according to ISO/IEC/IEEE12207 • V&V according to CMMI model • V&V in SQA plan	**Lecture**	**255 - 291**
12	**A Framework for Product Metrics** • Measures, Metrics, and Indicators • The Challenge of Product Metrics • Measurement Principles	**Lecture**	654 - 657

	• Goal-Oriented Software Measurement • The Attributes of Effective Software Metrics		
13	- Metrics for the Requirements Model - Function-Based Metrics - Metrics for Specification Quality - Component-Level Design Metrics - Operation-Oriented Metrics User Interface Design Metrics	**Lecture**	663 - 672
14	- Metrics for Source Code - Metrics for Testing • Metrics for Maintenance	**Lecture**	675-679
15	- Software Configuration Management - An SCM Scenario - Elements of a Configuration Management System - Baselines - Software Configuration Items Management of Dependencies and Changes	**Lecture**	**624-628**
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			
2			
3			
4			
5			
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16			