

" حيث تصبح الرؤية واقعاً "
"When Vision Becomes
Reality"

" عراقة وجوده "
Tradition and Quality

Detailed Course Description - Course Plan Development and Updating Procedures/ Department of Software Engineering	QF01/0408-3.0E
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Faculty	Faculty of Science & Information Technology	Department	Software Engineering
Course number	0114458	Course title	Software Quality Management
Number of credit hours	3	Pre-requisite/co-requisite	0114453

Brief course 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 techniques for quality.

Course goals and learning outcomes	
Goal 1	To develop an understanding of basic concepts of software quality and quality factors.
Learning outcomes	1.1 A student will discuss and develop an awareness of the concepts, needs, and challenges of software quality. 1.2 A student will be able to discuss the several quality factors and their sub-factors. 1.3 A student will be able to demonstrate their capabilities to adopt different software quality models.
Goal 2	To be exposed how the software quality assurance integrate into software development process.
Learning outcomes	2.1. A student will be able to describe the software quality assurance architecture and its' infrastructure. 2.2 A student will be able to use the software quality assurance activities in software development process. 2.3. A student will be able to identify varieties tools of the software quality assurance.
Goal 3	To be exposed to the management components of the software quality
Learning outcomes	3.1 A student will be able to apply different software quality metrics. 3.2. A student will be able to discuss different quality management standards.
Textbook	Software Engineering: A Practitioner's Approach, 8th edition, by R. Pressman, McGraw-Hill. 2015. ISBN- 978-0-07-802212-8.
Supplementary references	1. Galin D. (2009) " <i>Software Quality Assurance - From Theory to Implementation</i> ", Addison Wesley, Harlow, England. 2. Chemturi, Murali (2010). "Mastering Software Quality Assurance: Best Practices and Techniques for Software Developers", the Publisher: the Author. 3. Godbole, Nina S. (2014). "Software Quality Assurance: Principles and Practice", 2 nd edition, Alpha Science International, Pangbourne, UK. 4. Goodman P. (2004) "Software Metrics: Best Practices for Successful IT Management", Rothstein Asso., Brookfield, CONN, USA

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Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	1	Quality Concepts		
	1	- What Is Quality?	413	
	1	- Software Quality	414	
	1	- The Software Quality Dilemma - Achieving Software Quality	420 427	
02		REVIEW TECHNIQUES		
	1	- Cost Impact of Software Defects	432	
	1	- Defect Amplification and Removal	433	
	1	- Review Metrics and Their Use	435	
	1	- Reviews: A Formality Spectrum	438	
	1	- Informal Reviews - Formal Technical Reviews	439 441	
03		SOFTWARE QUALITY ASSURANCE		
	1	- Background Issues	449	
	1	- Elements of Software Quality Assurance	450	
	1	- SQA Processes and Product Characteristics - SQA Tasks, Goals, and Metrics	452 456	
04	1	- Formal Approaches to SQA	456	
	1	- Statistical Software Quality Assurance	456	
	1	- Software Reliability	459	
	1	- The SQA Plan	463	
05	1	- Software Quality Infrastructure	386	
	1	- Procedures and work instructions	389	
	1	- Templates, checklists	392	
	1	- Staff training and certifications - Corrective and preventive actions	396	
06	1	Quality management standards		
	1	- The ISO 9000 Quality Standards	461	
	1	- CMM assessment methodology - CMMI assessment methodology	466	
07	1	- A Strategic Approach to Software Testing	472	
	1	- Strategic Issues	481	
	1	- Software Testing Fundamentals	497	
	1	- Internal and External Views of Testing	499	
08	1	- Software Configuration Management	624	
	1	- An SCM Scenario	625	
	1	- Elements of a Configuration Management System	626	
	1	- Baselines	626	
	1	- Software Configuration Items	628	

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		- Management of Dependencies and Changes	628	
09	1 1 1 1 1	A Framework for Product Metrics	654	
		- Measures, Metrics, and Indicators	655	
		- The Challenge of Product Metrics	656	
		- Measurement Principles	656	
		- Goal-Oriented Software Measurement	657	
		- The Attributes of Effective Software Metrics		
10	1 1 1	- Metrics for the Requirements Model	659	
		- Function-Based Metrics	659	
		- Metrics for Specification Quality	662	
11	1 1 1 1 1 1	- Metrics for the Design Model	663	
		- Architectural Design Metrics	663	
		- Metrics for Object-Oriented Design	666	
		- Component-Level Design Metrics	671	
		- Operation-Oriented Metrics	671	
		- User Interface Design Metrics	672	
12	1 1 1	- Metrics for Source Code	675	
		- Metrics for Testing	677	
		- Metrics for Maintenance	679	
13	1 1 1	Course Revision		
		Project discussion		
14	1 1 1	Final Exam 50%		

Theoretical course evaluation methods and weight	Participation = 10% First exam 20% Second exam 20% Final exam 50%	Practical (clinical) course evaluation methods	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%
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Approved by head of department		Date of approval	
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Extra information (to be updated every semester by corresponding faculty member)

Name of teacher		Office Number	
Phone number (extension)		Email	@zug.edu.jo
Office hours			