

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

" عراقة وجودة"
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	0114489	Course title	Software Maintenance and Re-Engineering
Number of credit hours	3	Pre-requisite/co-requisite	0114455

Brief course description

This course introduces the concepts of software re-engineering and its phases, includes legacy systems re-engineering to enhance the maintenance process, and presents the different cost-effective methods to maintain software products. This course covers the concepts of the software reversal engineering, and how to use the CASE tools during the maintenance process.

Course goals and learning outcomes	
Goal 1	The student understand of current issues in software maintenance, evolution, & reengineering
Learning outcomes	1.1 The student will gain an understanding of principles and techniques of software maintenance 1.2 The student will gain an understanding of software change 1.3 The student will gain an understanding of the evolution process 1.4 The students will gain an understanding of types of software changes and maintenance: corrective, perfective, adaptive and preventive.
Goal 2	Apply common construction and maintenance heuristics to enhance existing code, such as ways to eliminate global variables and ways to test difficult code.
Learning outcomes	2.1 The student will be able to measure the software complexity. 2.2 The student will be able to understand the relationship between complexity and software maintenance.
Goal 3	Describe software modernization approaches such as reverse engineering, reengineering, salvaging, and restructuring
Learning outcomes	3.1 The student will know the reengineering stages. 3.2 The student will be able to perform reverse engineering
Goal 4	Apply appropriate refactoring techniques to resolve design problems in code.
Learning outcomes	4.1 The student will be able to identify code bad smells 4.2 The student will be able to perform Refactoring 4.3 The student will be able to use Net Beans to perform refactoring
Goal 5	Understand legacy system management
Learning outcomes	5.1 The student will be able to know the elements of legacy system 5.2 The student will be able to assess business value and quality of legacy systems. 5.3 The student will be able to choose the best strategy to evolve legacy system.
Textbook	1.- Tripathy, Priyadarshi, and Kshirasagar Naik. Software evolution and maintenance: A Practitioner's Approach. John Wiley & Sons, 2015.

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Supplementary references	<p>1- Mens, Tom, Serebrenik, Alexander, Cleve, Anthony (Eds.) Evolving Software Systems, Springer, 2014</p> <p>2- Reifer, Donald J. Software Maintenance Success Recipes. CRC Press, 2016.</p> <p>3- Suryanarayana, Girish, Ganesh Samarthayam, and Tushar Sharma. Refactoring for software design smells: managing technical debt. Morgan Kaufmann, 2014.</p>
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Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	1	Basic Concepts and Preliminaries	(1–24)	
	1			
	1			
02	1	Taxonomy of Software Maintenance and Evolution	(25–82)	
	1			
	1			
03	1	Evolution and Maintenance Models	(83–132)	
	1			
	1			
04	1	Reengineering	(133–186)	
	1			
	1			
05	1	Legacy Information Systems	(187–222)	
	1			
	1			
06	1	EXERSICES - Project discussion		
	1			
	1			
07	1	Review of previous chapters	(223–254)	
	1			
	1			
08	1	First Exam (20 %)	(255–288)	
	1			
	1			
09	1	Impact Analysis	(255–288)	
	1			
	1			

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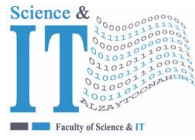
10	1 1 1	Principles in Refactoring.	(255–288)	
11	1 1 1	Bad Smells in Code.	(255–288)	
12	1 1 1	Toward a Catalog of Refactoring.		
13	1 1 1	Composing Methods.	(289–324)	
14	1 1 1	EXERSICES	(289–324)	
15	1 1 1	Review of previous chapters	(325–357)	
16	1 1 1	Second Exam (20 %)	(1–24)	

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			



جامعة الزيتونة الأردنية
Al-Zaytoonah University of Jordan
كلية العلوم وتكنولوجيا المعلومات
Faculty Of Science & IT



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