Zarqa University **Instructor:**
Faculty: Information Technology **Lecture's time:**
Department: Software maintenance **Semester:**
Course title: Software Architecture (1503755) **Office Hours:**

Course description:

The course focuses on aspect-oriented design and meta-programming. Model driven architecture. Reverse engineering, program understanding, re-engineering, automated program transformation and refactoring. Other advanced techniques for design and generation of software systems. The advanced Data Re-engineering will also be demonstrated. Finally, we will come across some issues of software reuse and how they affect software maintainability.

Aims of the course:

Students are expected to

- A wide variety of architectures and technologies available to design and implement software
- Basic principles of maintenance and re-engineering.

Intended Learning Outcomes: (ILOs)

After completion of the course the student is expected to be able to

A. Knowledge and Understanding

A1. Advance topics of software maintenance.
A2. Software maintenance on aspect-oriented design and meta-programming.
A3. Model driven architecture.
A4. Reverse engineering, program understanding, re-engineering

B. Subject-specific skills

B1. Problem solving skills:

Learn specific software maintenance processes and solve several issues affecting their performance efficiency.

B2. Modeling and Design:

- develop Model driven architecture

B3. Application of Methods and Tools:

- explain architectural models described in UML

Critical-Thinking Skills C1. Analytic skills:

C1. Analyze and compare strategies used in evolving legacy systems.

. C2. Strategic Thinking:

Analyze and compare some of the COTS products and how they support software maintainability issues

C3. Creative thinking and innovation:

T assess strengths and weaknesses of model-based approaches and methods

General and Transferable Skills (other skills relevant to employability and personal development)

D1. Describe the maintenance process and its role in software maintenace

D2. About standards and certifications

Course structure:

Week	Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1-2	3	A1, C2, C3	**Course Outline –** **Chapter3**: 3.2 Reuse Oriented Model 3.3 The Staged Model for CSS 3.4 The Staged Model for FLOSS 3.5 Change Mini-Cycle Model	Presentation methods and techniques, -Lecturing with active participations. -Problem solving. -Cooperative learning. Discussion. -Learning by activities. -Connecting students with different sources of information	Diagnostic tests to identify the students level and areas of weakness Formal (stage) evaluation a) Class Participation b) Exams c) Activities file
3	6	A1, B1, B2, C1, C2, C3, D1, D4	**Chapter3**: Evolution and Maintenance Models 3.6 IEEE/EIA 1219 Maintenance Process 3.7 ISO/IEC 14764 Maintenance Process 3.8 Software Configuration Management 3.8.1 Brief History 3.8.2 SCM Spectrum of Functionality 3.8.3 SCM Process 3.9 Change Request Workflow	=	=
5-6	6	A1, B1, B2, B3, C1, C2, C3, D1, D4	**Chapter 4**: Reengineering -	=	=
7-8	3	A1, B1, B2, B3, C1, C2, C3, D1, D4	**Chapter 5**: Legacy Information Systems •	=	=

	3	A1, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4		=	=
			Mid Exam		
9	3	A1, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4	**Chapter 6**: Impact Analysis	=	=
10-13	3	A1, B1, B2, B3, C1, C2, C3, D1	**Chapter 7:** • Refactoring • Program Comprehension	=	=
14-15	3	A1, B1, B2, B3, C1, C2, C3, D1	**Chapter 9**: • Reuse • Domain Engineering	=	=
16			Final Exam		

References:

A. **Main Textbook:**

Software Evolution and Maintenance A Practitioner's Approach, Roger Pressman, 7th edition, 2010

Assessment Methods:

Methods	Grade	Date
Mid Exam	30%	specified later
Writing a draught Paper	30%	specified later
Final Examination	40%	specified later