Faculty: Information Technology	
Department: Software Engineering **Program:** Masters	
Academic year: 2024/2025 **Semester:** 1st	

Course Plan

First: Course Information

Course No.:	*Course Title: Software Architecture*	*Credit Hours: 3*
Prerequisite No.:	*Section No.: 1*	*Lecture Time: 15:00-18:00*
Type Of Course:	☐ *Obligatory University Requirement* ☐ *Obligatory Faculty Requirement* ■ *Obligatory Specialization Requirement*	☐ *Elective University Requirement* ☐ *Elective Faculty Requirement* ☐ *Elective Specialization Requirement*
Type of Learning:	■ *Face-to-Face Learning* ☐ *Blended Learning (2 Face-to-Face + 1 Asynchronous)* ☐ *Online Learning (2 Synchronous +1 Asynchronous)*	

Second: Instructor's Information

Name: Hamzeh Aljawawdeh		*Academic Rank: Assistant Professor*	
Office Number: 114 B	*Phone Number: 1362*	*Email: Hamzeh.aljawawdeh@zu.edu.jo*	
Office Hours:	*Sunday* *10:00-11:00* *Tuesday* *10:00-11:00*	*Wednesday* *10:00-11:00*	*Thursday* *10:00-11:00*

Third: Course Description

This Masters-level course delves deep into advanced methodologies and contemporary research approaches in software architecture. Building upon foundational knowledge, students will master intricate design principles, techniques, and best practices for constructing resilient, scalable systems. An emphasis will be placed on honing research methods, harnessing cutting-edge tools, and refining analytical skills tailored to software architecture.

During the course, learners will:

1. Investigate sophisticated architectural patterns, styles, and the nuances of domain-driven design.
2. Participate in advanced lectures, immersive labs, and collaborative research projects to cultivate problem-solving prowess and effective interdisciplinary teamwork.

3. Conduct detailed analyses of contemporary software systems, understanding the intricacies of design decisions, trade-offs, and the underlying research that drives them.
4. Embark on research initiatives, leveraging state-of-the-art methods and tools, aiming to innovate and develop maintainable software solutions for the future.

Upon completion, graduates will not only possess an enriched understanding of software architecture's scientific material. However, they will also be adept in the research techniques pivotal to leading and innovating in this dynamic field.

Fourth: Learning Resources

Main Reference:	Clean architecture		
Author: Martin, Robert C.		Issue No.: 1	Publication Year: 2017
Additional Sources & Websites:			
Teaching Type:	■ Classroom ☐ Laboratory ☐ Workshop ☐ MS Teams ■ Moodle		

Fifth: Learning Outcomes

CILO Code	Course Intended Learning Outcomes (CILOs)	Connection To Program ILOs Code
Knowledge		
**K1	Gain knowledge of software architecture and design.	*PK1
K2	Gain knowledge of the different design principles and implementation strategies used in software architecture and design.	PK2
K3	Examine knowledge of essential principles of software architecture and design.	PK3
K4	Demonstrate knowledge of essential facts and concepts in software architecture, design, and computing.	PK4
Skills		
***S1	Problem-solving skills	PS1
S2	Modeling and Design:	PS2
S3	Application of Methods and Tools	PS3
S4	Understanding of the principles of software architecture and design.	PS4
S5	Understanding of the different design principles and implementation strategies used in software architecture.	PS5

Competences		
****C1	Communication	PC1
C2	Teamwork and Leadership:	PC2
C3	Demonstrate understanding of essential facts and concepts in software architecture and design	PC3
C4	Will do independent learning and continuous professional development.	PC4
C5	Creative thinking and innovation	PC5

* P: Program, **K: knowledge, ***S: skills, ****C: competencies.

Sixth: Course Structure

Lecture Date	Intended Teaching Outcomes (ILOs)	Topics	Teaching Procedures*	Teaching Methods **	References***
19/10/2023	K1, K3, S1 K1, K3, S1 S2	Introduction to Software Architecture	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
26/10/2023	K1, K2, K3, S1, S2, S3, S4, C1, C2	Generations of Software Architecture and Design, multi-user systems. Modularity, component-based systems, future trends. Research tools and skills: Planning and brainstorming	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
2/11/2023	K1, K2, K3, S1, S2, S3, S4, C1, C2	Design Concepts: What is software design? Design principles Parts of the paper and practice on finding papers	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
9/11/2023	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3	Introduction to Software Architecture and Design. Monolithic, Clean and Onion designs Hot topics in Software architecture.	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
16/11/2023	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3	Serverless, Microservices, and SOA	Face-to-Face	Lecture, In-class questions, and discussions	Textbook

Lecture Date	Intended Teaching Outcomes (ILOs)	Topics	Teaching Procedures*	Teaching Methods **	References***
		Tools to write a paper: Overleaf			
23/11/2023	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3	Domain-driven and event-driven	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
		Research Methods			
Midterm Exam 2/12/2023 – 14/12/2023					
30/11/2023	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3, C4, C5	Design Patterns	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
		Research design and experiment design			
7/12/2023	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3, C4, C5	Design Principles	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
		Research bias and Threats of validity			
14/12/2023	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3, C4, C5	Explore main topics in software architecture	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
		Communication skills part 1			
21/12/2023	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3, C4, C5	Explore main topics in software architecture	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
		Communication skills part 2			
28/12/2023	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3, C4, C5	Explore main topics in software architecture	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
		Communication skills part 3			
4/1/2024	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3, C4, C5	Open discussion about software architecture methods, principles, and research topics	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
11/1/2024	K1, K2, K3, K4, S1, S2, S3, S4, C1, C2, C3, C4, C5	Course Review	Face-to-Face	Lecture, In-class questions, and discussions	Textbook
Final Exam 21/1/2024-1/2/2024					

* Teaching procedures: (Face-to-Face, synchronous, asynchronous). * * Teaching methods: (Lecture, video…..).
** * Reference: (Pages of the book, recorded lecture, video….).

Seventh: Assessment Methods

Methods	Online Learning	Blended Learning	Face-To-Face Learning	Measurable Course (ILOs)
First Exam				
Second Exam				
Mid-term Exam			30	K1, K2, K3, S1, S2
Participation			30	K4, K5, K6, K7, S1, S2, C1, C2
Asynchronous Activities				
Final Exam			40	K1, K2, K3, S1, S2

Eighth: Course Policies

- All course policies are applied to all teaching patterns (online, blended, and face-to-face Learning) as follows:
  a. Punctuality.
  b. Participation and interaction.
  c. Attendance and exams.
- Academic integrity: (cheating and plagiarism are prohibited).

Approval	Name	Date	Signature
Head of Department	Dr. Ahmad Samhan		
Faculty Dean	Prof. M. Hassan		