Course Specification

(Bachelor)

Course Title:	Software Frameworks and Tools
Course Code:	SE3608
Program:	BSc in Software Engineering
Department:	Software Engineering
College:	College of Computing
Institution:	Umm Al Qura University
Version:	1.0
Last Revision Date:	22/04/2025

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (3rd year/ 5th or 6th level) or (4th year/8th level)					
4. Course General Description:					
This course provides an in-depth understanding of the software frameworks and tools used in modern software engineering to enhance productivity, maintainability, and scalability of applications. Students will explore foundational frameworks for web, desktop, and mobile development, alongside tools for version control, automation, testing, and deployment. The course emphasizes practical implementation, equipping students to select and apply the right frameworks and tools for specific project requirements.					
5. Pre-requirements for this course (if any)**:**					
SE2301 - Software Modelling and Analysis					
6. Co-requisites for this course (if any)**:**					
N/A					
7. Course Main Objective(s):					
Upon successful completion of this course, you will be able to: 1. To provide a foundational understanding of software frameworks and tools across multiple development domains, including web, mobile, desktop, IoT, build automation, and version control. 2. To enable students to evaluate and select appropriate frameworks and tools for specific project requirements. 3. To equip students with practical skills to design, develop, and deploy applications using modern frameworks and tools. 4. To explore the integration of frameworks and tools into collaborative software development processes, emphasizing efficiency, security, and scalability.					

5. To develop problem-solving and critical-thinking skills by applying frameworks and tools to real-world scenarios across diverse software development environments.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning	0	0
3	Hybrid • Traditional classroom • E-learning	0	0
4	Distance learning	0	0

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Understand the role and importance of software frameworks and tools in software development.	K1	Lectures, Exercises	Quizz, Lab, Assignment, Project, Exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.2	Identify the features and use cases of various software frameworks for different application domains.	K2	Lectures, Exercises	Quizz, Lab, Assignment, Project, Exam
2.0	**Skills**			
2.1	Develop software applications using modern frameworks	S2	Lectures, Exercises	Quizz, Lab, Assignment, Project, Exam
2.2	Practice with build automation tools and version control	S2	Lectures, Exercises	Quizz, Lab, Assignment, Project, Exam
3.0	**Values, autonomy, and responsibility**			
3.1	Work effectively in a team	V2	Lectures, Exercises	Quizz, Lab, Assignment, Project, Exam

C. Course Content

No	List of Topics	Contact Hours
1.	Describe Software Frameworks and Tools	**4**
2.	Web Development Frameworks (pick one: Spring Boot, Flask, Django, PHP, .. etc)	**12**
3.	Mobile Development Framework (pick one: Flutter, React, Vue.js .. etc)	**12**
4.	Desktop Application Frameworks (pick one: JavaFX, .Net .. etc)	**12**
5.	IoT Application Development Frameworks (pick one: AWS IoT, Google Cloude IoT, Eclipse IoT.. etc)	**12**
6.	Build Automation Tools (pick one: Maven, Gradle .. etc)	**4**
7.	Version Control Tools (GitHub)	**4**
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments and Quizzes	2-14	20
2.	Projects	2-14	10
3.	Lab	2-14	10
4.	Midterm	7	20
5.	Final Exam	16-17	40

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	• Ackermann, P. (2023). *Full stack web development: A comprehensive, hands-on guide to building modern websites and applications*. Rheinwerk Computing. ISBN 978-1493224371. • Mazzanti, S. (2021). *Mobile app development: Basic guide on how to build an app and run a business around it: Using app store optimization to get more downloads*. Independently published. ISBN 979-8479575907.
Supportive References	• Siahaan, V. (2020). *Visual Basic .NET for students: A project-based approach to develop desktop applications*. Independently published. ISBN 979-8642176320.
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Traditional Classroom
Technology equipment (projector, smart board, software)	Multimedia Projector
Other equipment (depending on the nature of the specialty)	N/A

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct, Indirect
Effectiveness of Students' assessment	Faculty, Peer reviewer	Direct, Indirect
Quality of learning resources	Faculty, Course coordinator	Direct, Indirect
The extent to which CLOs have been achieved	Course coordinator, Program management committee	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**SOFTWARE ENGINEERING DEPARTMENT COUNCIL**
REFERENCE NO.	**THE 17TH MEETING FOR THE ACADEMIC YEAR 1446H**
DATE	**22/04/2025**