هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

Course Specification

(Bachelor)

Course Title:	Software Development and Operations
Course Code:	SE4206
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: (8/4)					
4. Course General Description:					
Development and Operations (DevOps) paradigm is a culture that enhanced the efficiency of the software and IT industry. With agile practices, DevOps has created end-to-end software development and delivery. DevOps phases vary; however, automation tools for DevOps fall into one of the following: Build, Deployment, and Operations					
5. Pre-requirements for this course (if any)**:**					
SE3103 - Software Testing and Quality Assurance					
6. Co-requisites for this course (if any)**:**					
N/A					
7. Course Main Objective(s):					
In this course, students will learn the culture of DevOps and the need of it. Additionally, students will train on a number of DevOps tools which are important in the DevOps phases					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	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**	45
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total		45

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	Illustrate an understanding of DevOps and its phases	K2	Lecture, exercise	Quiz, exams, assignments
1.2	Recognize the main objectives of DevOps	K1	Lecture, exercise	Quiz, exams, assignments
2.0	**Skills**			
2.1	Organize automation of the building, deployment and operations usingDevOps tools	S1	Lecture, Group discussion, tutorials	Exams, assignments, project
2.2	Evaluate the most suitable options in DevOps stages	S3	Lecture, Group discussion, tutorials	Exams, assignments, project
2.3	Organize automation of the building, deployment and operations usingDevOps tools	S1	Lecture, Group discussion, tutorials	Exams, assignments, project
3.0	**Values, autonomy, and responsibility**			
3.1	Commit to regorous work practices to produce high quality software effeciently	V1	Lecture, Group discussion, tutorials	Exams, assignments, project

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to DevOps	3
2.	DevOps and Software Development Life Cycle	3
3.	Agile	3
4.	Git tool	6
5.	Jenkins tool	6
6.	Kubernetes Vs Docker tools	6
7.	Ansible	6
8.	Puppet	6
9.	Chef	3
10.	Amazon Web Services (AWS)	3
Total		**45**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Quizzes**	**2-14**	**15**
2.	**Projects**	**2-14**	**15**
3.	**Assignments**	**2-14**	**10**
4.	**Mid Term**	**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	• Brikman, J. (2025). *Fundamentals of DEVOPs and software delivery: A Hands-On Guide to Deploying and Managing Software in Production*. • Forsgren, N., Humble, J., & Kim, G. (2018). *Accelerate: The science of lean software and DevOps: Building and scaling high performing technology organizations*. IT Revolution Press. ISBN 978-1942788331.
Supportive References	• Kaufmann, M. (2025). *GitHub Actions in action: Continuous integration and delivery for DevOps*. Simon and Schuster.

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	N/A	N/A

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**