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

Course Specification
(Bachelor)

Course Title:	Computer Applications in Environmetnal Engineering
Course Code:	CE 4504
Program:	Bachelor of Science in Civil Engineering
Department:	Civil Engineering Department
College:	College of Engineering and Architecture
Institution:	Umm Al Qura University
Version:	1
Last Revision Date:	31 January 2025

Table of Contents

A. General information about the course: 3

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods 4

C. Course Content 5

D. Students Assessment Activities 5

E. Learning Resources and Facilities 6

F. Assessment of Course Quality 7

G. Specification Approval 7

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: (level 9 or 10/5th year)					
4. Course General Description:					
The course is designed to introduce students to environmental engineering (e.g. chemical speciation modeling software, water / wastewater treatment plant design software, water distribution system design software, sewer System software, watershed management software) and enables the student to use environmental engineering software in the analysis and design of environmental problems.					
5. Pre-requirements for this course (if any)**:**					
Environmetnal Engineering					
6. Co-requisites for this course (if any)**:**					
Not Applicable					
7. Course Main Objective(s):					
The course aims to enhance students' proficiency in utilizing specialized computer software for the effective analysis and design of environmental engineering solutions.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	5	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	3
2.	**Laboratory/Studio**	
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
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	Identify the basics of computer applications in environmental engineering.	K.1	• Lectures • Training tutorials	• Assignments • Quizzes
1.2	Recognize problems and issues related to environmental engineering.	K.2	• Lectures • Training tutorials	• Assignments • Quizzes
1.3	describe the applications of different software in the environmental engineering area.	K.1	• Lectures • Training tutorials	• Assignments • Quizzes
2.0	**Skills**			
2.1	professionally analyze the environmental engineering problems using the professional software's.	S.2; S.3	• Lectures • Training tutorials • Small group work	• Assignments • Quizzes • Mid Term exam • Final Term exam • Term project

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.2	Assess and compare the appropriate alternative solutions of the environmental problems.	S.1; S.3	• Lectures • Training tutorials • Small group work	• Assignments • Quizzes • Mid Term exam • Final Term exam • Term project
3.0	**Values, autonomy, and responsibility**			
3.1	Collaborate professionally and ethically within multidisciplinary teams to formulate and solve environmental engineering problems.	V.1	• Lectures • Training tutorials • Small group work	• Term project
3.2	Apply official codes standards, and specifications to asses and develop solutions for complex environmental engineering design challenges.	V.2	• Lectures • Training tutorials Small group work	• Term project • Mid Term exam • Final Term exam

C. Course Content

No	List of Topics	Contact Hours
1.	Use computers to practice problem solving using educational and commercial software in the field of environmental engineering.	**75**
Total		**75**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	Weekly	5%
2.	Quizzes	3 & 6 & 9,12	15%
3.	Group project	13	5%
4.	Mid-Term Exam	8	25%

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
5.	Final-Term Exam	16/17	50%

*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	The manuals accomplished with the software used.
Supportive References	• Journal of Environmental Engineering • Journal of Sustainable Water in the Built Environment, ASCE
Electronic Materials	• ASCE Publications • Institution of Civil Engineers • http://www.sciencedirect.com. • http://ocw.mit.edu/
Other Learning Materials	The following software are helpful for applications of the subjects to engineering projects: • AutoCAD • FlowMaster • CulvertMaster • StormCAD • WaterCAD • HEC HMS • Watershed management • MATLAB • Computer software in the field of Environmental Engineering

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	White board needs to be replaced with a bigger one with all writing and other accessories. Also, Laboratories for lectures and exams with students working on computers for 15 students during the scheduled class and laboratories hours.
Technology equipment (projector, smart board, software)	Computer with multi-media, a printer, internet connection, and data show.
Other equipment (depending on the nature of the specialty)	• 15 Desktop computers • 3 color Laser Jet Printer (size A3) • 3 Black-and-White Laser Jet Printer (size A3)

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	• Students • Instructor • Program leader	• Indirect • Direct • Direct
Effectiveness of Students assessment	• Independent member teaching staff	• Direct
Quality of learning resources	• Students • Instructor	• Indirect • Indirect
The extent to which CLOs have been achieved	• Instructor • Students • Program leader	• Direct • Indirect • Direct
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**CIVIL ENGINEERING COUNCIL**
REFERENCE NO.	**THE FIFTEENTH SESSION OF THE ACADEMIC YEAR 1446**
DATE	**30 APRIL 2025**

