Course Specification

(Bachelor)

Course Title:	Statics
Course Code:	COE2102
Program:	Bachelor of Construction Engineering
Department:	Civil and Environmental Engineering Department
College:	College of Engineering and Computing in Al-Qunfudhah
Institution:	Umm Al-Qura University
Version:	4.0
Last Revision Date:	14 January 2025

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3.0)					
2. Course type					
A.	☐University	☒ College	Department	☐Track	Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Second Year / Level 3)					
4. Course General Description:					
This course covers the basic concepts and principles of mechanics, vector algebra, and the equilibrium of particles in two and three dimensions. Key topics include the definition of moment and couple, reduction of systems of forces, equilibrium of rigid bodies. The course also addresses centroids and centers of gravity of lines, areas, and volumes, and the moment of inertia and radius of gyration.					
5. Pre-requirements for this course (if any)**:**					
Physics (1) for Engineering (PHYS 1110)					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The main purpose of this course is to prepare students to evaluate the equilibrium of rigid bodies subjected to a system of forces and apply this knowledge efficiently and independently to develop the relationship with internal and external forces to solve determinate structures.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	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	45
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	Define the principles and laws of statics and apply them to solve simple problems.	K2	Lecture, Problem-solving sessions. Worked examples, assignments Group exercises.	Quizzes, Assignments, Midterm Exam, Final Exam
1.2	Describe the quantitative nature of mechanics and explain the use of mathematics (vector analysis, derivatives, and integrals) for solving problems.	K2		
1.3	Describe the analysis of forces in 2D and 3D and explain the concept of resultants and moments in different force systems.	K2		
1.4	Recognize free-body diagrams and explain how to determine reactions using equilibrium equations.	K2		
2.0	Skills			
2.1	Use equations of equilibrium to determine the resultant and equilibrant of systems of coplanar forces and internal forces in pin-jointed structural elements	S1	Interactive learning Self-directed learning	Quizzes, Assignments, Midterm Exam, Final Exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.2	Show the conditions of static equilibrium of forces acting on the structural elements	S1		
2.3	Calculate the centroid and moment of inertia of sections	S1		
3.0	**Values, autonomy, and responsibility**			
3.1	NA			
...				

C. Course Content

No	List of Topics	Contact Hours
1.	General Principles	6
2.	Force Vectors	6
3.	Equilibrium of a Particle	6
4.	Force System Resultants	6
5.	Equilibrium of a Rigid Body	6
6.	Center of Gravity and Centroid	6
7.	Moments of Inertia	6
8.	Quizzes and Midterm exam	3
	Total	45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	4, 9, 12	15%
2.	Assignments	3,5,6,7,9,10,11,13	15%
3.	Midterm Exam	8	30%
4.	Final Exam	16 or 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	Hibbeler, R. C. *Engineering Mechanics: Statics*. Pearson.
Supportive References	Riley, W. F., Strurges, L. D. *Engineering Mechanics: Statics*. John Wiley & sons
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Classroom with a minimum capacity of 30 students, equipped with whiteboard and projector**
Technology equipment (projector, smart board, software)	**Projector and smart board**
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Lecturer / Students	Direct / Indirect (Grades, surveys)
Effectiveness of Students assessment	Faculty	Indirect (Barriers to understand successor course)
Quality of learning resources	Lecturer	Direct (Grades)
The extent to which CLOs have been achieved	Lecturer / Faculty	Direct (Grades)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Civil and Environmental Engineering Department Council in Al-Qunfudah
REFERENCE NO.	The fifteenth session of the academic year 1446
DATE	01/05/2025