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

Course Specification

(Bachelor)

Course Title:	Structural Analysis (1)
Course Code:	COE3201
Program:	Bachelor of Construction Engineering
Department:	Department of Civil and Environmental Engineering
College:	College of Engineering and computing in Al-Qunfudhah
Institution:	Umm Al-Qura University
Version:	4
Last Revision Date:	December 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (2 credits)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 5 / Year 3 **)**					
4. Course General Description:					
Classification of loads, supports and reactions, stability and determinacy of structures, analysis of statically determinate structures including beams, frames and trusses, calculating internal forces and drawing normal force, shear force and bending moment diagrams, introduction to influence lines for determinate structures.					
5. Pre-requirements for this course (if any):					
Mechanics of Materials-COE2104					
6. Co-requisites for this course (if any)**:**					
NA					
7. Course Main Objective(s):					
• Recognize statically determinacy of beams, frames, trusses in 2D space. • Analyze statically determinate beams and frames by computing the supports reactions, internal resisting forces, and drawing normal force, shear force, and bending moment diagrams. • Analyze statically determinate trusses using the method of joint and the method of section • Construct influence lines for different functions including reactions, shearing force and bending moment in statically determinate beams and maximize certain function by setting the critical location and pattern of the live load on the beam. • Calculate deflections for determinate beams, and frames using moment area method.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2 credit hours Contact hours (2 lecture sessions+0 lab)	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**	30
2.	**Laboratory/Studio**	--
3.	**Field**	--
4.	**Tutorial**	--
5.	**Others (specify)**	--
Total		30

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	Recall and define the fundamental principles of statically determinate structures, including stability, determinacy, and analysis methods	**K1**	Interactive learning, self-directed learning	Assignments, Quizzes Midterm, Final exam
2.0	**Skills**			
2.1	Recognize statically determinacy of beams, frames, trusses in 2D space	**S1**	Interactive learning, self-directed learning	Assignments, Quizzes Midterm, Final exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.2	Analyze statically determinate beams and frames by calculating support reactions, internal forces, and constructing shear force, normal force, and bending moment diagrams.	**S1**	Interactive learning, self-directed learning	Assignments, Quizzes Midterm, Final exam
2.3	Analysis of statically determinate trusses.	**S1**	Interactive learning, self-directed learning	Assignments, Quizzes Midterm, Final exam
2.4	Calculate deflections for determinate beams, and frames.	**S1**	Interactive learning, self-directed learning	Assignments, Quizzes Midterm, Final exam
2.5	Construct influence lines for different functions including reactions, shear force and bending moment in statically determinate beams.	**S1**	Interactive learning, self-directed learning	Assignments, Quizzes Midterm, Final exam
3.0	**Values, autonomy, and responsibility**			
3.1	**NA**			

C. Course Content

No	List of Topics	Contact Hours
1	**Basic principles, Review of main topics of Static & Mechanics of Materials .**	**2**
2	**Stability and determinacy of determinate structures.**	**4**
3	**Analysis of statically determinate beams**	**6**
4	**Analysis of statically determinate frames.**	**4**
5	**Midterm exam.**	**2**
6	**Analysis of statically determinate trusses.**	**4**
7	**Influence lines for statically determinate structures**	**4**
8	**Deflection of statically determinate beams and frames**	**4**
Total		**30**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	3,5,8,10,12	15
2.	Quizzes	3,9,12	15
3.	Midterm exam	7	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. (2020), Structural Analysis, Singapore: Prentice Hall
Supportive References	• Leet K. M., Uang C. M. and Gilbert. A. M. (2011), Fundamentals of Structural Analysis, Singapore: McGraw Hill. • Kassimali A. (2015), Structural Analysis, Stamford, USA: Cengage Learning.
Electronic Materials	• Online calculators from http://civilengineer.webinfolist.com/cecalc.htm
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture rooms with a capacity of at least 25 students
Technology equipment (projector, smart board, software)	The room must be fitted with multimedia projector, smart board and a computer.
Other equipment (depending on the nature of the specialty)	NA

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect

Assessment Areas/Issues	Assessor	Assessment Methods
	Faculty	direct
Effectiveness of Students assessment	Students Faculty	Indirect direct
Quality of learning resources	Students Faculty	Indirect
The extent to which CLOs have been achieved	Faculty	direct
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**