



Course Specification

(Bachelor)

Course Title: **Structural Analysis (2)**

Course Code: **COE3202**

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:.....	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods.....	4
C. Course Content.....	5
D. Students Assessment Activities.....	7
E. Learning Resources and Facilities.....	7
F. Assessment of Course Quality.....	8
G. Specification Approval.....	8



A. General information about the course:

1. Course Identification

1. Credit hours: (3 credits)

2. Course type

A. University College Department Track Others
B. Required Elective

3. Level/year at which this course is offered: (Level 6 / Year 3)

4. Course General Description:

Analysis of indeterminate structures with force method, slope deflection method, moment distribution method and direct stiffness method. Derive expressions of influence line of statically indeterminate structures.

5. Pre-requirements for this course (if any):

Structural Analysis (1)-COE3201

6. Co-requisites for this course (if any):

NA

7. Course Main Objective(s):

- Analyze indeterminate structures by consistent deformation method.
- Analyze indeterminate structures by slope deflection method.
- Analyze indeterminate structures by moment distribution method.
- Analyze indeterminate structures by stiffness method.
- Derive expressions of influence line with one redundant by consistent deformations and schematic influence diagrams by Muller Breslau's principal for statically indeterminate structures.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3 credit hours Contact hours (2 lecture sessions+ 3 lab)	100
2	E-learning	--	--
3	Hybrid <ul style="list-style-type: none"> • 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	45
3.	Field	--
4.	Tutorial	--
5.	Others (specify)	--
Total		75

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				
2.0	Skills			
2.1	Analyze indeterminate structures by consistent deformation method.	S1	Interactive learning, self-directed learning	Assignments, Quizzes, Midterm, Final exam
2.2	Analyze indeterminate structures by slope deflection method.	S1	Interactive learning, self-directed learning	Assignments, Quizzes, Midterm, Final exam
2.3	Analyze indeterminate structures by moment distribution method.	S1	Interactive learning, self-directed learning	Assignments, Quizzes, Midterm, Final exam
2.4	Analyze indeterminate structures by stiffness method.	S1	Interactive learning, self-directed learning	Assignments, Quizzes, Midterm, Final exam
2.5	Derive expressions of influence line with one redundant by consistent deformations and schematic influence diagrams by Muller Breslau's principal for	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
	statically indeterminate structures.			
2.6	Analyze determinate and indeterminate structures using adaptative software.	S3	Lectures, computer lab	Lab reports and lab exam
3.0	Values, autonomy, and responsibility			
3.1	NA			

C. Course Content

No	List of Topics	Contact Hours
1.	Review of main topics of structural analysis 1.	5
2.	Force method.	10
3.	Slope deflection method.	15
4.	Midterm exam.	2
5.	Moment distribution method.	15
6.	Direct stiffness method.	15
7.	Influence lines for statically indeterminate structures	10
8.	Lab exam	3
Total		75

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	3,5,7,10,12	10
2.	Quizzes	4,10	10
3.	Midterm exam	8	20
4.	Lab exam	15	20
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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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
	Faculty	direct
Effectiveness of Students assessment	Students	Indirect
	Faculty	direct
Quality of learning resources	Students	Indirect
	Faculty	
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
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REFERENCE NO.

The fifteenth session of the academic year 1446

DATE

01/05/2025

