Course Specification
(Bachelor)

Course Title:	Design of High-Rise Buildings
Course Code:	CE 4108
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

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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 3/ 2nd Year)					
4. Course General Description:					
The course aims tp present the concept of the analysis and design of high-rise buildings under gravity and lateral loads using different lateral loads resisting systems.					
5. Pre-requirements for this course (if any)**:**					
Department approval					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The objective of this course is to present a complete and up-to-date design of high-rise buildings as well as the different lateral load resisting systems and the response to lateral loads.					

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	Enable the students to define the concept and different systems of high-rise buildings.	K1	Lectures and training tutorials	Quizzes and Exams
1.3	Enable the students to outline the loads, state the analysis, and design of different systems of high-rise buildings.	K2	Lectures and training tutorials	Quizzes and Exams
2.0	**Skills**			
2.1	To select and apply appropriate structural systems for high-rise buildings.	S1	Lectures and training tutorials, home-works and exams	Quizzes and Exams
2.2	To analyze and calculate the internal forces in various elements of the structural system.	S1	Teamwork projects and report writing	Quizzes and Exams
2.3	To apply the optimum design of	S3	Search for a particular topic	Quizzes and Exams

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	lateral load-resisting systems.			
3.0	**Values, autonomy, and responsibility**			
3.1	To demonstrate the ability of life-long learning and application of official codes, specifications, and practices for high-rise buildings.	V3	Lectures and training tutorials, home-works and exams	Class works
3.2	To use skills required for the selection of a convenient lateral load-resisting system.	V3	Team-work projects and report writing	Class works

C. Course Content

No	List of Topics	Contact Hours
1.	Overview of Tall Buildings	3
2.	Design Philosophy and Criteria	3
3.	Lateral loads resisting systems in high-rise buildings	3
4.	Selection of Structural Systems	3
5.	Structural Analysis for Gravity Loads	3
6.	Dynamic response	3
7.	Lateral loads in SBC 301	3
8.	3D-modeling of high-rise buildings	3
9.	Structural Analysis for Lateral Loads	3
10.	Design of moment-resisting frames	3
11.	Design of shear walls	3
12.	Design of outrigger, and coupling beams	3
13.	Response of HRB in storey drift and lateral displacement	3
14.	Modeling and design of diaphragms	3
15.	Design and details of high-rise buildings	3
Total		**45**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	3 & 5 & 11	30 %
2.	Mid-term exam	8	20 %
3.	Final Exam	16	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	• Bungale S. Taranath (2010): Reinforced Concrete Design of Tall Buildings, Taylor and Francis Group, LLC.
Supportive References	• Edward L. Wilson (2000): Three-Dimensional Static and Dynamic Analysis of Structures, Computers & Structures Inc.
Electronic Materials	• http://www.sciencedirect.com • http://ocw.mit.edu
Other Learning Materials	• R. Park and T. Paulay (1975): Reinforced Concrete Structures, John Wiley and Sons.

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	The whiteboard needs to be replaced with a bigger one.
Technology equipment (projector, smart board, software)	A Smart Board is needed
Other equipment (depending on the nature of the specialty)	A whiteboard & Computer with internet and data show. Computing Services provides the University IT facilities and infrastructure. General purpose computer resources across campus are open 24 hours and more specialist computer laboratories are provided in partnership with departments. Students in halls of residence are supported in connecting their computers to the high speed network.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Faculty members who teach this course	• Students questioners running at the semester end. • Analysis of students` marks • Regular feedback of the students about the course and the teaching methods
Effectiveness of Students assessment	Faculty members who teach this course and those teaching other courses relevant to this course.	• Regular revising and improving the course contents and consulting the faculty members who teach this course and those teaching other courses relevant to this course.
Quality of learning resources	Faculty members who teach this course	• Frequent improvement for teaching and learning techniques. • Frequent survey for latest references. • Encouraging the students in teamwork work cooperation and writing reports.
The extent to which CLOs have been achieved	Independent member(s) teaching staff	• A sample of students' answer sheets is revised by a specified committee of the department.
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

