Course Specification

(Bachelor)

Course Title:	Steel Structures Design
Course Code:	COE3203
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:	4th
Last Revision Date:	March 2025

Table of Contents

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: (6/3)					
4. Course General Description:					
This course offers an introduction to steel members design. Topics include design principles, elastic and plastic analysis, structural use of steel works in building, compression and tension members design, beams and beams-columns design, bolted and welded connections design.					
5. Pre-requirements for this course (if any)**:**					
Structural Analysis (1) (COE3201)					
6. Co-requisites for this course (if any)**:**					
7. Course Main Objective(s):					
The main purpose of this course is to enable the students to acquire the basis on how to design different elements of steel structures, and related techniques.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100 %
2	E-learning	None	None
3	Hybrid • Traditional classroom • E-learning	None	None
4	Distance learning	None	

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	None
3.	**Field**	None
4.	**Tutorial**	None
5.	**Others (specify)**	None
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	Understand the different type of element in steel structure.	**K1**	Lecture	Assignment, Quiz and Midterm exam
1.2	Recognize the different state limits on which the steel structure design is based.	**K1**	Lecture	Assignment, Quiz, Midterm and final exam
2.0	**Skills**			
2.1	Calculate the load required on structure for the design of steel structure members.	**S1**	Lecture	Assignment, Quiz, Midterm and final exam
2.2	Design of tension, compression and flexural members of the steel structures.	**S2**	Lecture	Assignment, Quiz, Midterm and final exam
2.3	Design beam-columns as a whole for different steel structural frame.	**S2**	Lecture	Assignment, Quiz, Midterm and final exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.4	Design different type of joints and connections.	**S2**	Lecture	Midterm exam OR final exam
3.0	**Values, autonomy, and responsibility**			
3.1				
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Course Description and Introduction to steel structures design	**6**
2.	Design of tension members	**9**
3.	Design of compression members	**6**
4.	Design of flexural members	**9**
5.	Design of beam-column members	**6**
6.	Connection design	**6**
7.	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.	Assignments	**2, 5, 8, 11, 14**	**15%**
2.	Quizzes	**4, 11, 14**	**15%**
3.	Midterm exam	**7 or 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	Jack McCormac, Stephen Csernak (2017), Structural Steel Design, USA: Pearson; 6th edition (August 3, 2017). ISBN 10: 9780134589657, ISBN-13: 978-0134589657
Supportive References	Segui, W. T. (2013), Steel Design, USA: Cengage Learning.

	McCormac, J. C. (2008), Structural Steel Design, USA: Person.ISBN: 9788126524518
Electronic Materials	American Institute of Steel Construction: http://www.aisc.org/ Steel Construction and design: http://www.steelconstruction.info/Design
Other Learning Materials	None

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Equipped Classroom
Technology equipment (projector, smart board, software)	Blackboard, Data show, Smart Board
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student Instructor	Indirect Direct
Effectiveness of Students assessment	Student Instructor	Indirect Direct
Quality of learning resources	Student Instructor	Indirect
The extent to which CLOs have been achieved	Instructor	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**