

Republic of Iraq
Ministry of Higher
Education and Scientific
Research
Supervision and Scientific
Evaluation Apparatus



University: Shatt Al-Arab
College: Engineering
Department: Civil Engineering
Stage: 4th stage
Lecturer name: Dr. Jamal Abdulsamad
Academic title: Professor

Course Weekly Outline

Name	Dr. Jamal Abdulsamad Khudhair		
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Course name	Design of Steel Structures - 1		
Course objectives	1- Understanding steel as a structural material, and get knowledge of its mechanical properties. 2- Knowledge of design codes and standards. 3- Learning to identify and evaluate the various loads. 4- Understanding the analysis and design of tension members in steel structures. 5- Studying the analysis and design of compression members.		
Course description	The course provides fundamental knowledge of the properties of steel as a structural material, familiarizes students with various design approaches for steel structures, and covers the analysis and design of tension and compression members. The course has been prepared in accordance with the AISC specification-2016.		
References	1- AISC Steel Construction Manual, Fifteenth edition-2017. 2- Structural Steel Design.by McCormac and Csernak, 6th edition, 2018.		
External sources	-Steel Design, by Segui, 6 th edition, 2018.		
Course assessment	Quizzes and assessment	Mid-term exam	Final exam
	40	10	50
General notes			



Week No.	Theoretical	Aims Lecturer name: Dr. Ihsan Qasim Academic title: Assistant Professor University: Shatt Al-Arab
1	Introduction	1- Understanding steel as a structural material, and get knowledge of its mechanical properties. 2- Knowledge of design codes and standards. 3- Learning to identify and evaluate the various loads. 4- Understanding the analysis and design of tension members in steel structures. 5- Studying the analysis and design of compression members.
2	Advantages and disadvantages of steel as a structural material,	
3	cold-formed steel shapes, steel grades, stress-strain relationships for structural steel,	
4	Specifications, loads, design methods (load and resistance factor design, LRFD, and the allowable strength design, ASD),	
5	nominal strength, load combinations for LRFD and ASD methods, description of the AISC manual	
6	Tension members: Introduction, tensile strength of tension members, net area	
7	effective area, connecting elements for tension members.	
8	block shear	
9	design of tension members, selection of sections, design to LRFD,	
10	design to ASD, design tables, built- up tension members.	
11	Analysis of axially loaded compression members: Modes of failure, sections used for columns, the Euler formula, effective lengths of columns	
12	stiffened and unstiffened elements, long, short and intermediate columns	
13	Design of axially loaded compression members: AISC requirements, maximum slenderness ratio, design tables.	
14	columns with different unsupported lengths, built-up columns, design of built-up columns with lacing, columns within rigid frames and the alignment charts.	
15	Introduction to beams:	