6- Syllabus of "_Advanced Structural Steel Design"

Prepared By:	- **Dr. Sulaiman Al-Safi**
Pre –requisite:	Introductory undergraduate **Course** courses in mechanics of materials and steel design

Credit hours				
Th.	Sem.	Pr.	Tr.	TOTAL
3	-	-	-	3

Course Description:

Students should have some background in the design of steel structures including beams, columns, and frames. This course will cover fundamental concepts and applications of advanced concepts in the design of steel buildings and bridges. At the end of the course, the student will have an in-depth knowledge of relevant limit states / failure modes in steel components and structures, and a familiarity with the applicable topics in the AISC Specification and their basis in research / testing. The students will have some experience in solving design examples and looking at applications of the fundamental concepts learned in the course.

Course Content:

Order	Units/Topics List	Number of Weeks	contact hours
1	Design and behavior of plate girders	2	6
2	Design of composite beam and column members	2	6
3	Simple shear and moment connections between steel beams and columns in frame systems.	2	6
	Midterm Exam	1(7)	3
4	Advanced topics in structural steel seismic design	2	6
5	Frame stability	2	6
6	Steel braces, and eccentrically braced frame links,	2	6
7	Capacity design of conventional steel-frame buildings; innovative lateral load resisting systems	1	3
8	Presentation of course-projects	1	3
9	Final Exam	1	3
		16	48

Schedule of Assessment Tasks for Students during the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Assignments/ Lab work	3,5,7,9,11,13	10	10%
2	Midterm exam	7	20	20%
3	Course project	15	20	20%
4	Final exam	16	50	50%
	Total		100	100%

Learning Resources:

1- Textbook(s)	
	• "Steel Structures: Design and Behavior; Emphasizing Load and Resistance Factor Design" Fifth Edition, Charles G. Salmon, John E. Johnson and Faris Malhas; Pearson Prentice Hall; 2009
2- Code of Pracice	
	• "Steel Construction Manual" 15th Edition, American Institute of Steel Construction.
	• S. Al-Safi, 2021-Structural Steel Design Aids SI-Version
	• AISC 341-16 Seismic Provisions for Structural Steel Buildings, American Institute of Steel Construction.
	• AISC 358-16 Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications
2- References.8	
	• Jack C. McCormac, & Stephen F. Csernak, 2012, - Structural Steel Design, 5th edition, USA, PEARSON • Geschwindner L. F., 2016, Unified Design of Steel Structures, 3rd ed., USA, POVIDENCE ENGINEERING GROUP
3- Electronic Materials and Web Sites *etc*.	