COURSE CATALOG

Course Code: CE 369				Course Name: Steel Structures			
Semester	T + P + L	Credits	ECTS	Language of Instruction	Course Type	Instruction Methods	Prequisite(s)
6-7-8	3 + 0 + 0	3	6	English	Departmental Elective(D2)	Lecture	CE201, CE202,

Course Objectives	Introduction to steel structures. Safety considerations. Connections design: Riveted connections, bolted connections, welded connections. Members design: Tension rods, Compression rods, rods subjected to flexure. General features of Truss systems design of tension and compression members. Design of beam-columns and beam-column connections. Roof design and construction details.
Topics Covered	Introduction to steel structures, general assumptions, Review of structural design processes; external effects on structures, design codes, specifications and standards. Properties and types of structural steel. Beams: Local buckling. Lateral torsional buckling; Design of laterally supported and laterally unsupported beams; Design for Shear. Compression Members: Effective length factors. Tension Members: Effective net areas; block shear. Essentials of Bolted Connections: Types of Connections; Mechanical and physical properties of bolts; Installation techniques; Design of bolted connections. Essentials of Welded Connections: Welding techniques; Types of welds; Welding symbols; Strength of welds; Design of simple welded connections. Beam-columns. Truss systems Roof design and constructions.
Learning Outcomes of the Course	After completing this course students should gain: 1- Connection details and design of connections in planar systems. 2- Design of bending elements and beam- [2,4] *[Note that the numbers in between the brackets address the bullet numbers in the program outcomes list.]*
ISCED Category of the Course	52 Engineering
Textbook	E.H. Gaylord, Design of Steel Structures, McGraw Hill Companies, 1991.
Recommended Sources	1- H. Deren, E. Uzgüder, F. Piroğlu, Ö. Çağlayan, Çelik Yapılar, Çağlayan Kitabevi, 2008. 2- Y. Odabaşı, Ahşap ve Çelik Yapı Elemanları, Beta Yayın Dağıtım, 2004. 3- L.S. Negi, Design of Steel Structures, Tata Mgraw Hill, 2005.

WEEKLY SCHEDULE

Week	Theoretical Topic	Applied / Laboratory Topics
1	Introduction, Material properties, Loads and load combinations in steel structures, Allowable stress design, Riveted and bolted connections, Configuration of rivets and bolts in connections.	
2	Calculation of rivets and bolts, Riveted and bolted applications, Welded connections: General knowledge, welding methods. Kinds of welds and their properties.	
3	Welded connections: Kinds of welds and their properties (continue), Calculation of groove and fillet welds together, Welded connections' calculation: Simple and combined stress (theory).	
4	Simple and combined stress (theory and application-continue), welding procedures. Tension members: General knowledge.	
5	Tension members: Fundamentals of calculation. Splice on tension members: Riveted and bolted splices (theory and applications).	
6	Welded splices (theory and applications), Axially Loaded Compression members: General knowledge, single piece compression members.	
7	Single piece compression members (applications), 1. Group multi-piece compression members.	
8	Linking members' calculation, 1. Group multi-piece compression members (applications).	
9	2. Group multi-piece compression members (theory and applications), 3. Group multi-piece compression members (theory and applications).	
10	Steel Members Subjected to Combined Bending and Compression.	
11	Axial force with bending.	

12	Rolled girders: General knowledge, Rolled girders with profiles, riveted and bolted rolled girders' splices	
13	Girder connections: Simple beam connections (theory and applications).	
14	Welded rolled girders' splices	

COURSE ASSESSMENT POLICY

	Activities	Number	Contribution (%)
Studies throughout the term	Quize	3	05
	Term Homework/ Project	-	-
	Reports	-	-
	Graduation Thesis/ Project	-	-
	Seminar	-	-
	Homework	3	25
	Presentations	-	-
	Midterm Exams	2	35
	Project		
	Laboratory	-	-
	Other (attendance)	-	-
FINAL EXAM		1	35
Total			100

CONTRIBUTION OF THE COURSE TO CIVIL ENGINEERING PROGRAM OUTCOMES

	Program Outcomes	1	2	3
1	The ability to apply knowledge of mathematics, science, and engineering		X	
2	The ability to identify, formulate, and solve engineering problems			X
3	The ability to design a system or component to meet desired needs with realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability and sustainability		X	
4	The ability to analyze and interpret data			X
5	The ability to design and conduct experiments and apply experimental results to improve processes		X	
6	The ability to convey technical material through oral presentations and written papers/reports			X
7	The ability to function within multidisciplinary teams			X
8	The understanding of professional and ethical responsibilities			X
9	The understanding of the impact of engineering on society		X	
10	The understanding of the necessity to engage in life-long learning			X
11	The understanding of management and leadership principles and techniques		X	
12	The appreciation of the role of research in civil engineering problems			X
13	A knowledge of contemporary issues in civil engineering			X
14	The ability to use modern engineering techniques, skills, and tools		X	
15	The ability to understand and explain basic concepts in management, business, and leadership	X		
16	A commitment to quality, punctuality and continuous improvement		X	

Contribution Level: 1 low, 2 medium, 3 high

ECTS-WORKLOAD TABLE

ACTIVITIES	Number	Duration (Hour)	Workload(Hour)
Lecture Time	14	3	42
Final Exam (Including Prepation Time)	1	13	13
Quiz	3	4	12
Term Homework / Project	1	25	25
Reports	-	-	-
Graduation Thesis/Project	-	-	-
Seminar	-	-	-
Study Time Outside the Class	14	2	28
Homework	3	6	18
Presentations	-	-	-

Midterm Exams (Including Prepation Time)	2	6	12
Project	-	-	-
Laboratory	-	-	-
Total Workload			150
ECTS Credits of the Course (Total Workload / 25)			6

Last update on 19.01.2014	Coordinator / PREPARED BY Faruk Karadoğan, Esin Inan	APPROVED BY Esin İnan