



<b>Course Code &amp; Name</b>	CE 493 Design of Structural Steel Members
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<b>Course Schedule</b>	Monday 09. <sup>00</sup> -11. <sup>00</sup> ; Wednesday 09. <sup>00</sup> -11. <sup>00</sup> Room:B0423									
	yulearn.yeditepe.edu.tr									
<b>Instructor's Name</b> <b>Phone</b> <b>E-mail</b> <b>Office Hours</b>	Dr. Selçuk İZ 0216-578 00 00 / 3091 <a href="mailto:selcuk.iz@yeditepe.edu.tr">selcuk.iz@yeditepe.edu.tr</a> Thursday 11. <sup>00</sup> -12. <sup>00</sup>									
<b>Assistant's Name</b> <b>Phone</b> <b>E-mail</b>	Şükrü Efe ÖLGÜN efe.olgun@yeditepe.edu.tr									
<b>Midterm Dates</b>	MT1 14 April 2023									
<b>Additional Information</b>	<p>Grading out of 100 is as follows:</p> <table><tr><td>Homework</td><td>: 25%</td><td>(25 points)</td></tr><tr><td>Midterm Exam I</td><td>: 35%</td><td>(35 points)</td></tr><tr><td>Final Exam</td><td>: 40%</td><td>(40 points)</td></tr></table> <ul style="list-style-type: none"><li>• Students should get at least 50% points of the final exam to pass the course.</li><li>• 80% attendance is required by the university regulations</li><li>• Quiz and classwork dates will be announced later</li></ul>	Homework	: 25%	(25 points)	Midterm Exam I	: 35%	(35 points)	Final Exam	: 40%	(40 points)
Homework	: 25%	(25 points)								
Midterm Exam I	: 35%	(35 points)								
Final Exam	: 40%	(40 points)								



COURSE INFORMATION				
Course Code	CE 493	Course Title	Design of Structural Steel Members	
Semester	Credits	ECTS	C +P + L Hour	Prerequisites
7	3	6	2+2+0	CE 236

Language of Instruction	Course Level	Course Type
English	Bachelor's Degree (First Cycle Programmes)	Core
<b>Course Coordinator</b>	Dr. Selçuk İZ	
<b>Instructors</b>	Dr. Selçuk İZ	
<b>Assistants</b>	Şükrü Efe ÖLGÜN	
<b>Goals</b>	The goal of this course is to provide students the necessary background information for steel structures and their properties, as well as teaching them design of structural steel members according to related standards..	
<b>Content</b>	Introduction; historical background; properties of structural steel; behavior of steel structures; design concepts; design methods; codes; connections. Bolts; design of bolted connections; bolted connections in tension; bolted connections in shear; bearing type connections; slip critical connections. Welds; design of groove welded connections; design of fillet welded connections; eccentric welded connections. Tension members; fracture line; net area; behaviour and design of tension members; tension member splice. Compression members; over all buckling; local buckling; design of columns; built-up columns. Beams; lateral and local buckling of beams; design of beams; bi-axial bending; bending about weak axis. Beam-columns; braced and unbraced frames.	
<b>Contribution of the Course to the Professional Education</b>	Students acquire the ability of to design structural steel members according to the latest codes and necessary knowledge is given for construction of steel structures.	



Course Learning Outcomes	Program Outcomes	Teaching Methods	Assessment Methods
1) Ability to identify the properties of steel structures.	1a	1	A
2) Ability to apply structural steel design methods.	1a, 2b, 3a, 3b	1	A, H
3) Ability to analyse and design structural steel members according to the current regulations.	1a, 1b, 2a, 2b, 3a, 3b, 6c, 9b	1, 3, 5	A, H
4) Ability to analyse and design structural steel connections according to the current regulations.	1a, 1b, 2a, 2b, 3a, 3b, 6c, 9b	1, 3, 5	A, H

<b>Teaching Methods:</b>	1: Lecture by instructor, 2: Lecture by instructor with discussion, 3: Problem solving by instructor, 4: Use of simulations, 5: Problem solving assignment, 6: Reading assignment, 7: Laboratory work, 8: Term research paper, 9: Presentation by guest speaker, 10: Sample Project Review, 11: Interdisciplinary group working.
<b>Assessment Methods:</b>	A: Written exam, B: Multiple-choice exam C: Take-home exam, D: Experiment report, E: Homework, F: Project, G: Presentation by student, H: Classwork



COURSE CONTENT				
Week	Topics	Study Materials		
1	Introduction and historical background; production; material properties.	Lecture YUlearn	notes,	books,
2	Structural design; behavior and advantageous of steel structures. Codes.	Lecture YUlearn	notes,	books,
3	Bolts. Design of bearing type connections.	Lecture YUlearn	notes,	books,
4	Design of slip-critical connections.	Lecture YUlearn	notes,	books,
5	Welds. Design of groove welded connections.	Lecture YUlearn	notes,	books,
6	Design of fillet welded connections.	Lecture YUlearn	notes,	books,
7	Tension members; failure line; net area; effective Yield; rupture; block shear.	Lecture YUlearn	notes,	books,
8	Design of tension members.	Lecture YUlearn	notes,	books,
9	Design of tension members. Tension member splice.	Lecture YUlearn	notes,	books,
10	Compression members; Euler buckling; buckling length; local buckling.	Lecture YUlearn	notes,	books,
11	Design of compression members. Built-up compression members.	Lecture YUlearn	notes,	books,
12	Beams; moment strength; lateral buckling; local buckling; shear; deflection.	Lecture YUlearn	notes,	books,
13	Design of beams. Beam splice. Midterm Exam.	Lecture YUlearn	notes,	books,
14	Beam-columns. Braced and un-braced frames.	Lecture YUlearn	notes,	books,



RECOMMENDED SOURCES	
<b>Resource</b>	Lecture notes (yulearn.yeditepe.edu.tr)
<b>Additional Resources</b>	<ul style="list-style-type: none"><li>William T. Segui 2018. Steel Design, CENGAGE Learning, USA, 6th Edition. ISBN 978-337-09474-0.</li><li>Çelik Yapıların Tasarım, Hesap ve Yapım Esaslarına Dair Yönetmelik Uygulama Kılavuzu-2017. (T.C. Çevre ve Şehircilik Bakanlığı).</li><li>Çelik Yapıların Tasarım, Hesap Ve Yapım Esasları Yönetmeliği-2016. (T.C. Çevre ve Şehircilik Bakanlığı).</li><li>Türkiye Bina Deprem Yönetmeliği-2018.</li></ul>

MATERIAL SHARING	
<b>Documents</b>	Power point slides are shared with the students on electronic media. (yulearn.yeditepe.edu.tr)
<b>Assignments (Claswork)</b>	Solutions are shared on electronic media.
<b>Exams</b>	Solutions are shared on electronic media.

ASSESSMENT		
IN-TERM STUDIES	NUMBER	PERCENTAGE
Assignment	1	40
Midterm exam	1	60
<b>Total</b>		<b>100</b>
<b>Contribution Of Final Examination To Overall Grade (%40)</b>		40
<b>Contribution Of In-Term Studies To Overall Grade (%60)</b>		60
<b>Total</b>		<b>100</b>

<b>COURSE CATEGORY</b>	Field Course
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COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES		
No	Program Outcomes	check √
1a	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline,	√
1b	Ability to use theoretical and applied knowledge in these areas in complex engineering problems.	√
2a	Ability to identify, formulate, and solve complex engineering problems,	√
2b	Ability to select and apply proper analysis and modeling methods for this purpose.	√
3a	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result,	√
3b	Ability to apply modern design methods for this purpose.	√
4a	Ability to select and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice.	
4b	Ability to employ information technologies effectively.	
5a	Ability to design experiments for investigating complex engineering problems or discipline specific research questions,	
5b	Ability to conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.	
6a	Ability to work efficiently in intra-disciplinary teams,	
6b	Ability to work efficiently in multi-disciplinary teams,	
6c	Ability to work individually.	√
7a	Ability to communicate effectively in Turkish, both orally and in writing,	
7b	Knowledge of a minimum of one foreign language,	
7c	Ability to write effective reports and comprehend written reports, prepare design and production reports,	
7d	Ability to make effective presentations,	
7e	Ability to give and receive clear and intelligible instructions.	
8a	Recognition of the need for lifelong learning, ability to access information, ability to follow developments in science and technology,	
8b	Ability to continue to educate him/herself.	
9a	Consciousness to behave according to ethical principles and professional and ethical responsibility.	
9b	Knowledge on standards used in engineering practice.	√
10a	Knowledge about business life practices such as project management, risk management, change management.	
10b	Awareness in entrepreneurship and innovation.	



10c	Knowledge about sustainable development.	
11a	Knowledge about the global and social effects of engineering practices on health, environment, and safety,	
11b	Knowledge about contemporary issues of the century reflected into the field of engineering.	
11c	Awareness of the legal consequences of engineering solutions.	
12	Knowledge about project award mechanisms and tendering procedures.	
13	Knowledge about the interaction of designers and constructors.	

<b>ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION</b>			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration	14	4	56
Hours for off-the-classroom study (Pre-study, practice)	14	4	56
Quiz	1	3	3
Assignment (Classwork)	5	3	15
Midterm	2	3	6
Final Exam	1	3	3
Total Work Load			139
Total Work Load / 25 (h)			5.56
ECTS Credit of the Course			6

Prepared by: Res. Asst. Şükrü Efe ÖLGÜN

Preparation date:  
21.07.2023