

**COURSE IDENTIFICATION FORM**

**Course Code and Name:** IM5044 ADVANCED  
STEEL STRUCTURE DESIGN

**Department of :** CIVIL ENGINEERING / MASTER  
PROGRAMME

Semester	Theoretic Hour	Practice Hour	Total Hour	Credits	ECTS	Education Language	Type: Compulsory Elective
Atumn/Spring	3	0	3	3	5	Turkish	Optional
Prerequisite (s)							
Instructor		Assoc. Prof. Erkan POLAT				Mail : erkanpolat@munzur.edu.tr Web :	
Course Assistant						Mail : Web :	
Groups / Classes							
Course Aim		This course primarily focuses on the design of ductile steel structures from a seismic-resistant design perspective. Although the material presented is mostly independent of structural engineering codes, it aims to provide a deep understanding of fundamental ductile design behavior based on American seismic provisions. While importance is given to design concepts and strategies related to steel structures, the methods presented (with some modifications) can also be applied to other materials.					
Course Goals		<ul style="list-style-type: none"><li>• Understand the plastic behavior of steel structures and elements</li><li>• Learn the fundamental concepts of plastic analysis</li><li>• Learn the plastic design of ductile steel elements</li><li>• Learn how to evaluate existing structures using ductile design</li></ul>					
Course Learning Outs and Proficiencies		<ul style="list-style-type: none"><li>• Students who successfully complete the course will develop the concept of system behavior (as opposed to the behavior of individual elements), which is the most important aspect of seismic design for steel structures.</li><li>• They will learn the elements of evaluating existing structures with seismic design.</li></ul>					
Course Basic and Auxiliary Contexts		<ul style="list-style-type: none"><li>• Course Notes</li><li>• Ductile Design of Steel Structures, 2nd Edition by Bruneau, Uang, and Sabelli</li><li>• AISC Seismic Design Manual, 2nd Edition by the American Institute of Steel Construction</li></ul>					
Methods of Give a Lecture		The course will be conducted in class.					

Assessment Criteria		If Available, to Sign (x)	General Average Percentage (%) Rate
	Midterm Exam	X	30
	Homework	X	20
	1. Quiz		
	2. Quiz		
	3. Quiz		
	Oral Examination		
	Practice Examination (Laboratory, Project etc.)		
	Final Exam	X	50
Semester Course Plan			
Week	Subjects		
1	Structural Steel: Advantages of Plastic Behavior		
2	Plastic Behavior of Cross-Sections		
3	Fundamental Concepts of Plastic Analysis		
4	Yield Line Analysis		
5	Review of Turkish and American Design Codes		
6	Seismic Design of Ductile Moment Frames		
7	Midterm Exam		
8	Design of Ductile Braced Frame Systems		
9	Design of Ductile Braced Frame Systems		
10	Design of Buckling Restrained Steel Braces		
11	Design of Buckling Restrained Steel Braces		
12	Design of Steel Plate Shear Walls		
13	Design of Steel Plate Shear Walls		
14	Final Exam		