Course name: MCE –508 ADVANCED MECHANICS OF MATERIALS	Department: Mechanical Engineering							
Semester	**Methods of Education**							**Credit (ECTS)**
	Lecture	Recitation	Lab	Project/Field Study	Homework	Other	Total	7.5
1	42	42		40	42	20	186	

Language	English
Compulsory/Elective	Elective
Prerequisites	None
Course Contents	Strain and stress-strain relationships; two-dimensional problems in elasticity; torsion of prismatic bars; numerical methods; plastic behavior of materials.
Course Objectives	To present analytical and numerical methods used in the real analysis of the stresses in structural and machine members
Learning Outcomes and Competences	At the end of the course, attendants should be able to find exact solutions for the problems where the configurations of loading and boundary are relatively simple and also find approximate solutions employing numerical methods for the complex problems.
Textbook and /or References	Ugural, A. C., S. K. Fenster; Advanced Strength and Applied Elasticity (Main Textbook)

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exam	X	30
	Quizzes		
	Homeworks	X	10
	Projects	X	20
	Term Paper		
	Laboratory work		
	Other		
	Final Exam	X	40

Instructors	Prof. Dr. Osman YİĞİT

Week	**Subject**
1	Analysis of Stress
2	Equations of Compatibility, Strain Transformations
3	Stress-Strain Relations
4	Strain Energy in Structural Members
5	Plane Strain and Plain Stress Problems
6	Airy's Stress Function, Solution of Elasticity Problems
7	Thermal Stresses
8	Basic Relations in Polar Coordinates
9	Stresses due to Concentrated Loads
10	Torsion of Prismatic Bars - Midterm Exam
11	Prandtl's Stress Function and Membrane Analogy
12	Equation of Finite Differences
13	Analyzing the Torsion of a Bar using Finite Difference Technique
14	Plastic Behavior of Materials