



**T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY  
ENGINEERING AND ARCHITECTURE FACULTY  
MECHANICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

<b>SEMESTER</b>	Spring
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<b>COURSE CODE</b>	151818xxx	<b>COURSE NAME</b>	Introduction to Mechanics of Composite Materials
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAGE
7	3	0	0	3	5	COMPULSORY ( ) ELECTIVE (X)	Turkish

**COURSE CATAGORY**

<b>Basic Science</b>	<b>Basic Engineering</b>	<b>Engineering Subjects</b> [if it contains considerable design, mark with (√) ]	<b>Social Science</b>
		√	

**ASSESSMENT CRITERIA**

	Evaluation Type	Quantity	%
	<b>MID-TERM</b>	Mid-Term	1
Quiz			
Homework			
Project			
Report			
Others (.....)			
<b>FINAL EXAM</b>		1	60

<b>PREREQUIEITE(S)</b>	
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<b>COURSE DESCRIPTION</b>	This course investigates general structure of composite materials, production techniques, mechanical behavior and failure criteria of composite materials. In order to teach the classical lamination theory better, anisotropic elasticity is also covered within this course.
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<b>COURSE OBJECTIVES</b>	Composite materials are among advance materials which are effectively utilized in aerospace and automotive industry. This course leads students in learning about composite materials and designing parts by using such materials. Moreover, this course provides students with sufficient knowledge in solid mechanics.
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<b>ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION</b>	Examination of mechanical behavior of composite materials requires special approaches and theories. By learning such theories, students gain ability to design parts composed of composite materials. Additionally, they know about various production techniques.
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<b>COURSE OUTCOMES</b>	Having knowledge about design and production techniques of composite materials which are commonly used in engineering applications.
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<b>TEXTBOOK</b>	Robert M. Jones, Mechanics of Composite Materials, Taylor and Francis, 1999.
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<b>OTHER REFERENCES</b>	Autar K. Kaw, Mechanics of Composite Materials, Taylor and Francis, 2006.
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<b>TOOLS AND EQUIPMENTS REQUIRED</b>	
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## COURSE SYLLABUS

WEEK	TOPICS
1	Components of Composite materials
2	Production Techniques
3	Production Techniques
4	Anisotropic Elasticity
5	Anisotropic Elasticity
6	Macro-mechanical behavior of a lamina
7	Micro-mechanical behavior of a lamina
8	Mid-Term Examination
9	Mid-Term Examination
10	Micromechanical behavior of a lamina
11	Macro-mechanical behavior of a laminate
12	Macro-mechanical behavior of a laminate
13	Strength of laminates and Failure criteria
14	Strength of laminates and Failure criteria
15,16	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of mechanical engineering problems.	[X]	[ ]	[ ]
2	Ability to determine, define, formulate and solve complex mechanical engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods.	[X]	[ ]	[ ]
3	Ability to design a complex system, a component and/or an engineering process under real life constraints or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods.	[X]	[ ]	[ ]
4	Ability to develop, select and use modern methods and tools required for mechanical engineering applications; ability to effective use of information technologies.	[ ]	[X]	[ ]
5	In order to investigate mechanical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.	[ ]	[ ]	[X]
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.	[ ]	[X]	[ ]
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.	[ ]	[X]	[ ]
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.	[ ]	[X]	[ ]
9	Understanding of professional and ethical issues and taking responsibility	[ ]	[X]	[ ]
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.	[ ]	[ ]	[X]
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions.	[ ]	[ ]	[X]
1:None. 2:Partially contribution. 3: Completely contribution.				

Prepared by: Assist. Prof. Dr. Onur Arslan

Date: 06.12.2021

Signature(s):