



T.C. ESKİŞEHİR OSMANGAZI UNIVERSITY
ENGINEERING AND ARCHITECTURE FACULTY
MECHANICAL ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

SEMESTER	Fall
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COURSE CODE	151813554	COURSE NAME	MATERIALS SCIENCE
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAG E
3	3	0	2	4	5	COMPULSORY (X) ELECTIVE ()	Turkish
COURSE CATAGORY							
Basic Science	Basic Engineering		Mechanical Engineering Subjects [if it contains considerable design, mark with (√)]			Social Science	
	X		()				
ASSESSMENT CRITERIA							
MID-TERM				Evaluation Type	Quantity	%	
				Mid-Term	1	40	
				Quiz			
				Homework			
				Project			
				Report			
				Others (.....)	1	20	
FINAL EXAM					1	40	
PREREQUIEITE(S)							
COURSE DESCRIPTION				Internal Structure of Materials, Crystalline Structure, Crystal Defects, Miller Indices, Phase Rules, Alloys, Phase Diagrams, Corrosion, Wear, Mechanical Behaviour of Materials: Hardness, Tensile Test, Compression Test, Bending and Torsion Test, Creep, Stress Relaxation Test, Impact Test and Fatigue			
COURSE OBJECTIVES				To instruct the fundamental informations about materials, to estimate reliable suggestions about performance of materials and life on service			
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION				1.Structure and constitution of materials 2.Definition of material's properties			
COURSE OUTCOMES				Knowledge of materials structure and properties, interpration of materials properties, adaptation of theoretical knowledge to practical applications, experimental studies of materials science, design of materials, determining of working conditions of engineering materials			
TEXTBOOK				Malzeme Bilimi ve Mühendisliği, Çev. Kenan Genel, Nobel Yayın, 2014			
OTHER REFERENCES				1.Elements of Materials Science and Engineering, Vlack, L.H.V., Addison-Wesley Pub.Co., 1995 2.Malzeme Bilimi ve Mühendisliği, Smith, W.F., Çev.Kınıkoğlu, N., lit. 3.Malzeme bilgisi I-II, Bargel, Çev. Güleç, Ş., Tübitak Yayınları,1987 4.Malzemelerin Yapı ve özellikleri, I-II-III-IV, Moffat, W.G., Pearsall, G.W., Çev. Onaran, K., İTÜ Yayınları, 1992			
TOOLS AND EQUIPMENTS REQUIRED							

COURSE SYLLABUS	
WEEK	TOPICS
1	Internal Structure of Materials
2	Crystalline Structure, Crystal Defects
3	Miller Indices
4	Phase Rules, Alloys
5	Phase Diagrams
6	Mechanical Behaviour of Materials,; Hardness
7	Tensile Test and Compression Test
8	Mid-Term Examination
9	Mid-Term Examination
10	Bending and Torsion Test
11	Creep
12	Corrosion and Wear,
13	Stress Relaxation Test
14	Impact and Fatigue Test
15,16	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and mechanical engineering; 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: Doç. Dr. Melih Cemal KUŞHAN

Date: 13/11/2017

Doç. Dr. Mustafa ULUTAN

Signature(s):