OSTİM TEKNİK ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
DERS MÜFREDAT FORMU2021-2022

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MEC 304 Manufacturing Technologies							
Course Name	**Course Code**	**Period**	**Hours**	**Application**	**Laboratory**	**Credit**	**ECTS**
Manufacturing Technologies	**MEC 304**	3	3	0	1	3	4

Course Status	Compulsory
Language of Instruction	English
Course Level	Bachelor
Learning and Teaching Techniques of the Course	Lecture, Discussion, Question Answer, Practice

Course Objective

Learn traditional and non-traditional manufacturing processes, machine tools and equipment. Get the ability to assess and compare different manufacturing processes. Get the ability to decide on the appropriate manufacturing process for a specific application. Learn and practice basic of computer aided manufacturing simulations.

Learning Outcomes

The students who succeed in this course;

1. Will develop an understanding of fundamental and advanced manufacturing processes
2. Will acquire the mechanical/physical properties of materials and their effects on the manufacturing processes.
3. Will classify the capabilities and limitations of manufacturing processes (casting, forming, machining, welding etc.) and develop relationship between technical and economical factors in manufacturing of the final product.
4. Will have an understanding of computer aided manufacturing simulations (machining, casting, welding, forming).

Course Outline

Mechanical and physical properties of materials, metal casting, mechanical shaping processes (bulk and sheet metal forming), machining and joining operations, powder metallurgy, non-traditional processes, additive manufacturing, micro and nano fabrication technologies.

Weekly Topics and Releated Preparation Studies		
Weeks	**Konular**	**Preparation Studies**
1	Introduction to manufacturing processes	
2	Mechanical and physical properties of materials and their characterization	
3	Metal casting processes	
4	Metal casting processes	
5	Bulk metal forming processes	
6	Sheet metal forming processes	
7	Powder metallurgy	
8	Midterm exam	
9	Machining processes	
10	Machining processes	
11	Non-traditional machining processes	
12	Joining processes	
13	Additive manufacturing processes	
14	Micro and nano manufacturing technologies	
15	Final Exam	

Textbook(s)/References/Materials:
Course book: Mikell P. Groover. Fundamentals of Modern Manufacturing. Materials, Processes and Systems.
Serope Kalpakjian, Steven R. Schmid. Manufacturing Engineering and Technology.
E.P. DeGarmo, J.T.Black and R.A. Kohser. Materials and Processes in Manufacturing

Assessment		
Studies	**Number**	**Contribution margin (%)**
Attendance	14	10
Lab	14	15
Application		
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical	5	15
Homework		
Presentation		
Projects		
Report		
Seminar		
Midterm Exams / Midterm Jury	1	20
General Exam / Final Jury	1	40
	Total	**100**
Success Grade Contribution of Semester Studies		60
Success Grade Contribution of End of Term		40
	Total	**100**

Ders Kategorisi	
Temel Meslek Dersleri	X
Uzmanlık/Alan Dersleri	
Destek Dersleri	
İletişim ve Yönetim Becerileri Dersleri	
Aktarılabilir Beceri Dersleri	

Relationship Between Course Learning Outcomes and Program Competencies						
No	**Learning Outcomes**	**Contribution Level**				
		1	**2**	**3**	**4**	**5**
1	An ability to apply knowledge of science, mathematics, and engineering.					X
2	An ability to design static systems, components, or processes to meet industrial needs.					X
3	An ability to identify, formulate, and solve engineering problems				X	
4	Take responsibility to solve unpredictable and complex problems encountered in applications as an individual and as a member of a team			X		
5	Plan and manage activities in teamwork		X			
6	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.		X			
7	Can do research on interdisciplinary fields.			X		

ECTS / Workload Table			
Activities	**Number**	**Duration (hours)**	**Total Workload**
Course hours (Including the exam week: 14 x total course hours)	14	3	42
Laboratory	14	1	14
Application			
Course-Specific Internship			
Field Study			
Study Time Out of Class	14	2	28
Presentation / Seminar Preparation			
Projects			
Reports			
Homeworks			
Quizzes / Studio Review			
Preparation Time for Midterm Exams / Midterm Jury	1	20	20

Preparation Period for the Final Exam / General Jury	1	30	30
Total Workload			**133**