

TOROS ÜNİVERSİTESİ

Faculty Of Engineering
Industrial Engineering (English)

Course Information

MANUFACTURING PROCESSES					
Code	Semester	Theoretical	Practice	National Credit	ECTS Credit
		Hour / Week			
INE221	Fall	3	0	3	5

Prerequisites and co-requisites	None
Language of instruction	English
Type	Required
Level of Course	Bachelor's
Lecturer	Asst. Prof. Fikri EGE
Mode of Delivery	Face to Face
Suggested Subject	None
Professional practise (internship)	None
Objectives of the Course	1. Introduce traditional and modern manufacturing methods to focus on casting, forming, cutting, welding, powder metallurgy: metal, plastic, ceramic, glass and composite materials manufacturing technologies 2. Teach principals, technical equipment and application areas of manufacturing processes. 3. Describe basic calculation methods in manufacturing processes
Contents of the Course	Essentials of material science and materials selection/ Casting technology / PPolymers manufacturing / Processing methods for ceramics / Metal cutting teory and application areas/ Chip formation in material processing / Welding / Powder metallurgy / Free form fabrication-3D printing / Nontraditional manufacturing / Surface technologies / Fabrication of micro-electronic devices

Learning Outcomes of Course

#	Learning Outcomes
1	Describe principles of manufacturing technologies and application areas
2	Describe limitations and application areas of manufacturing processes
3	Describe and select the equipment used in manufacturing
4	Select the suitable methods for certain manufacturing processes
5	Use knowledge in designing manufacturing processes and perform basic calculations
6	Select/design process parameters in a given manufacturing process

Course Syllabus

#	Subjects	Teaching Methods and Technics
1	Introduction, processes vs. systems. Manufacturing properties of materials	Lecturing
2	Fund. of metal casting: classification, metallurgical principles, solidification, fluid flow and heat treatment	Lecturing
3	Metal casting processes: sand c., investment c., centrifugal c., die c., pressure c. semi-solid c.	Lecturing
4	Casting design, materials and economics; Polymer processing: Injection molding	Lecturing
5	Classification of forming processes, Mechanical and metallurgical fundamentals	Lecturing
6	Bulk and hot-working processes. Rolling, extrusion and drawing, forging	Lecturing
7	Midterm	Exam

8	Sheet metal forming and cold-working processes. Cutting, Bending, Stamping & Drawing, Presses	Lecturing
9	Machining processes: Turning, boring, drilling, shaping, planning and machine tools	Lecturing
10	Machining processes: Milling, broaching and machine tools. Abrasive machining processes	Lecturing
11	Machining processes: Milling, broaching and machine tools. Abrasive machining processes	Lecturing
12	Classification welding methods and physical principles. Gas flame processes	Lecturing
13	Arc processes and equipment. Resistance welding. Brazing and soldering; Powder metallurgy	Lecturing
14	Free-form fabrication. Nontraditional and modern processes. Surface technology. Fabr. of micro-electronic devices	Lecturing
15	Free-form fabrication. Nontraditional and modern processes. Surface technology. Fabr. of micro-electronic devices	Lecturing
16	Final Exam	

Course Syllabus

#	Material / Resources	Information About Resources	Reference / Recommended Resources
1	Fundamentals of Modern Manufacturing, M.P. Manufacturing Engineering & Technology (7th Ed.) by S Kalpakjian, S Schmid (2013) Prentice Hall ISBN-13: 978-0133128741		

Method of Assessment

#	Weight	Work Type	Work Title
1	40%	Mid-Term Exam	Mid-Term Exam
2	60%	Final Exam	Final Exam

Relationship between Learning Outcomes of Course and Program Outcomes

#	Learning Outcomes	Program Outcomes	Method of Assessment
1	Describe principles of manufacturing technologies and application areas	1	1,2
2	Describe limitations and application areas of manufacturing processes	1	1,2
3	Describe and select the equipment used in manufacturing	9	1,2
4	Select the suitable methods for certain manufacturing processes	4	1,2
5	Use knowledge in designing manufacturing processes and perform basic calculations	1	1,2
6	Select/design process parameters in a given manufacturing process	1	1,2

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

Work Load Details

#	Type of Work	Quantity	Time (Hour)	Work Load
1	Course Duration	14	3	42
2	Course Duration Except Class (Preliminary Study, Enhancement)	14	3	42
3	Presentation and Seminar Preparation	0	0	0
4	Web Research, Library and Archival Work	0	0	0
5	Document/Information Listing	0	0	0
6	Workshop	0	0	0
7	Preparation for Midterm Exam	1	14	14
8	Midterm Exam	1	2	2
9	Quiz	0	0	0

10	Homework	0	0	0
11	Midterm Project	0	0	0
12	Midterm Exercise	0	0	0
13	Final Project	0	0	0
14	Final Exercise	0	0	0
15	Preparation for Final Exam	1	18	18
16	Final Exam	1	2	2
				120