

School of Engineering and Natural Sciences / Industrial Engineering (English)

2022 - 2023 Academic Year

MANUFACTURING PROCEDURES

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
MANUFACTURING PROCEDURES	IND2133910	Fall Semester	3+0	3	6
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Required				
Course Coordinator	Prof.Dr. Talip ALP				
Name of Lecturer(s)	Prof.Dr. Talip ALP				
Assistant(s)					
Aim	The aims and objectives of this course is to impart to The would be industrial engineers the basic principles and solient features of modern manufacturing technologies				
Course Content	This course contains; 1. Introduction to Materials and Manufacturing Processes,2. Properties of Engineering MAterials,3. Metals and Alloys,4. Equilibrium Phase Diagrams,5. Heat Treatment of Steel (and selected alloys),6. Non-Ferrous Metals and Alloys,7. Iron and Steel,8. Non-Metallic Materials,9. Materials Selection,10. Metal Casting and Foundry,11. Bulk Forming Processes,12. Powder Metallurgy,13. Welding Processes,14. Surface Engineering.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
1. Will absorb the theories and applications of various industrial production processes			1, 14, 15, 2	A, B	
2. Will be educated about the main inputs and manufactured products involved in different manufacturing processes			1, 14, 15	A, B	
3. Understand the methods of designing the properties of materials using heat treatment, mechanical processes and thermo-mechanical processes			1, 10, 14, 15, 2	A, B, C	
4. Will be able to identify the most suitable manufacturing process among different options			1, 10, 12, 2	A, B	
5. Understand the surface hardening methods in steels.			1, 10, 12, 2	A, B	
Teaching Methods	1: Lecture, 10: Brainstorming, 12: Case study, 14: Self-Study, 15: Problem solving, 2: Question - Answer				
Assessment Methods	A: Written Exam, B: Oral Exam, C: Homework				
Lecture Schedule					
Sequenc e	Topics	Preliminary Preparation			
1	1. Introduction to Materials and Manufacturing Processes				
2	2. Properties of Engineering MAterials				
3	3. Metals and Alloys				
4	4. Equilibrium Phase Diagrams				
5	5. Heat Treatment of Steel (and selected alloys)				
6	6. Non-Ferrous Metals and Alloys				
7	7. Iron and Steel				
8	8. Non-Metallic Materials				
9	9. Materials Selection				
10	10. Metal Casting and Foundry				
11	11. Bulk Forming Processes				
12	12. Powder Metallurgy				
13	13. Welding Processes				
14	14. Surface Engineering				
Evaluation Methods		Weight(%)			
Midterm Exam		30			
General Exam		70			

Resources
Principles of Modern Manufacturing, Mikell P. Groover, J. Wiley 2011Materials & Processes in Manufacturing J.T. Black and Ronald A. Kohser, 10th Edition, J. Wiley 2008