

## GAU, Faculty of Engineering

<b>Course Unit Title</b>	Manufacturing Technology	
<b>Course Unit Code</b>	IE 314	
<b>Type of Course Unit</b>	Compulsory, Industrial engineering students	
<b>Level of Course Unit</b>	3 <sup>rd</sup> year BSc	
<b>National Credits</b>	3	
<b>Number of ECTS Credits Allocated</b>	6 ECTS	
<b>Theoretical (hour/week)</b>	3	
<b>Practice (hour/week)</b>	-	
<b>Laboratory (hour/week)</b>	-	
<b>Year of Study</b>	3 <sup>rd</sup> Year	
<b>Semester when the course unit is delivered</b>	6	
<b>Mode of Delivery</b>	Face to Face	
<b>Language of Instruction</b>	English	
<b>Prerequisites and co-requisites</b>	-	
<b>Recommended Optional Programme Components</b>	-	
<b>Objectives of the Course:</b>		
<ul style="list-style-type: none"> <li>➤ Aim of this course is to give students the fundamentals of materials science, traditional and modern manufacturing processes and systems, and the effects of materials and processing parameters in understanding manufacturing processes and operations.</li> </ul>		
<b>Learning Outcomes</b>		
When this course has been completed the student should be able to		Assesment.
1	Explain structure - property relationship.	1, 2
2	Explain effects of external forces on material behavior.	1, 2
3	Evaluate the applicability of particular materials for specific design requirements.	1, 3
4	Describe traditional and modern manufacturing processes.	1, 2, 3
5	Identify appropriate manufacturing process to produce various products.	1, 2, 3
Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work		
<b>Course's Contribution to Program</b>		
		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	5
2	Ability to design and conduct experiments as well as to analyze and interpret data	4
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	3
4	Ability to apply systems thinking in problem solving and system design	5
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	4
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	Ability to express their ideas and findings, in written and oral form	4
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	5
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	4
10	Ability to design systems, processes or products by applying modern methods of work study, ergonomics, production systems and simulation while fulfilling requirements under realistic conditions	4
11	Ability to plan and improve system performance using production planning, quality planning and control, information system design and project planning techniques	3
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)		

<b>Course Contents</b>			
Week			Exams
1	Chapter 1	Introduction to Manufacturing and Engineering Materials	
2	Chapter 2	Nature of Materials	
3	Chapter 3	Properties of Materials: Mechanical Properties; Physical Properties	
4	Chapter 4	Heat Treatment of Metals & Metal Alloys	
5			Class-Quiz 1
6	Chapter 5	Metal Casting	
7			Midterm
8	Chapter 6	Metal Forming and Sheet Metal Processes	
9	Chapter 7	Joining and Fastening Processes	
10	Chapter 8	Polymer and Ceramic Forming	
11			Class-Quiz 2
12	Chapter 9	Non-Traditional Processes	
13		Project/Poster Presentations	
14			
15			Final
<b>Recommended Sources</b>			
<b>Textbook:</b> Manufacturing Engineering and Technology, 5 <sup>th</sup> Ed. Kalpakjan & Schimid. Pearson – Prentice Hall Publications, 2006			
<b>Supplementary Material(s):</b> Foundations of Materials Science and Engineering, 2 <sup>nd</sup> Ed. Smith. Mac Graw Hill, 1993.			
GAU elearning site ( <a href="http://elearning.gau.edu.tr">www.http://elearning.gau.edu.tr</a> ).			
<b>Assessment</b>			
Poster/Project	15%		
Laboratory	-		
Midterm Exam (Written)	30%		
Quiz (Written)	20%		
Final Exam (Written)	35%		
Total	100%		
<b>ECTS Allocated Based on the Student Workload</b>			
Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	15	3	45
Labs and Tutorials	-	-	-
Assignments	3	4	12
Project/Presentation/Report Writing	1	15	15
E-learning Activities	-	-	-
Quizzes	2	10	20
Midterm Examination	1	14	14
Final Examination	1	20	20
Self Study	14	3	42
Total Workload			168
Total Workload/30 (h)			5.6
ECTS Credit of the Course			6