GAU, Faculty of Engineering

Course Unit Title	Manufacturing Technology
Course Unit Code	IE 314
Type of Course Unit	Compulsory, Industrial engineering students
Level of Course Unit	3rd year BSc
National Credits	3
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3rd Year
Semester when the course unit is delivered	6
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisities and co-requisities	-
Recommended Optional Programme Components	-

Objectives of the Course:

- 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.

Learning Outcomes

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

Course's Contribution to Program

		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)

Course Contents

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	Joinning and Fastenning 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

Recommended Sources
Textbook: Manufacturing Engineering and Technology, 5th Ed. Kalpakjan & Schimid. Pearson – Prentice Hall Publications, 2006

Supplementary Material(s): Foundations of Materials Science and Engineering, 2nd Ed. Smith. Mac Graw Hill, 1993.
GAU elearning site (www.http://elearning.gau.edu.tr).

Assessment

Poster/Project	15%	
Laboratory	-	
Midterm Exam (Written)	30%	
Quiz (Written)	20%	
Final Exam (Written)	35%	
Total	100%	

ECTS Allocated Based on the Student Workload

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