GAU, Faculty of Engineering

Course Unit Title	Fundamentals of Industrial Engineering
Course Unit Code	ENG106
Type of Course Unit	Compulsory, All engineering students
Level of Course Unit	1st Year BSc
National Credits	3
Number of ECTS Credits Allocated	5 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	2
Mode of Delivery	Face to Face, Class discussions
Language of Instruction	English
Prerequisities and co-requisities	-
Recommended Optional Programme Components	-

Objectives of the Course:

- Introduction and conceptual overview of basic concepts of Industrial engineering
- Pioneers and the related concepts they introduced to the disclipline
- Basic systems design concepts and related terminology
- Facility location and layout basics and quantitative methods.
- Overview of material handling and distribution methods
- Overview of basic methods of demand forecasting

Learning Outcomes

When this course has been completed the student should be able to		Assesment.
1	Define basic concepts introduced by pioneers	1,2
2	Explain the basic system design terminology	1,2
3	Formulate and solve facility location problems	1
4	Formulate and solve material handling problems	1
5	Apply methods of demand forecasting to predict demand for engineering services and products	1

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	3
2	Ability to design and conduct experiments as well as to analyze and interpret data	1
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	2
4	Ability to apply systems thinking in problem solving and system design	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	2
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	3
7	Ability to express their ideas and findings, in written and oral form	3
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	3
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	2

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)

Course Contents

Week			Exams
1	Chapter 1	History of Engineering and Development of Engineering	
2	Chapter 2	Industrial and Systems Engineering	
3		Industrial and Systems Engineering	
4	Chapter 18	Systems Concepts	
5		Systems Concepts	
6	Chapter 4	Facilities Location and Layout	
7		Facilities Location and Layout	
8		Facilities Location and Layout	Midterm
9	Chapter 5	Material Handling, Distribution and Routing	
10		Material Handling, Distribution and Routing	
11	Chapter 7	Overview of Demand Forecasting	
12		Basic Methods of Demand Forecasting	Quiz
13		Basic Methods of Demand Forecasting	
14		Review	
15			Final

Recommended Sources

Textbook: 1. W. C. Turner, J. H. Mize, K. E. Case, and J. W. Nazemetz, Introduction to Industrial and Systems Engineering, 3rd ed., Prentice Hall, 1993. ISBN: 0-13-481789-3

2. Hicks, Philip, E., "Industrial Engineering and Management: A New Perspective", second edition, McGraw-Hill, 2001.

Assessment

Attendance	5%	
Assignments	10%	
Midterm Exam (Written)	30%	
Quiz (Written)	15%	
Final Exam (Written)	40%	
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	5	4	20
Project/Presentation/Report Writing	-	-	-
E-learning Activities	-	-	-
Quizzes	1	10	10
Midterm Examination	1	22	22
Final Examination	1	25	25
Self Study	14	2	28
Total Workload			150
Total Workload/30 (h)			5
ECTS Credit of the Course			5