

## GAU, Faculty of Engineering

<b>Course Unit Title</b>	Fundamentals of Industrial Engineering	
<b>Course Unit Code</b>	ENG106	
<b>Type of Course Unit</b>	Compulsory, All engineering students	
<b>Level of Course Unit</b>	1st Year BSc	
<b>National Credits</b>	3	
<b>Number of ECTS Credits Allocated</b>	5 ECTS	
<b>Theoretical (hour/week)</b>	3	
<b>Practice (hour/week)</b>	-	
<b>Laboratory (hour/week)</b>	-	
<b>Year of Study</b>	1	
<b>Semester when the course unit is delivered</b>	2	
<b>Mode of Delivery</b>	Face to Face, Class discussions	
<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>➤ Introduction and conceptual overview of basic concepts of Industrial engineering</li> <li>➤ Pioneers and the related concepts they introduced to the discipline</li> <li>➤ Basic systems design concepts and related terminology</li> <li>➤ Facility location and layout basics and quantitative methods.</li> <li>➤ Overview of material handling and distribution methods</li> <li>➤ Overview of basic methods of demand forecasting</li> </ul>		
<b>Learning Outcomes</b>		
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		
<b>Course's Contribution to Program</b>		
		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