GAU, Faculty of Engineering

Course Unit Title	Probability
Course Unit Code	MT207
Type of Course Unit	Compulsory, All engineering students
Level of Course Unit	2nd Year BSc
National Credits	3
Number of ECTS Credits Allocated	4 ECTS
Theoretical (hour/week)	2
Practice (hour/week)	1
Laboratory (hour/week)	-
Year of Study	2
Semester when the course unit is delivered	2
Mode of Delivery	Face to Face,
Language of Instruction	English
Prerequisities and co-requisities	-
Recommended Optional Programme Components	Basic bacground for sets, permutation and combination

Objectives of the Course:

- Conceptial overview for understand and effectively use the basic concepts of probability for solving enginnering problems.
- The major objective of the course is to help the students to develop an intuition and an interest for random phenomena, and to introduce both theoretical issues and applications that may be useful in real life

Learning Outcomes

When this course has been completed the student should be able to		Assesment.
1	Interpret basic rules of probability	1,2
2	To develop notions of possible and favorable outcomes of an experiment; intuitive probability	1,2
3	To introduce the concepts of random variables and distributions	1,2
4	To present some of the often encountered continuous probability models and to discuss their application	1,2
5	To learn Conditional probability	1,2

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	4
2	Ability to design and conduct experiments as well as to analyze and interpret	3
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	1
4	Ability to apply systems thinking in problem solving	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	3
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	4
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	2
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	3

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

Course Contents

Week			Exams
1	Chapter 1	Basic Set Theory	
2	Chapter 2	Mathematical Probability: Sample Space and events	
3		Axioms Of Probability,Basic Properties of Probability	
4	Chapter 3	Combinoratorial Probability, Basic Counting Rule	
5		Permutation And Combination	Quiz
6		Application of Counting Rules to Probability	
7	Chapter 4	Conditional Probability And Independence	
8			Midterm
9	Chapter 5	Bayes's Rule,Discrete random variables and their distributions	
10	Chapter 7	Expected value of Discrete random variables	
11	Chapter 8	Continuos random Variables and their distribution	
12		Normal and Uniform Distribution	
13		Exponential Distribution	
14	Chapter 12	Application Of Distribution	
15			Final

Recommended Sources

Textbook: "A course in Probability", Neil A. Weiss,Pearson,2006

Supplementary Material (s): "Introduction to Probability And Statistics", J.Susan Milton,Jesse C. Arnold, 4th edition 2003

Assessment

Attendance& Assignment	15%	
Midterm Exam (Written)	35%	
Quiz (Written)	5%	
Final Exam (Written)	45%	
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	2	30
Tutorials	13	1	13
Assignments	5	1	5
Project/Presentation/Report Writing	-	-	-
E-learning Activities	-	-	-
Quizzes	1	6	6
Midterm Examination	1	15	15
Final Examination	1	20	20
Self Study	14	2	28
Total Workload			117
Total Workload/30 (h)			3.9
ECTS Credit of the Course			4