

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	
Prerequisites and co-requisites	-	
Recommended Optional Programme Components	Basic background for sets, permutation and combination	
Objectives of the Course:		
<ul style="list-style-type: none"> ➤ Conceptual overview for understand and effectively use the basic concepts of probability for solving engineering 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	Combinatorial 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	Continuous 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