

Faculty of Engineering & Technology

Probability and Statistics (Math 6)

Information :

Course Code : MTH 312

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Department of Mechanical Engineering

Instructor Information :

Title	Name	Office hours
Associate Professor	Nashwa Mohamed El Sayed Mohamed	8
Assistant Lecturer	Doaa Nabil Sayed Mohamed Elsayed Khodair	

Area Of Study :

This course aims to develop the students' confidence and skills in dealing with mathematical expressions of statistical Science, to improve their understanding of the concepts of statistical studies and to perform descriptive and basic inferential statistical studies. The course gives the students the ability to understand the inference techniques for the inferential statistical studies within the areas of interest.

Description :

Descriptive statistics and data analysis, Introduction to probability theory, conditional probability, Bayes theorem, Random variables and probability distribution, Discrete and continuous random variables, Mathematical expectation of random variables and some special expectation, Some discrete probability distribution (Binomial and poisson). Some continuous distribution (Normal distribution, t- distribution), Introduction to estimation and tests of hypothesis. Correlation analysis, applied statistics.

Course outcomes :

a. Knowledge and Understanding: :

1 -	Recognize the fundamental features of the probability theory, and other statistical topics.
2 -	Distinguish the meaning of conditional probability and its application
3 -	Describe random variables, discrete and continuous distributions.
4 -	Define samples and population measures (point and interval estimate).

b. Intellectual Skills: :

1 -	Summarize Statistical concepts essential and necessary for applications in Mechanical engineering problems
2 -	Think logically and creatively.
3 -	Analyze the appropriate method for the solutions of statistical engineering problems using convenient methods.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Descriptive statistics and data analysis. Definitions and concepts.	10	6	4
Random variables and probability distribution: Discrete and continuous random variables	10	6	4
Random Variables and Probability Distribution	10	6	4
Mathematical expectation of random variables and some special expectation	10	6	4
Some discrete probability distribution (Binomial and Poisson).	10	6	4
Some continuous distribution (Normal distribution).	10	6	4
Introduction to the estimation and tests of hypothesis.	10	6	4
Correlation analysis.	5	3	2

Teaching And Learning Methodologies :

Interactive Lecturing
Problem solving
Discussion

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Participation	10.00		To assess understanding and problem solving skills
Assignments	5.00		To assess lecture material comprehension
Final exam	40.00	16	
First Exam	20.00	5	To assess understanding and problem solving skills
Quizzes	5.00		To assess material comprehension & self study.
Second Exam	20.00	10	To assess understanding and problem solving skills

Recommended books :

Ronald E. Walpole, Raymond H. Myers, and Sharon L. Myers. %Probability & Statistics for Engineers & Scientists 9th ed., Pearson Education, Inc. 2012.
Douglas C. Montgomery, George C. Ringer. %Applied Statistics and Probability for Engineers 6th Edition. John Wiley & Sons, Inc. 2013.

Web Sites :

- o www.stattrek.com
- o www.statistics.com
- o www.sosmath.com
- o www.math.hmc.edu
- o www.tutorial.math.lamar.edu
- o www.web.mit.edu