Faculty of Computers and Information Technology

Probability and Statistics

Information :

Course Code :	ST103	**Level** :	Undergraduate	**Course Hours :**	3.00- Hours

Department :	Faculty of Computers and Information Technology

Instructor Information :

Title	Name	Office hours
Associate Professor	Khaled Ahmed Mohamed Elshafey	6
Teaching Assistant	Amany Hussein Hassan Mohamed Abou elnaga	6
Teaching Assistant	Abdelaziz Mohsen Abdelaziz Mohamed	

Area Of Study :

Apply the basic concepts, theories, meanings and interpretations of probability and statistics.
Combine and evaluate different probability laws.
Use basic mathematics in probability and statistics.
 Analyze the analytical requirements of some applications to design a solution for these requirements.
Compare, evaluate and select methodologies from range of probability distributions to model continuous and discrete systems.
Use effectively communication skills.
Carry out a self-learning and research in probability and statistics field.

Description :

This course provides an introduction on Statistics. Topics of interest include the statistical analysis on statistical data, statistical measurements. Elementary probability, probability theorems, conditional probability, independent and dependent events, total probability rule and Baye's Theorem. Discrete probability distribution, probability mass function, continuous probability distribution and probability density function. Mathematical expectation: mean and variance. Special discrete distribution: Bernoulli, Binomial. Geometric and Poisson distributions. Special continuous distribution: Uniform, negative exponential and normal distribution.

Course outcomes :

a.Knowledge and Understanding: :

1 -	Define the fundamental concepts and theories related to probability and statistics
2 -	Discuss methodologies and practices of different probability distributions used in continuous and discrete systems modeling
3 -	Explain analytical requirements in developing real applications

b.Intellectual Skills: :

1 -	Analyze and design analytical solutions for certain probabilistic problems considering limitations and constrains
2 -	Determine measurement criteria to identify appropriate probability distributions for continuous and discrete systems
3 -	Prepare probabilistic models and use hypothesis testing

c.Professional and Practical Skills: :

1 -	Use different probability theorems such as Bayes theorem in real-life situations
2 -	Install and maintain supporting tools for data analysis
3 -	Realize probability distributions to model the behavior of variables for a wide variety of problems
4 -	Acquire a set of fundamental research skills to discover a set of fundamental research skills from different resources of probability and statistics

d.General and Transferable Skills: :

1 -	Exploit a range of learning resources of probability and statistics
2 -	Work in a team effectively and efficiently considering time and stress management
3 -	Apply quantitative methods in understanding different case studies

ABET Course outcomes :

1 -	Define the fundamental concepts and theories related to probability and statistics.
2 -	Recognize methodologies and practices of different probability distributions used in continuous and discrete systems modeling.
3 -	Identify analytical requirements in developing real applications.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Probability theory: events, probabilities and conditional probability.	4	2	2
Probability theory: posterior probabilities,	4	2	2
Probability theory: counting techniques and case studies.	4	2	2
Discrete Random variables: expectations, variance, and standard deviation.	4	2	2
Continuous Random variables: expectations, variance, and standard deviation.	4	2	2
Random variables: Jointly distributed random variables and case studies.	4	2	2
Discrete probability distributions: Bernoulli random variable, Binomial and Poison distributions.	4	2	2
Discrete probability distributions: Geometric and Negative Binomial, and case studies.	4	2	2
Mid-Term Exam	2		
Continuous probability distributions: Uniform, Exponential, and case studies.	4	2	2
Normal Distribution: combinations of normal random variables, approximating distributions with normal distribution	4	2	2
Descriptive statistics: experimentation and data representation.	4	2	2
Descriptive statistics: sample statistics and case studies.	4	2	2
Final Exam	2		

Teaching And Learning Methodologies :

Interactive Lectures including Discussions
Tutorials

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Self-Study (Project / Reading Materials / Online Material / Presentations)
Problem Solving

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00	4	
Final Exam	40.00	14	
Midterm Exam (s)	20.00	9	
Others (Participations)	10.00		
Quizzes	20.00	5	

Course Notes :

An Electronic form of the Course Notes and all the slides of the Lectures is available on the Students Learning Management System (Moodle)

Recommended books :

R. Walpole, R. Myers, S. Myers, K. Ye, Probability and Statistics for Engineers and Scientists, 9th ed. Prentice Hall, Pearson Education, 2011. ISBN978-0-321-62911-1.

Web Sites :

˝ĹStat Trek. Teach yourself statistics online. www.statrek.com
˝ĹPractice for probability and statistics. www.khanacademy.org

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