

BA327- Statistics & Numerical Mathematics

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2

COURSE COORDINATOR

Dr Ahmed Akl

TEXT BOOK:

Mohmoud Gaber , Probability and statistics for engineering student.

COURSE DESCRIPTION:

Probability / Statistics – Probability : Events , Sample Spaces and Probability , conditional Probability , Independent Events , Bay's theorem ; Discrete Probability Distribution; Continuous Probability Distribution ; Special Distributions – Numerical Methods/ Roots of Equations : Bracketing Methods (The Bisection and The False – Position Methods) , Open Methods (Simple Fixed Point Iteration ; The Newton-Raphson Method ; The Secant Method) , Curve Fitting : Interpolation (Newton's Divided-Difference Interpolating polynomials; Lagrange Interpolating Polynomials; Inverse Interpolation).

PREREQUISITE:

BA 323

RELATION OF COURSE TO PROGRAM:

Required

COURSE INSTRUCTION OUTCOMES:

The student gains knowledge on the basic concepts of probability, statistics and different sampling distributions, as well as he/she is introduced to different numerical techniques used in solving mathematical equations and tools for fitting the data by interpolation methods.

TOPICS COVERED:

An introduction to statistics and statistical analysis on data observation – Statistical measurements – Elementary probability, probability theorems – Conditional probability, Independent and dependent events – Total probability rule, bayes theorem and enumeration methods – Discrete probability distribution: probability mass function – Continuous probability distribution: probability density function – Mathematical expectation, mean and variance – Special discrete distribution: Bernoulli , binomial , geometric and Poisson distributions – Special continuous distribution: Uniform, exponential and normal distribution – Discrete and Continuous joint probability distribution – Random Process: temporal and spectral Characteristics.

CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:

Professional Component Content			
Math and Basic Sciences	Engineering Topics	General Education	Engineering Design
✓			

RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

Student Outcomes		Course Outcomes
a.	An ability to apply knowledge of mathematics, science, and engineering.	✓
b.	An ability to design and conduct experiments, analyze and interpret data.	
c.	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	
d.	An ability to function on multi-disciplinary teams.	
e.	An ability to identify, formulate, and solve engineering problems.	✓
f.	An understanding of professional and ethical responsibility.	
g.	An ability to communicate effectively.	
h.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal content	
i.	A recognition of the need for, and an ability to engage in life-long learning.	
j.	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k.	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	