



**Gyanmanjari**  
Innovative University

**Course Syllabus**  
Gyanmanjari College of Computer Application  
Semester-2 (BCA)

**Subject:** Probability and Statistics - BCAXX12203

**Type of course:** Multidisciplinary

**Prerequisite:** Measure of central Tendency and Dispersion; Curve fitting and basic Probability, etc.

**Rationale:** The basic concepts of Mean, Mode, Standard Deviation, Skewness, and Bayes' rule, Bernoulli trials, Random variables.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits C	Examination Marks					Total Marks
CI	T	P		Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
4	0	0	4	100	30	00	00	70	200

*Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.*

**Course Content:**

Sr. no.	Course content	Hrs	% Weightage
1	<b>Chapter-1: Measure of central Tendency and Dispersion</b> Introduction of Central Tendency, Arithmetic Mean, Harmonic Mean, Median, Mode, Quartile, Deciles and Percentile, Introduction of Dispersion, Range(R), Quartile Deviation, Standard Deviation.	14	25%
2	<b>Chapter – 2 : Special Statistics</b> Moments, Expectation, dispersion, skewness, kurtosis, expected value of two dimensional random variable, Linear Correlation, correlation coefficient, ranks correlation coefficient.	12	25%



3	<p><b>Chapter – 3 : Curve fitting</b> Curve fitting by method of least squares ,Fitting of straight lines , Fitting of Second degree parabola , Fitting of curve of the type <math>Y=ax^b</math> , Fitting of curve of the type <math>Y=ab^x</math> , Fitting of curve of the type <math>Y=ae^{bx}</math> .</p> <p><b>Chapter – 4 : Basic Probability</b> Random Experiment, Counting Principle, Permutation and Combination. Definition of probability. Probability, conditional probability, independent events.</p>	12	25%
4	<p><b>Chapter – 5 : Special Probability</b> Bayes' rule, Bernoulli trials, Random variables, discrete random variable , Introduction of distribution , Binomial distribution, Poisson Distribution , Normal Distribution and Application of distribution.</p>	14	25%

**Continuous Assessment:**

Sr. No.	Active Learning Activities	Marks
1	<p><b>Short Tricks by Using Vedic Maths:</b> Students will prepare chart on shortcut trick of Operation of Maths like multiplication, Square root, square, Factor, etc. and upload to GMIU web portal.</p>	10
2	<p><b>Functionality of scientific calculator:</b> List of functions will be assigned by teacher. Students have to prepare the flowchart for solution and upload to the GMIU web portal (in group of three students).</p>	10
3	<p><b>Presentation :</b> Faculty will assign topics and students will prepare Presentations (Slideshow/video) and upload them to GMIU web portal.</p>	10
4	<p><b>Puzzle :</b> Various problems based on series, geometry, clock, calendar, etc. will be assigned to the students. Students need to submit Mathematical logic and Solution via GMIU web portal.</p>	10
5	<p><b>Chart:</b> Chart upon application of any topic of syllabus must be prepared by the students and upload to GMIU web portal.</p>	10
6	<p><b>Test of Formulas :</b> Students have to list out formulas with example used in given chapter and upload it to GMIU web portal. (Minimum 10 formulas).</p>	10
7	<p><b>Attendance :</b> All the students have to be present in classroom in every lecture.</p>	10
<b>Total</b>		<b>70</b>



**Suggested Specification table with Marks (Theory): 100**

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	40%	40%	00	00	00

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Course Outcome:**

After learning the course, the students should be able to:	
CO1	Solve the problems of central tendency, correlation and correlation coefficient and also regression.
CO2	Apply the concept of the correlation and correlation coefficient and also regression on various real world problems.
CO3	Understand the fitting of various curves by method of least square.
CO4	Understand the terminologies of basic probability, two types of random variables and their probability functions

**Instructional Method:**

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

**Reference Books:**

- [1] S. Ross, a First Course in Probability, 6th Ed., Pearson Education India.
- [2] W. Feller, an Introduction to Probability Theory and its Applications, Vol. 1, Wiley.
- [3] J. L. Devore, Probability and Statistics for Engineering and the Sciences, Cengage Learning.

