



Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Science College
Semester-3 (B.Sc.)

Subject: Statistics – BSCXX13310

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 hypotheses.

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	Chapter-1: Data Collection And Analysis 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	Chapter – 2 : Special Statistics Moments, Expectation, dispersion, skewness, kurtosis, expected value of two dimensional random variable, Linear Correlation, correlation coefficient, ranks correlation coefficient.	12	25%
3	Chapter – 3 : Curve fitting and Basic Probability Curve fitting by method of least squares, Fitting of straight lines, Fitting of Second degree parabola, Random Experiment, Counting Principle, Permutation and Combination. Definition of probability, conditional probability, independent events.	12	25%



4	Chapter – 4 : Statistical Tests and Testing of Hypothesis Binomial Distribution , Elementary theory and practice of sampling, standard error or means and variance, Z test – Test of significance for large sample: With single mean, two mean, Difference between standard deviation, Single proportion, Difference of proportion, t-test- Test of significance for Small sample : Single Mean (σ - Unknown)	14	25%
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Continuous Assessment:

Sr. No.	Active Learning Activities	Marks
1	Short Tricks by Using Vedic Maths: Students will prepare chart on shortcut trick of Operation of Maths like multiplication, Square root, square, Factor, etc. and upload to GMIU web portal. Data Collection and Analysis	10
2	Data Collection and Analysis Faculty assign task to collect data of any Topic and Students will analys data and upload to the GMIU web portal (in group of three students).	10
3	Experiment of Coin Toss Each group of 2 Students gets a fair coin and toss 20 times and record the results(heads/tail).After the experiment each group calculate the experimental probability of getting heads or tail.	10
4	Chart: Chart upon application of any topic of syllabus must be prepared by the students and upload to GMIU web portal.	10
5	Preparation of Formulae List : Students have to list formulas with examples used in a given chapters and upload it to the GMIU web portal.	10
6	Chart using Excel file: Student need to prepare data charts like pie chart, line chart, column chart, bar chart, XY (scatter) chart etc. based on various data given by teacher and submit the Excel file via GMIU web portal (in group of three students).	10
7	Attendance	10
	Total	70



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%	30%	50%	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 Statistical Tests and Testing of Hypothesis

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.

