BIOSTATISTICS

Course Code: 0542-3107	**Course Title:** Biostatistics	
Course Type: Compulsory	**Level/Term:** Level 3, Term 1	**Pre-requisite (s):** None
Credit: 3.0	**Contact Hours: 3 Hrs/Week**	**Total Marks: 100 (CIE: 60, SFE:40)**

Course Rationale:

In real life, statistical methods can apply to solve different problems and help to make an effective decision that affect our daily lives. Statistical methods are used in development of planning, commerce, industry, business, formation of development policy, agricultural sector, social science etc. By studying this course, students will learn the fundamental knowledge about statistics and their applications.

Content of the Course:

Sl No	Course Content (as Summary)	Hrs	CLOs
1	**Introduction to Statistics** (Meaning and Definition of Statistics Types of statistics; Population and sample; Parameter and statistic; Variable and types of variable; Characteristics, Levels of data)	6	CLO 1
2	**Data Presentation** (Contents: Constructing frequency distribution and relative frequency distribution: Qualitative and quantitative data; Cumulative frequency distribution; Graphic presentation of a frequency distribution with merits and demerits.)	6	CLO 1 CLO 4
3	**Measures of Central Tendency and Measures of Location** (Contents: Arithmetic Mean, Geometric Mean, Harmonic Mean, Weighted Mean, Median and Mode with uses, advantages and limitations; Quartile, Percentile and Decile; Mathematical Problems and Box-Whisker plot)	6	CLO 1 CLO 2 CLO 4
4	**Measures of Dispersion and Shape of the Distribution** (Contents: Meaning of dispersion; measures of dispersion; absolute measures of dispersion Relative measures of dispersion; Application of different measures	6	CLO 1 CLO 2

	of dispersion; Concept of Skewness, kurtosis and their measures)		CLO 4
5	**Correlation Analysis** (Contents: Bi-variate data, scattered diagram, simple correlation, calculation of correlation coefficient, interpretation, multiple correlation)	3	CLO 1 CLO 4
6	**Regression Analysis** **(**Contents: Simple regression with examples. Multiple regression with examples Simple linear Regression model Estimation with related maths coefficient of determination with interpretation)	6	CLO 1 CLO 3 CLO 4
7	**Introduction to Probability** (Contents: Sample Space, Tree diagram, Define probability, Marginal probability, Joint probability, Conditional probability Addition rule, Multiplication rule)	6	CLO 1 CLO 3 CLO 4
8	**Probability Distribution** (Contents: Basic idea of Probability Distribution, Binomial distribution, Poisson distribution and Normal distribution with maths.)	3	CLO 1 CLO 3 CLO 4
9	**Test of Hypothesis** (Contents: Definition, Objectives, applications of Hypothesis, acceptance and rejection area, Mean Test)	3	CLO 1 CLO 3 CLO 4

Course Learning Outcomes: At the end of the Course, the Student will be able to-

CLO1	Achieve a sound understanding of the theoretical and practical knowledge of statistics.
CLO2	Impart them with fundamental knowledge about descriptive statistics and their applications.
CLO3	Apply appropriate statistical tools (Regression, data mining, and probability) for making decision.
CLO4	Able to apply their statistical knowledge and skills throughout their future studies.

Mapping of Course Learning Outcomes to Program Learning Outcomes-

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CLO1	2										
CLO2	3	2		3				3			
CLO3	1	3		3	3						
CLO4	3	2		3	3						

Mapping Course Learning Outcome (CLOs) with the Teaching-Learning and Assessment Strategy

CLOs	**Teaching-Learning Strategy**	**Assessment Strategy**
CLO 1	Brainstorming Sessions, Voice over PPT, Lecture Video, Open Discussion	Feedback Session, Q/A session, H5P (Interactive Content), Quiz, Midterm Examination
CLO 2	Voice Over PPT, Lecture Video, Setting Interactive Session, Mind Mapping	Q/A Session, H5P (Interactive Content), Quiz, Midterm Examination, Assignment
CLO 3	Voice Over PPT, Lecture Video, Case Study, Academic Debate	Q/A Session, Feedback Session, H5P (Interactive Content), Midterm Examination, Quiz
CLO 4	Voice Over PPT, Lecture Video, Open Discussion, Content Analysis	Q/A Session, Feedback Session, H5P Interactive Content, Quiz, Final Examination
	Lecture Video, Open Discussion	

ASSESSMENT PATTERN

CIE- Continuous Internal Evaluation (53 Marks) + Attendance (7 Marks)

Bloom's Category Marks (out of 53)	**Midterm Exam (25)**	**Class Test (15)**	**Assignment (5)**	**Presentation (8)**
Remember	5	2		
Understand	5	3	2	2

Apply	10	5		
Analyze	5	5		
Evaluate				
Create			3	6

SEE- Semester End Examination (40 Marks)

Bloom's Category	**Test**
Remember	5
Understand	5
Apply	10
Analyze	10
Evaluate	5
Create	5

LEARNING MATERIALS

Recommended Readings:

1. M. Nurul Islam, *Introduction to Statistics and Probability*, Book World.
2. Applied Statistics and Probability for Engineers by Douglas *C. Montgomery, Arizona State University.*

Statistics and Probability for Engineering Applications with Microsoft® Excel by W.J. DeCoursey College of Engineering, University of Saskatchewan Saskatoon.