Enclosure – BMTIV

Shree Manibhai Virani and Smt. Navalben Virani Science College, Rajkot (Autonomous)
Affiliated to Saurashtra University, Rajkot

Transdisciplinary Elective (Theory) For the students admitted from A.Y. 2021-2022 & onwards		
Offering Department: **Mathematics**	Offered to: **B.Sc. (All Programs)**	
Semester – IV		
Course Code	Course Title	Course Credit and Hours
	Transdisciplinary Elective 1: Fundamentals of Statistics	**2 Credits - 2 hrs/wk** **(2 Theory)**

Course Description:

This course is meant as transdisciplinary nature which is suitable to any students who want to apply the knowledge of mathematics in their subject area. This is an introductory course in statistics intended for students in a wide variety of areas of study. Students learn how statistics has helped to solve major problems in economics, education, genetics, medicine, physics, political science, and psychology.

Course Purpose:

Statistics provides tools and methods to find structure and to give deeper data insights. Knowing the fundamentals of the two important subjects- mathematics and statistics- will allow the learner to think critically, and be creative when using the data to solve business problems and make data-driven decisions.

Course Outcomes: Upon completion of this course, the learner will be able to

CO No.	**CO Statement**	**Blooms taxonomy Level (K_1 to K_6)**
CO_1	Identify the relevant population, sample, study units (subjects) and variables and produce and interpret numerical summary using mean, median, mode, range, standard deviation and variance.	K_1, K_2, K_3
CO_2	Represent graphically the data using different graphs and charts.	K_1, K_2
CO_3	Understand the concept of probability.	K_1, K_2

CO_4	Understand, interpret and apply the concepts of binomial distribution.	K_1, K_2, K_3
CO_5	Understand, interpret and apply the concept of Poisson Distribution.	K_1, K_2, K_3

Course Contents	**Hours**
Unit-I: Descriptive Statistics	**4**
• Types of data • Mean, median, mode, variance, standard deviation.	
Unit-II: Graph and Charts	**4**
• Histogram, Ogive, frequency polygon • Stem and Leaf plot, dot plot • Bar Graphs, pie chart	
Unit- III: Events and Their Probabilities	**5**
• Classical definition of probability • Probability of union, intersection, difference of events • Conditional Probability	
Unit- IV: Discrete Probability Distributions- Binomial Distribution	**6**
• Binomial Distribution. • Mean and Variance of Binomial Distribution. • Properties of Binomial Distribution.	
Unit- V: Discrete Probability Distributions- Poisson Distribution	**5**
• Poisson Distribution. • Mean and Variance of Poisson Distribution. • Properties of Poisson Distribution.	

Pedagogic Tools

- Chalk and board
- PowerPoint presentation
- Online resources

Text Books:

- Digambar Patri and D. N. Patri, (2011), Statistical Methods, Kalyani Publishers.

Reference Books:

- Nabendu Pal, Sahadeb Sarkar, (2015), Statistics: Concepts and Applications, 2nd edition, Prentice Hall of India.

- J. N. Kapur, H. C. Saxena, Mathematical Statistics, (2010), S. Chand & Company Ltd.

Suggested reading / E-resources:

- https://www.cuemath.com/data/statistics/
- https://www.dcpehvpm.org/EContent/Stat/FUNDAMENTAL%20OF%20MATHEMATICAL%20STATISTICS-S%20C%20GUPTA%20&%20V%20K%20KAPOOR.pdf

Suggested MOOCs:

- https://ocw.mit.edu/search/?t=Mathematics
- https://www.my-mooc.com/en/categorie/statistics-and-probability

Methods of Assessment & Tools:

Components of CIA: 100 marks

Sr. No.	Component	Content	Duration	Marks	Sub Total
A	Test 1	1st 2 units	1 hour	30	90
	Test 2	All 5 units	3 hours	60	
B	Assignment-1			5	10
C	Assignment-2			5	
				Grand Total	**100**

Note: Any other assessment tools or methods can be adopted as per the requirement of the course