SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Accredited by National Board of Accreditation, AICTE, New Delhi,Accredited by
NAAC with "A" Grade – 3.32 CGPA,Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi,Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF S&H

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester
23BS4T04	Probability and Statistics	IV	CSE,AIML,IT,CSE-(BS)	6	2024-25	16-12-2024

COURSE OUTCOMES: At the end of this course, the student will be able to

CO1	Classify the concepts of data science and its importance (K2)
CO2	Apply discrete and continuous probability distributions (K3)
CO3	Apply Sampling Distribution and estimate the population parameters. (K3)
CO4	Examine the statistical inferential methods based on small and large sampling tests (K3)
CO5	Use correlation methods and principle of least squares, regression lines (K3)

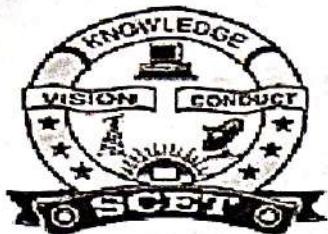| UNIT	Out Comes / Bloom's Level	Topic No.	Topics/Activity	Text Book/ Reference	Contact Hour	Delivery Method
			Descriptive statistics and methods for datascience			
		1.1	Introduction – Data Science - Statistics	T_1&T_2	1	
		1.2	Population vs Sample	T_1&T_2	1	
		1.3	Collection of data (primary and secondary data)	T_1&T_2	1	
				T_1&T_2	1	
	CO1: At the end of this course, the student will be able to classify the concepts of data science and its importance(K2)	1.4	Type of variable: dependent and independent	T_1&T_2	1	
I		1.5	Continuous variables	T_1&T_2	1	Chalk & Talk,Active learning ,PPT and Tutorial
		1.6	Data visualization	T_1&T_2	1	
					1	
		1.7	Measures of Central tendency	T_1&T_2	1	
					1	
		1.8	Measures of Variability	T_1&T_2	1	
					1	
		1.9	Skewness	T_1&T_2	1	
		1.10	Kurtosis	T_1&T_2	1	
					14	

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			ProbabilityandDistributions			
		2.1	Introduction - Probability	T_1&T_2	1	
		2.2	Conditional probability	T_1&T_2	1	
		2.3	Baye's theorem	T_1 &T_2	1	
					1	
		2.4	Random variables – Discrete random variables	T_1&T_2	1	
					1	
	CO2: At the end of this course, the student will be able to apply discrete and continuous probability distributions (K3)	2.5	Continuous random variables	T_1&T_2	1	Chalk & Talk,Active learning ,PPT and Tutorial
					1	
II		2.6	Probability mass function, Probability density function and Cumulative distribution functions	T_1&T_2	1	
		2.7	Mathematical Expectation and Variance	T_1&T_2	1	
		2.8	Binomial distributions	T_1&T_2	1	
		2.9	Poisson distributions	T_1&T_2	1	
		2.10	Uniform distributions	T_1&T_2	1	
		2.11	Normal distributions	T_1&T_2	1	
				T_1&T_2	1	
					15	
			SamplingTheory			
	CO3: At the end of this course, the student will be able to apply Sampling Distribution and estimate the population parameters. (K3)	3.1	Introduction–Population and Samples	T_1&T_2	1	
		3.2	Sampling distribution of Means and Variance (definition only)	T_1&T_2	1	
				T_1&T_2	1	
		3.3	Point and Interval estimations	T_1&T_2	1	
		3.4	Maximum error of estimate	T_1&T_2	1	
III		3.5	Central Limit theorem (without	T_1&T_2	1	

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				proof)			
		3.6		Estimation using t, and F- distributions	T_1&T_2	1	Chalk & Talk, Active learning, PPT and Tutorial
						7	
IV	CO4: At the end of this course, the student will be able to examine the statistical inferential methods based on small and large sampling tests (K3)		Tests of Hypothesis				
		4.1		Introduction–Hypothesis– Null and Alternative Hypothesis	T_1&T_2	1	Chalk & Talk, Active learning, PPT and Tutorial
		4.2		Type I and Type II errors– Level of significance	T_1&T_2	1	
		4.3		Test of significance for large samples- Single mean	T_1&T_2	1	
					T_1&T_2	1	
		4.4		Test of significance for large samples- difference of means	T_1&T_2	1	
					T_1&T_2	1	
		4.5		Test of significance for large samples- Single proportion	T_1&T_2	1	
					T_1&T_2	1	
		4.6		Test of significance for large samples- difference of proportions	T_1&T_2	1	
		4.7		Test of significance for small samples- Student's t-test	T_1&T_2	1	
		4.8		Test of significance for small samples- F-test	T_1&T_2	1	
		4.9		Test of significance for small samples- χ^2 - test	T_1&T_2	1	
					Total	12	
V	CO5: At the end of this course, the student will be able to Use correlation methods and principle of least squares, regression lines		CorrelationandRegression				
		5.1		Correlation – Correlation coefficient	T_1&T_2	1	
					T_1&T_2	1	
		5.2		Rank correlation.	T_1&T_2	1	
					T_1&T_2	1	
		5.3		**Linear Regression**: Straight line	T_1&T_2	1	
					T_1&T_2	1	
		5.4		Multiple Linear Regression	T_1&T_2	1	

(K3)				T_1&T_2	1	
	5.6	Regression coefficients and properties		T_1&T_2	1	Chalk & Talk,Active learning ,PPT and Tutorial
	5.7	Curvilinear Regression: Parabola		T_1&T_2	1	
	5.8	Exponential		T_1&T_2	1	
	5.9	Power curves.		T_1&T_2	1	
				T_1&T_2	1	
				Total	12	
			Cumulative Proposed Periods		60	

Text Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
T1	Miller and Freund's, Probability and Statistics for Engineers,7/e,Pearson,2008.
T2	S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics,11/e, Sultan Chand & Sons Publications, 2012

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
R1	**Shron L. Myers, KeyingYe, Ronald E Walpole,** Probability and Statistics Engineers and the Scientists,8[th]Edition,Pearson2007.

Web Details

1	https://youtu.be/RJLqVy8qdSM
2	https://youtu.be/mBCiKUzwdMs
3	https://youtu.be/WkDxhfxLf-M
4	https://youtu.be/1g3pCE_B12E

		Name	Signature with Date
i.	Faculty	Mr. M. Ravindhra Babu	
ii.	Faculty	Mrs. P. Durga bhavani	
iii.	Faculty	Mrs. R. V. Lakshmi	
iv.	Faculty	Ms. N. Lavanya	
v.	Course Coordinator		
vi.	Module Coordinator		
vii.	Programme Coordinator	Dr. V. Swaminadham	

Principal