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 BASIC SCIENCES & HUMANITIES

TEACHING PLAN

Course Code	Course Title	Sem	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester
23BS4T05	STATISTICAL METHODS FOR DATA SCIENCE	IV	CSE-DS,AIDS	60/6	2025-26	10 -12-2025

COURSE OUTCOMES: Students are able to

1	Analyze data and draw conclusion about collection of data and fitting of distributions.(K4)
2	Analyzing the testing of hypothesis for Large and Small samples.(K4)
3	Develop skills in problem solving of the regression analysis .(K3)
4	Understanding the significance of Time Series data in various fields(K2)
5	Understanding the classification using Logistic Regression.(K2)

UNIT	Out Comes / Bloom's Level	Topic No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	CO1- Students are able to Analyze data and draw conclusion about collection of data and fitting of distributions.(K4)		**DATA VISUALIZATION AND DISTRIBUTIONS**			Chalk & Talk, Active Learning, PPT & Tutorial
		1.1	Introduction to Statistical methods	T_1 & T_2	1	
				T_1 & T_2	1	
		1.2	Exploratory Data Analysis- Charts (Line, Pie, Bar)	T_1 & T_2	1	
		1.3	Exploratory Data Analysis-Plots (Bubble, Scatter)	T_1 & T_2	1	
		1.4	Exploratory Data Analysis-Maps (Heat, Dot Distribution)	T_1 & T_2	1	
		1.5	Exploratory Data Analysis-Diagrams (Trees and Matrices)	T_1 & T_2	1	
		1.6	Principal Components Analysis	T_1 & T_2	1	

		1.7	Introduction to Data Distributions	T_1 & T_2	1	
		1.8	Probability Distributions	T_1 & T_2	1	
		1.9	Discrete Probability Distributions	T_1 & T_2	1	
		1.10	Binomial,Poisson	T_1 & T_2	1	
		1.11	Continuous Distributions Normal, exponential.	T_1 & T_2	1	
				T_1 & T_2	1	
		1.12	Continuous Distributions exponential.	T_1 & T_2	1	
				Total	**14**	
		HYPOTHESIS TESTING				
II	CO2-Students are able to Analyzing the testing of hypothesis for Large and Small samples.(K4)	2.1	Introduction to Parametric Estimation	T_1 & T_2	1	Chalk & Talk, Active Learning, PPT & Tutorial
		2.2	Parametric Confidence Intervals	T_1 & T_2	1	
		2.3	Choosing a Statistic	T_1 & T_2	1	
				T_1 & T_2	1	
		2.4	Hypothesis Testing	T_1 & T_2	1	
				T_1 & T_2	1	
		2.5	Parametric test	T_1 & T_2	1	
				T_1 & T_2	1	
		2.6	Parametric test: the T-test	T_1 & T_2	1	
				T_1 & T_2	1	
		2.7	Applications to Hypothesis Tests	T_1 & T_2	1	
		2.8	Pairwise comparisons.	T_1 & T_2	1	
				Total	**12**	
		LINEAR REGRESSION AND MULTIPLE REGRESSION				
III	CO3-The student should be able to Develop skills in problem solving of the Regression analysis .(K3)	3.1	Linear Regression	T_1 , T_2	1	Chalk & Talk, Active Learning, PPT & Tutorial
		3.2	Curvilinear Regression: Exponential Regression	T_1 , T_2	1	
		3.3	Polynomial Regression-Power Model	T_1 , T_2	1	
		3.4	Practical Examples	T_1 , T_2	1	
				T_1 , T_2	1	
		3.5	- The nature of the 'relationship' -	T_1 , T_2	1	

		3.6	Multiple Linear Regression	T_1 , T_2	1	
		3.7	Important measurements of the regression estimate	T_1 , T_2	1	
		3.8	Multiple Regression with Categorical Explanatory Variables	T_1 , T_2	1	
				T_1 , T_2	1	
		3.9	Inference in Multiple Regression	T_1 , T_2	1	
		3.10	Variable Selection	T_1 , T_2	1	
					12	
			TIME SERIES			
IV	CO4-The student should be able to Understanding the significance of Time Series data in various fields(K2)	4.1	Significance of Time series analysis	T_1 & T_2	1	Chalk & Talk, Active Learning, PPT & Tutorial
		4.2	Components of Time series	T_1 & T_2	1	
		4.3	Secular trend: Graphic method	T_1 & T_2	1	
				T_1 & T_2	1	
		4.4	Semi-average method	T_1 & T_2	1	
		4.5	Method of moving averages	T_1 & T_2	1	
		4.6	Method of least squares: straight line, non-linear trends	T_1 & T_2	1	
				T_1 & T_2	1	
		4.7	Logarithmic methods – Exponential trends, Growth curves	T_1 & T_2	1	
				T_1 & T_2	1	
		4.8	Seasonal Variations: Method of simple averages	T_1 & T_2	1	
		4.9	Ratio-to-trend method,	T_1 & T_2	1	
		4.10	ratio-to-moving average method, Link relative method.	T_1 & T_2	1	
				T_1 & T_2	1	
				Total	**14**	
			LOGISTIC REGRESSION			
V		5.1	The classification	T_1 & T_2	1	Chalk & Talk,

	CO5-The student should be able to Understanding the classification using Logistic Regression.(K2)		problem	T_1 & T_2	1	Active Learning, PPT & Tutorial
		5.2	Logistic Regression Setup	T_1 & T_2	1	
		5.3	Interpreting the Results	T_1 & T_2	1	
		5.4	Comparing Models	T_1 & T_2	1	
				T_1 & T_2	1	
		5.5	Classification Using Logistic Regression.	T_1 & T_2	1	
				T_1 & T_2	1	
				Total		**8**
				CUMULATIVE PROPOSED PERIODS		**60**

Text Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
T1	Elizabeth Purdom, "Statistical methods for Data science"
T2	K. Murugesan, P. Gurusamy , "Probability, Statistics and Random Processes"

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
R1	Manoj Kumar Srivastava and Namita Srivastava, Statistical Inference –Testing of Hypotheses, Prentice Hall of India, 2014.
R2	Robert V Hogg, Elliot A Tannis and Dale Zimmerman, Probability and Statistical Inference, 9th edition, Pearson publishers,2013.

Web Details

1	https://youtu.be/eFByJkA3ti4?si=EvAqhVDeyMjhuhaS
2	https://youtu.be/IEP3swFeauE?si=FmY25s4f2ooPu7Zq
3	https://youtu.be/8PJ24SrQqy8?si=1MxW9ZdU3oeeKOtc
4	https://youtu.be/d_bynTkE9yY?si=IV7ToNZNLfStpBcm

		Name	Signature with Date
i.	Faculty	Dr.E.M.Victoria	E.M.Victoria
ii.	Course Coordinator	Dr. E.M.Victoria	E.M.Victoria
iii.	Module Coordinator	Dr P.Prem Delphy	
iv.	Head of the Department	Dr. V.Swaminadham	V.Iwami

Principal