



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

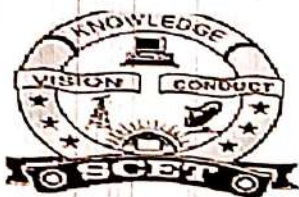
TEACHING PLAN

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	2024-25	-12-2024

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				
		1.1	Introduction to Statistical methods	T ₁ & T ₂	1	Chalk & Talk, Active Learning, PPT & Tutorial
				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			



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		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 binomial	T_1 & T_2	1		
		1.10		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		
II	CO2-Students are able to Analyzing the testing of hypothesis for Large and Small samples.(K4)	HYPOTHESIS TESTING					Chalk & Talk, Active Learning, PPT & Tutorial
		2.1	Introduction to Parametric Estimation	T_1 & T_2	1		
		2.2	Parametric Confidence Intervals	T_1 & T_2	1		
				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		
					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		
III	CO3-The student should be able to Develop skills in problem solving of the Regression analysis .(K3)	LINEAR REGRESSION AND MULTIPLE REGRESSION					Chalk & Talk, Active Learning, PPT & Tutorial
		3.1	Linear Regression	T_1, T_2	1		
		3.2	Curvilinear Regression: Exponential Regression	T_1, T_2	1		
		3.3	Polynomial Regression- Power Model	T_1, T_2	1		



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		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	T ₁ & T ₂	1			



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			relative method.	T ₁ & T ₂	1	
Total					14	
LOGISTIC REGRESSION						
V	CO5-The student should be able to Understanding the classification using Logistic Regression.(K2)	5.1	The classification problem	T ₁ & T ₂	1	Chalk & Talk, 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	
		5.5	Classification Using Logistic Regression.	T ₁ & T ₂	1	
				T ₁ & T ₂	1	
		Total				
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, 9 th 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=IMxW9ZdU3oeeKOtc					
4	https://youtu.be/d_bynTkE9yY?si=IV7ToNZNLfStpBcm					



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	Name	Signature with Date
i. Faculty 1	Dr.E.M.Victoria	<i>E. M. Victoria</i>
ii. Course Coordinator	Dr. E.M.Victoria	<i>E. M. Victoria</i>
iii. Module Coordinator	<i>Mr. M. Ravindra Reddy</i>	<i>[Signature]</i>
iv. Head of the Department	Dr. V.Swaminadham	<i>V. Swaminadham</i>

[Signature]
Principal