



# 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 ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Code	Course Title	Semester/Regulation	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
20CD6T01	DATA VISUALIZATION TECHNIQUES	VI	AI & DS	5	2024-25	18-11-2024

#### COURSE OUTCOMES

COURSE OUTCOMES		KNOWLEDGE LEVELS
1	Understand the Visualization concepts	K2
2	Classify the visualization systems	K4
3	Create visualization of groups	K4
4	Visualization of complex data	K2
5	Apply new techniques in data visualization	K3

#### UNIT-I: INTRODUCTION TO DATA VISUALIZATIONS AND VISUAL REPRESENTATIONS

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book/Reference	Contact Hour	Delivery Method
I	CO1: Understand the Visualization concepts	1.1	Introduction to Data Visualization	T1	2	Chalk & Board PPT
		1.2	Introduction of visual perception	T1	2	
		1.3	visual representation of data	T1	2	
		1.4	Gestalt principles	T1	1	
		1.5	Information overload	T1	1	
		1.6	Creating visual representations	T1	1	
		1.7	visualization reference model,	T1	1	
		1.8	visual mapping	T1	1	
		1.9	visual analytics	T1	1	
		1.10	Design of visualization applications	T1	1	
		1.11	Ethical considerations in visual communication	R2	1	

Revision of UNIT-I

Total

15

#### UNIT-II: CLASSIFICATION OF VISUALIZATION SYSTEMS

II	CO2: Classify the visualization systems	2.1	Classification of visualization systems	T1	2	Chalk & Board PPT
		2.2	Interaction and visualization techniques misleading	T1	2	
		2.3	Visualization of one, two and multi-dimensional data	T1	2	
		2.4	Text and Text documents.	T1	2	
	Content beyond syllabus	2.6	Data dashboards and real-time visualization systems	T1	1	
Revision of UNIT-II					1	
					Total	10

### UNIT-III: VISUALIZATION OF GROUPS

III	CO3: Create visualization of groups	3.1	Visualization of groups	T1	2	Chalk & Board PPT
		3.2	Visualization of trees	T1	2	
		3.3	Visualization of graphs	T1	2	
		3.4	Visualization of clusters	T1	2	
		3.5	Visualization of networks	T1	1	
		3.6	Visualization of software	T1	1	
		3.7	Metaphorical visualization	T1	1	
	Content beyond syllabus	3.5	Radial and circular visualization techniques	R1	1	
Revision of UNIT-III					1	
					Total	13

### UNIT-IV: VISUALIZATION OF VOLUMETRIC DATA AND EVALUATION OF VISUALIZATIONS

IV	CO4: Visualization of complex data	4.1	Visualization of volumetric data	T1	2	Chalk & Board PPT
		4.2	Vector fields	T1	2	
		4.3	processes and simulations	T1	2	
		4.4	Visualization of maps	T1	2	
		4.5	Visualization of geographic information	T1	1	
		4.6	Visualization of GIS systems	T1	1	
		4.7	collaborative visualizations	T1	1	
		4.8	Evaluating visualizations	T1	1	
	Content beyond syllabus	4.10	3D visualization techniques for scientific data	R1	1	
Revision of UNIT-IV					1	
					Total	14

### UNIT-V: EMERGING TRENDS AND DATA STRUCTURES

V	CO5: Apply new techniques in data visualization	5.1	Recent trends in various perception techniques,	T2	2	Chalk & Board PPT
		5.2	Various visualization techniques	T2	2	
		5.3	Data structures used in data visualization.	T2	2	

	Content beyond syllabus	5.4	AI and machine learning in automated visualizations	R1	1	
		Revision of UNIT-V			1	
			Total	8		
CUMULATIVE PROPOSED PERIODS						60

Text Books:

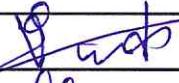
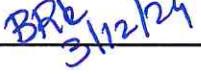
S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
T1	WARD, GRINSTEIN, KEIM,. Interactive Data Visualization: Foundations, Techniques, and Applications. Natick:AKPeters, Ltd, 2015
T2	E.Tufte, The Visual Display of Quantitative Information, GraphicsPress, 2014

Reference Books:

S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
R1	Beautiful Visualization, Looking at Data Through the Eyes of Experts by Julie Steele, Noah Iliinsky, 2010
R2	The Accidental Analyst: Show Your Data Who's Boss by Eileen and Stephen McDaniel, 2012

V~ Details:

1	<a href="https://www.geeksforgeeks.org/data-visualization-and-its-importance/">https://www.geeksforgeeks.org/data-visualization-and-its-importance/</a>
2	<a href="https://www.javatpoint.com/what-is-data-visualization">https://www.javatpoint.com/what-is-data-visualization</a>
3	<a href="https://www.kaggle.com/learn/data-visualization">https://www.kaggle.com/learn/data-visualization</a>
4	<a href="https://nptel.ac.in/courses/111106415">https://nptel.ac.in/courses/111106415</a>
5	<a href="https://elearn.nptel.ac.in/shop/iit-workshops/completed/data-visualization-with-r/">https://elearn.nptel.ac.in/shop/iit-workshops/completed/data-visualization-with-r/</a>

		Name	Signature with Date
i	Faculty	M. N.V. Viswanadh	
ii	Course Coordinator	Dr. G. Sudhakar	
iii	Module Coordinator	V. Subrahmanyam	
iv	Program Coordinator	Dr.B. Rama Krishna	 B.R.K 3/12/24



Principal

