



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.D.T., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF INFORMATION TECHNOLOGY TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement
23CD3T01	Introduction to data science	III	CSE(DS)	6	2025-2026	14-07-2025

COURSE OUTCOMES

1	Knowledge and expertise to become a data scientist.
2	Essential concepts of statistics and machine learning that are vital for data science.
3	Significance of exploratory data analysis (EDA) in data science.
4	Critically evaluate data visualizations presented on dashboards.
5	Suitability and limitations of tools and techniques related to the data science process.

UNIT	Out Comes / Bloom's Level	Topic s No.	Topics/ Activity	Text Book/ Ref	Contact Hour	Delivery Method
I	CO – 1	Unit-1Introduction to Data science and Data science process				Chalk & Board Power point presentations Video Lecture E-Learning through NPTEL Assignment Test
		1.1	Introduction to Data science,	T1	1	
		1.2	Benefits and uses, facets of data	T1	1	
		1.3	Overview of Data Science process,	T1	1	
		1.4	Defining goals and project charter	T1	1	
		1.5	Retrieving data, cleaning, integrating and transforming data	T1	2	
		1.6	Exploratory analysis, model building	T1	2	
		1.7	Presenting findings and building applications	T1, T2	2	
		1.8	Big data ecosystem and data science	T1, T2	1	
		1.9	Defining goals and creating project charter,	T1, T2	2	
		Content beyond syllabus		1.10	DataPrivacy, Security & Ethical Considerations in Data Science	
Total					14	



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II	CO – 2	Introduction to ML and Handling large data				Chalk & Board Power point presentations Video Lecture E-Learning through NPTEL Assignment Test
		2.1	Applications of ML in DS, role of ML	T1, T2	1	
		2.2	Python tools like sklearn	T1, T2	1	
		2.3	Feature engineering	T1, T2	1	
		2.4	Model selection, validation and Prediction	T1, T2	2	
		2.5	Types of ML, semi-supervised learning	T1, T2	1	
		2.7	Handling large data: problems and techniques	T1, T2	2	
		2.8	Case studies: malicious URLs, recommender systems	T1, T2	2	
		2.9	AutoML tools	T1, T2	1	
		Total				
III	CO – 3	NoSQL movement for handling Bigdata				Chalk & Board Power point presentations Video Lecture E-Learning through NPTEL Assignment Test
		3.1	NoSQL movement	T1, T2	1	
		3.2	Big data overview	T1	1	
		3.3	Distributing data storage and processing with Hadoop framework	T1, T2	2	
		3.4	case study on risk assessment for loan sanctioning,	T1	1	
		3.5	ACID principles	T1, T2	1	
		3.6	CAP theorem	T1, T2	1	
		3.7	case study on risk assessment for loan sanctioning,	T1, T2	1	
		3.8	Types of NoSQL databases	T1	2	
		3.9	Case study on disease diagnosis and profiling	T1, T2	1	
		3.10	Intro to Apache Spark	T1, T2	2	
Content beyond syllabus		3.7	Distributed File Systems: HDFS Architecture and Internals	T1, R1	1	
Total				14		
IV	CO – 4	Tools and Applications of Data Science				Chalk & Board Power point presentations Video Lecture E-Learning through NPTEL Assignment Test
		4.1	Introducing Neo4j and Cypher query language	T1, T2	2	
		4.2	Applications of graph databases	T1, T2	1	
		4.3	Python libraries like nltk and SQLite	T1, T2	1	
		4.4	Python libraries SQLite	T1, T2	1	
		4.5	handling Text mining and analytics	T1, T2	2	
		4.6	Reddit post classification (case study)	T1, T2	2	
		4.7	LangChain, vector DBs	T1, T2	1	
Total				10		



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V	CO – 5	Data Visualization and Prototype Application				chalk&Board Power point presentations Video Lecture E-Learning through NPTEL Assignment Test
		5.1	Introduction to visualization	T1, T2	1	
		5.2	Data visualization options	T1,T2	1	
		5.3	Overview of Crossfilter	T1, T2	1	
		5.4	JavaScript MapReduce	T1,T2	1	
		5.5	Interactive dashboard development	T1, T2	1	
		5.6	Dashboard development tools	T1, T2	2	
		5.7	Creating an interactive dashboard with dc.js	T1, T2	2	
		5.8	Applying the Data Science process for real-world problem-solving scenarios as a detailed case study.	T1, T2	2	
Content beyond syllabus		5.9	Data Storytelling and Designing Effective Visual Narratives	T1, R1	1	
Total					12	
Cumulative Proposed Periods					61	

Text Books:

1	Davy Cielen, Arno D.B.Meysman, and Mohamed Ali, "Introducing to Data Science using Python tools",
2	Prateek Gupta, "Data Science with Jupyter" BPB publishers, 2019 for basics

Reference Books:

1	Joel Grus, "Data Science From Scratch", O'Reilly, 2019
2	Doing Data Science: Straight Talk From The Frontline, 1 st Edition, Cathy O'Neil and Rachel Schutt, O'Reilly.

Web Details:

1	https://nptel.ac.in/courses/106106212
2	https://www.tutorialspoint.com/data_science/index.htm
3	https://www.geeksforgeeks.org/data-science/data-science/
4	https://en.wikipedia.org/wiki/DataScience

		Name	Signature with Date
i.	Faculty	Mr. K V V Nagendra babu	
ii.	Module Coordinator	Mr. K V V Nagendra babu	
iii.	Programme Coordinator	Mr. R V V S V Prasad	

Principal