



**THIRD-YEAR DIPLOMA COMPUTER ENGINEERING SYLLABUS**

Semester: 6<sup>TH</sup>

Course Code: 002204677

Type of Course: PEC-10

Course Name: Introduction to Data Analysis Theory

Course Prerequisites: Basic knowledge of Data Analysis

**COURSE OBJECTIVE(S):**

- Data Analytics involves data discovery that helps in making smart decisions, creating suggestions for options based on previous choices.
- Learn about different types of data (qualitative vs. quantitative) and their characteristics
- Gain skills in cleaning and pre-processing data to ensure accuracy and usability.
- Understand how to interpret the results of analyses and communicate findings effectively.

**TEACHING & EXAMINATION SCHEME:**

Teaching Scheme (Hrs/Week)				Examination Scheme					
Theory	Tutorial	Practical	Credit	SEE		CA			Total
				Th	Pr	MSE	PLE	LA	
3	0	0	3	60	00	40	00	00	100

*Th: Theory; Pr: Practical; FA: Final Assessment; CAT: Continuous Assessment Theory; CAP: Continuous Assessment Practical;*

TOTAL Theory Hours: No. of Th. and Tut. Hrs/Week\*15 = 45

**COURSE CONTENT(S):**

Unit No.	Content	Hours	Weightage (%)
1	Math, probability and statistical modeling Exploring probability and inferential statistics, quantifying correlation, Reducing Data Dimensionality with linear algebra	06	10%
2	Modeling Decisions with Multi Criteria Decision making, Regression Methods, Detecting outliers, Time-series analysis.	12	30%
3	Using Clustering to subdivide data Introducing clustering basics, identifying clusters, Categorizing data with Random forest algorithm	08	20%
4	Modeling instances Recognizing the Difference between Clustering and Classification	10	20%
5	Making sense of data with nearest neighbor analysis, classifying data with average nearest neighbor algorithms, classifying data with K- nearest neighbor algorithms, Solving Real-world problems	09	20%
	<b>TOTAL</b>	<b>45</b>	<b>100%</b>



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**Text Book(s):**

Title of the Book	Author(s)	Publication

**Reference Book(s):**

Title of the Book	Author(s)	Publication
Data science for Dummies	Lillian Pierson	WILEY publication
Doing Data Science	Cathy O'Neil, Rachel Schutt	O'Reilly Media, Inc.
Data Analytics for Beginners: Basic Guide to Master Data Analytics	Paul Kinley	CreateSpace Independent Publishing

**Web Material Link(s):**

1. <https://www.geeksforgeeks.org/virtual-reality-introduction/>
2. [https://en.wikipedia.org/wiki/Virtual\\_reality](https://en.wikipedia.org/wiki/Virtual_reality)
3. <https://www.intechopen.com/chapters/80516>

**Equivalent/Corresponding Course on NPTEL (SWAYAM):**

NPTEL course on

<https://archive.nptel.ac.in/courses/110/106/110106064/>

**COURSE EVALUATION:**

Sr.No.	Activity	Marks	Weightage
1	Semester End Examination (External Th)	60	60%
2	Internal Examination	40	40%
2(a)	Mid Semester Examination	20	
2(b)	Attendance	10	
2(c)	Assessment Types (Any One from 2(c).1 to 2(c).7)	10	
2(c).1	Subject (Course) based Mini-Project		
2(c).2	Industry/Site Visit & Report		
2(c).3	Assignment		
2(c).4	Seminar		
2(c).5	Case Study		
2(c).6	Surprise Class Quiz		
2(c).7	Design Exercise		
2(c).7	Presentation		
2(d)	Practical (if Applicable)		

\* For 4 Credit Subjects



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1 Credit = 25 Marks

Theory: 3 Credits = 75 Marks

Practicals: 1 Credit = 25 Marks

SEE Evaluation will be of 100 marks and converted to 50 Marks (75 Th + 25 Pr)

CA Evaluation will be of 100 Marks and converted to 50 Marks. (75 Th + 25 Pr)

**Distribution of Marks for Theory Evaluation as per Bloom's Taxonomy Level:**

Level	Remember	Understand	Apply	Analyse	Evaluate	Create
% Weightage	10%	30%	15%	10	15%	-

**COURSE OUTCOMES:**(in the range of 4 to 6)

CO1	Perform descriptive statistics.
CO2	Perform dimensionality reduction.
CO3	Perform clustering and detect outliers
CO4	Apply the analytics to real world problems.