DPG Institute of Technology and Management
Sector 34, Gurugram HR 122004

Lesson Plan

Course Name: DATA ANALYTICS BASICS

Faculty Name: MEENAKSHI GUPTA

No. of Lecture Hours/Week	**3**	**Exam Hours**	**3**
Total No. of Lecture Hours	**32**	**Exam Marks**	**75**
Course Code:	**PEC-DS-313G**	**Semester**	**5th**

Course Objectives:

1. To understand the Data analytics tasks, methods and process
2. To understand the concepts of data exploratory analysis
3. To familiarize students with data interaction and visualization techniques.
4. To impart the major simulation and visualization trends of volumetric data.

Lecture No.	Topics to be covered	Teaching Methodology	Class Activity/ Event	Remark /CO
UNIT -1				
1	What is data analytics and data analytics project, steps of DAP	Chalk &Talk	PPT making	CO1
2	Data analytics task, methods, classification of data analytics	Chalk &Talk		
3	Data formats, parsing and transformation,	Chalk &Talk		
4	Data cleaning, consistency checking, heterogenous missing data	PPT/Chalk &Talk		
5	Data transformation, segmentation	Chalk &Talk		
6	Revision of unit-1	Chalk &Talk		
UNIT -2				
7	What is statistics and types of statistics and also introduce with the difference between Descriptive and comparative statistics	Chalk &Talk		CO2
8	What is Hypothesis testing, types of hypothesis testing	Chalk &Talk		
9	What is statistical inference and different association rules for mining,	Chalk &Talk		
10	what is clustering and types of various kind of clustering algorithms.	Chalk &Talk		
11	Types of various kind of clustering algorithms (Continue with last class)	Chalk &Talk	Assignment -1	
12	Visual representation of data, like line graph, scatter graph, box plot, bar chart, histogram, pie	Chalk &Talk		

	chart etc.			
13	Gestalt principle and different rules used in gestalt principle	PPT		
14	Introduction with information overloading, different hazards of information overloading.	Chalk &Talk		
15	Define and Diagram of Visualization reference model, visual mapping and analytics, visualization applications	Chalk &Talk		
16	Revision of unit-2	Discussion		
UNIT -3				
17	Visualization techniques, visualization of one, two and multi-dimensional data	Chalk &Talk		CO3
18	Visualization of one, two and multi-dimensional data	PPT		
19	How to handle text documents in visualization (different term used for understanding the content of txt document like regular expression, tokens, pos, tokenization,lemmination,stopwords, stemming.)	PPT		
20	How to handle text documents in visualization using example (continuity class from last class)	PPT		
21	How to handle text documents in visualization using more example (continuity class from last class)	SMART BOARD	Assignment -2	
22	Visualization of trees, graphs, clusters, networks, software metaphorical visualization	SMART BOARD		
23	Various ways of Visualization of trees, graphs	Chalk &Talk		CO3
24	Various ways of Visualization of clusters, networks, software metaphorical visualization	Chalk &Talk		CO3
25	Revision of unit-1, unit-3 for sessional1	Discussion		CO1, CO3
UNIT -4				
26	What is Volumetric data visualization .Discussion on visualization of vectors fields, processes and simulation.	Chalk &Talk		CO4
27	Visualization of maps, geographic information, GIS systems	SMART BOARD		
28	Collaborative visualization. Evaluating visualization,	Chalk &Talk		
29	Introduction with Perception technique and their examples and applications	Chalk &Talk		
30	Various visualization techniques, data structure used in visualization	PPT		
31	Revision of unit-1, unit-2	Discussion		CO1, CO2,

32	Revision of unit-3, unit-4	Discussion		CO3, CO4

Assessment Methods: -

S.No.	Evaluation Component	Assessment Method	Marks
1	Internal Marks		25
		Attendance	5
2		Quiz/Presentation	5
3		Assignment	5
4		Avg of Sessional 1&2	10
5	External Marks	Final University Exam	75

Text Books:

1. Glenn J. Myatt, Wayne P. Johnson, Making Sense of Data I: A Practical Guide to Exploratory Data Analysis and Data Mining, 2nd Edition, John Wiley & Sons Publication, 2014
2. Glenn J. Myatt, Wayne P. Johnson, Making Sense of Data II: A Practical Guide to Data Visualization, Advanced Data Mining Methods, and Applications, John Wiley & Sons Publication, 2009.
3. E. Tufte. The Visual Display of Quantitative Information, (2e), Graphics Press, 2007.
4. Jules J., Berman D., Principles of Big Data: Preparing, Sharing, and Analyzing Complex Information, (2e), 2013.

Reference Books:

1. Matthew Ward and Georges Grinstein, Interactive Data Visualization: Foundations, Techniques, and Applications, (2e), A K Peters/CRC Press, 2015.
2. Jurgen Kai-Uwe Brock, Data Design: The Visual Display of Qualitative and Quantitative Information, (1e), Consulting Press, 2017.
3. Edward R. Tufte, The Visual Display of Quantitative Information, (2e), Graphics Press USA, 2001.
4. Cole Nussbaumer Knaflic, Storytelling With Data: A Data Visualization Guide for Business Professionals, (1e), John Wiley and Sons, 2015

Course Outcomes:

At the end of the course, the student will be able:

CO 1	Get through the data analytics task, methods, and process in real world
CO 2	Well familiar brief concepts of data exploratory analytics
CO 3	Design, develop, deploy the dashboard with data interaction and visualization techniques
CO 4	Choose the appropriate simulation and visualization trends for its volumetric data

CO-PO-PSO Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO1 2	PS O1	PS O2	PS O3
CO 1															
CO 2															
CO 3															
CO 4															

Signature of Staff In-charge
Ms. Meenakshi Gupta

Signature of HOD
Dr. Sarika Chaudhary