SEMESTER S7

DATA ANALYTICS

Course Code	PEMUT751	CIE Marks	40
Teaching Hours/Week (L: T:P: R)	3-0-0-0	ESE Marks	60
Credits	3	Exam Hours	2 Hrs. 30 Min.
Prerequisites (if any)	None	Course Type	Theory

Course Objectives:

1. To understand the Evolution of Data Analytics
2. To Familiarize Statistical Concepts for Data analytics
3. To understand Descriptive Analytics and Predictive Analytics Techniques
4. To Explore the fundamentals of Big Data and Business Intelligence

SYLLABUS

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Module No.	Syllabus Description	Contact Hours
1	Introduction to Data Analysis - Evolution of Analytic scalability, analytic processes, and tools. Analysis vs reporting - Modern data analytic tools. Statistical concepts: Sampling distributions, re-sampling, statistical inference	9
2	Levels of Analytics –- Predictive Analytics – Demand forecasting Regression, Neural Networks. Dimensionality Reduction - Principal component analysis	9
3	Descriptive Analytics - Mining Frequent item sets - Market based model – Association and Sequential Rule Mining - Clustering Techniques – Hierarchical – K- Means	9
4	Introduction to Big Data Analytics- Fundamental concepts of Big Data management and Analytics Characteristics- Sources of Big Data. Introduction to Business Intelligence- Definition, Need, and Evolution of Business Intelligence System and its components	9

Course Assessment Method
(CIE: 40 marks, ESE: 60 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Assignment/ Microproject	Internal Examination-1 (Written)	Internal Examination- 2 (Written)	Total
5	15	10	10	40

End Semester Examination Marks (ESE)

In Part A, all questions need to be answered and in Part B, each student can choose any one full question out of two questions

Part A	Part B	Total
• 2 Questions from each module. • Total of 8 Questions, each carrying 3 marks **(8x3 =24marks)**	• Each question carries 9 marks. • Two questions will be given from each module, out of which 1 question should be answered. • Each question can have a maximum of 3 sub divisions. **(4x9 = 36 marks)**	**60**

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Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Explain different data analysis techniques	**K2**
CO2	Discuss the concepts behind the descriptive analytics and predictive analytics	**K2**
CO3	Familiarize with Big Data and its sources	**K2**
CO4	Illustrate different visualization techniques in data analysis	**K2**

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

CO-PO Mapping Table (Mapping of Course Outcomes to Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1					1			2
CO2	3	3	3	3					1			1
CO3	3	3	3	1					1			1
CO4	3	3	3	3								

Note: *1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), -: No Correlatio*

Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data.	EMC Education Services,	John Wiley & Sons,	2015
2	Data Mining Concepts and Techniques	Jaiwei Han, Micheline Kamber	Elsevier,	2006.
3	Intelligent Data Analysis,	Michael Berthold, David J. Hand,	Springer,	2007
4	Business Intelligence, Analytics, and Data Science: A Managerial Perspective",	R. Sharda, D. Delen, and E. Turban,	Pearson, 4th edition,	2018.

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Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Analytics in a Big Data World: The Essential Guide to Data Science and its Business Intelligence and Analytic Trends	Bart Baesens	John Wiley & Sons,	2013
2	Data Analytics	A. Maheshwari,	McGraw Hill Education, 1st Edition,	2017

Video Links (NPTEL, SWAYAM…)	
Module No.	**Link ID**
1 -4	https://www.youtube.com/watch?v=La-NZ6jOfoQ&list=PLRueFtKLr0QN7MmQ8pdpQerOe_s8vGJG4