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| **Module** | **Detailed Contents** | **Hrs** |
| 01 | **Module: Data Warehousing and OLAP:** Data warehouse: Introduction to DW, DW architecture,  ETL process,  Top- down and bottom-up approaches,  characteristics, and benefits of data mart. Dimensional Modeling:  Star,  Snowflake,  and Fact Constellation Schemas, major features and functions of OLAP,  OLAP models-  ROLAP  and MOLAP,  and the difference between OLAP and OLTP.  **Self Learning Topics**: Study any one DW implementation | 08 |
| 02 | **Module: Data Analytics :**  Data Analytics Overview,  Importance of Data Analytics,  Types of Data Analytics,  Descriptive Analytics,  Diagnostic Analytics,  Predictive Analytics,  Prescriptive Analytics,  Benefits of Data Analytics,  and Data Visualization Techniques.  **Self Learning Topics**: Case Studies of Data analytics. | 06 |
| 03 | **Module: Data Pre-processing:**  Introduction to data mining,  knowledge discovery- KDD process.    Data Preprocessing:  Types of Attributes;  Data Cleaning –  Missing Values;  Noisy Data;  Data Integration  and Transformations.  Data Reduction –  Data cube aggregation,  dimensionality reduction,  data compression,  numerosity reduction,  discretization,  and concept hierarchy. **Self Learning Topics**: Data normalization | 07 |