

ELECTIVE I

2CSE50E13: Business Intelligence

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Learning Outcomes:

After learning the course the students should be able to

- Design and implement OLTP, OLAP and Warehouse concepts
- Design and develop Data Warehouse using Various Schemas & Dimensional modelling
- Use the ETL concepts, tools and techniques to perform Extraction, Transformation, and Loading of data
- Report the usable data by using various reporting concepts, techniques/tools, and use charts, tables for reporting in BI
- Use Analytics concepts like data mining, Exploratory and statistical techniques for predictive analysis in Business Intelligence
- Demonstrate application of concepts in BI

SYLLABUS

Unit No.	Topics	Lectures (Hours)
1	IMPORTANT CONCEPTS Understanding the field of business intelligence in a global world - Understanding the BI process and choosing –Place and tasks of the study of private and public intelligence The practice of private and public intelligence: the choice of means -Strategies of information gathering, The distinction between intelligence, information and data, Information asymmetry and competitive advantage	6
2	DIMENSIONAL MODELLING AND DW DESIGN Star schema, Snow flake schema, and Fact Constellation schema, Grain of dimensional model, transactions, Recurring Snapshots, Accumulating Snapshots, Dimensions (SCD types, conformed dimensions)Clickstream Source Data (Google Analytics as a Clickstream Data Source), Facts (additive, semi-additive, non-additive), Hierarchy in dimensions, parent child relationships, Many-Many Dimensional relationship, Multi Valued Dimensions and Dimension Attributes	8
3	ETL Data Quality, Data profiling, Data enrichment, data duplication, ETL Architecture and what is ETL, Extraction concept and Change data capture, Transformation concept, lookups, time lag, formats, consistency, Loading concept, Initial and Incremental loading, late arriving facts, What is Staging, Data marts, Cubes, Scheduling and dependency matrix	8
4	REPORTING Metadata Layer, Presentation Layer, Data Layer, Use of different layers and	6

	overall Reporting architecture, Various report elements such as Charts, Tables, prompts Data aggregation: Table based, Materialized views, Query rewrite, OLAP, MOLAP, Dashboards, Ad-hoc reports, interactivity in analysis (drill down, drill up), Security: report level, data level (row, column),Scheduling	
5	ANALYTICS Analytics concepts and use in Business Intelligence, Exploratory and statistical techniques:- Cluster analysis, Data visualization, Predictive analysis :- Regression, Time series, Data Mining :- Hierarchical clustering, Decision tree Text analytics :- Text mining, In-Memory Analytics and In-DB Analytics, Case study: Google Analytics	9
6	RECENT TRENDS Big data like HIVE, PIG and DW appliances like Netezza, Teradata, Smart Change data capture using log based techniques, Real time BI, Operational BI, Embedded BI, Agile BI, BI on cloud, BI applications (Case study on BI tools like: QlikView, Pentaho, Tableau, MyReport, Spotfire, OR any other BI tool)	8

Lab Work:

Unit 1: Understand the benefits of IBM Cognos Insight, Drag and drop files to import data, Filter data and discover associations using Explore Points, Perform a Guided Import from a file, Perform a Guided Import from a relational data source, Refresh data

Unit 2: Analyze data from different perspectives, Insert totals, Calculate data, Explore chart types, Explore chart options, Determine the optimal chart type to use for your analysis, Add content by using widgets, Organize your workspace with tabs and action buttons, Improve appearance by applying themes

Unit 3: Understand data entry colors and fonts, Control appearance and behavior using formatting, Annotate and calculate data in cells, Send or upload files to other users, Publish a workspace, Export and print data, End to End Workshop

Text Books:

1. Reema Thareja, "Data Warehouse", Publisher: Oxford University Press
2. Jiawei Han, Micheline Kamber, Jian Pei "Data Mining: concepts and techniques", 2nd Edition, Publisher: Elsevier/Morgan Kaufmann
3. Ralph Kimball, Margy Ross, "The Data Warehouse Toolkit", 3rd edition, Publisher: Wiley

Reference Books:

1. William Inmon, "Building the Data Warehouse", Wiley publication 4th edition
2. Efram G. Mallach, "Decision Support And Data Warehouse Systems", 1st Edition Publisher: Tata McGraw-Hill Education,. ISBN-10: 0072899816
3. Efraim Turban, Ramesh Sharda, Dursun Delen, David King, "Business Intelligence", ISBN-10: 013610066X Publisher: Prentice Hall.ISBN-13: 9780136100669
4. Dorian Pyle, "Business Modeling and Data Mining", Elsevier Publication MK