Semester: VIII				
Course Title: ENTERPRISE RESOURCE PLANNING & BUSINESS INTELLIGENCE				
Course Code: B4BC230812T/P			**Credits: 4**	
Category: Minor				
Theory/Practical/Composite : Composite				
Course Overview: This course provides a comprehensive understanding of Enterprise Resource Planning (ERP) systems and Business Intelligence (BI) tools. It begins with the conceptual foundations of ERP, evaluating its role in streamlining business operations, enhancing process integration, and supporting organizational decision-making. Learners will explore ERP architecture, customization strategies, implementation life cycles and performance evaluation through key performance indicators (KPIs). This course also introduces core ERP technologies and the integration of BI for data-driven insights. Learners will gain hands-on experience with Power BI, focusing on data preparation, modelling, and visualization. They will apply DAX functions and advanced analytics to create interactive dashboards that support managerial decisions. By the end of the course, learners will be able to align ERP systems with business objectives and leverage BI tools to enhance operational efficiency.				
Course Outcome: By the end of this course, learners will be able to:				
CO1. Describe ERP concepts and architecture, **analyse** its role in business integration and **evaluate** its strategic benefits for organizational efficiency.				
CO2. Demonstrate ERP implementation frameworks, **examine** customization vs. standardization decisions and **develop** ERP models aligned with business processes.				
CO3. Recall core ERP technologies, **classify** BI components and **use** ERP–BI integration for performance optimization.				
CO4. Explain BI interface and data modeling principles**, implement** data transformation techniques and **design** interactive reports using visual tools.				
CO5. Execute DAX functions for business analysis, **analyze** data relationships and trends and **justify** performance report for decision-making.				
CO6. Create advanced BI dashboards, **evaluate** their effectiveness in business contexts and **interpret** insights to support strategic decisions.				
Prerequisites: A basic understanding of Enterprise Resources, Business Processes and Spreadsheet Applications are expected to grasp synergy between Enterprise Resource Planning (ERP) and Business Intelligence (BI); no prior knowledge of BI or Power-BI is required.				
SYLLABUS				
Unit with Topic Name	**Content**	**Number of Classes**	**CO Mapping**	**Cognitive Level**
MODULE A: ENTERPRISE RESOURCE PLANNING (THEORY) (50 MARKS)				
I. Enterprise Resource Planning (ERP): Concepts and Integration	Foundations of ERP: Need for ERP, Features, Challenges, Cost-Benefit Analysis; Design of ERP Framework: ERP Architecture, Value-Chain Framework, ERP Customization vs Standardization; ERP	**16**	**CO1 CO2**	**K2 (Understand) K3 (Apply) K4 (Analyze) K5 (Evaluate)**

		Integration & Alignment: Enterprise Application Integration (EAI), Business Process Re-Engineering (BPR) and ERP Alignment; ERP Implementation & Management: ERP Implementation Life Cycle, ERP Selection Process, Steps to build an ERP System for Business; ERP Evaluation & Decision Support: KPIs in ERP, ERP in Decision Making; ERP in Practice			**K6 (Create)**
II.	**ERP Technologies and Emerging Trends**	Core ERP Technologies: Overview of Database Management System (DBMS), Online Transaction Processing (OLTP) in ERP; Business Intelligence (BI) in ERP: Basic Concept of BI, ETL, Data Warehousing, Data Mining, Online Analytical Processing (OLAP), Dashboards & Reporting; ERP–BI Integration: ERP-BI Synergy, Predictive & Prescriptive Analytics in ERP, Performance Optimization; Emerging Trends : Emerging Technologies, Next Generation ERP	**14**	**CO3 CO6**	K**1 (Remember) K2 (Understand) K3 (Apply) K5 (Evaluate) K6 (Create)**
MODULE B: BUSINESS INTELLIGENCE (PRACTICAL)					
III.	**Business Intelligence Foundations: Data Preparation and Modeling with Power BI**	Getting Started with Power BI: Interface walkthrough (ribbons, panes, fields); Importing data; Data Transformation with Power Query: Data Cleaning (remove duplicates, handle nulls, change data types); Merging & Appending Queries; Splitting / Combining Columns, Conditional Columns; Data Modeling in Power BI: Tables & Relationships; Cardinality,	**15**	**CO4 CO6**	**K2 (Understand) K3 (Apply) K5 (Evaluate) K6 (Create)**

	Relationship Types, Cross-Filtering; Star Schema; Role-Playing Dimensions; Basic Visualizations in Power BI: Bar, Column, Pie, Line charts; KPIs, Cards, Maps, Slicers; Formatting Visuals; Report Interactivity			
IV. Business Intelligence Applications: Advanced Analytics and Visualization with Power BI	Data Analysis with DAX: Calculated Columns vs. Measures; Aggregation functions; Date & Time Functions; Filter Functions; Logical Functions; Financial Functions; Time Intelligence Functions; Information Functions; Table Manipulation Functions; Text Functions; Advanced Visualizations & Interactivity; Performance Optimization	**15**	**CO4 CO5 CO6**	**K2 (Understand) K3 (Apply) K4 (Analyze) K5 (Evaluate) K6 (Create)**

**** Each unit is accompanied by relevant business case studies for practical understanding**

Text Books

1. **Veena Bansal, Enterprise Resource Planning: A Managerial Perspective, Pearson Education India.**
2. **Ramesh Sharda, Dursun Delen, Efraim Turban, Business Intelligence, Analytics, and Data Science: A Managerial Perspective, Pearson Education.**
3. **Steven Scott Phillips, Control Your ERP Destiny-Reduce Project Costs, Mitigate Risks and Design Better Business Solutions. Street Smart ERP Pubs.**
4. **Dan Clark, Beginning Microsoft Power BI: A Practical Guide to Self-Service Data Analytics, Apress.**
5. **Jack Hyman, Microsoft Power BI for Dummies, Wiley.**

Suggested Readings

1. **Ashim Raj Singla, Enterprise Resource Planning, Cengage India Private Limited.**
2. **Alexis Leon, Enterprise Resource Planning, McGraw Hill.**
3. **Siar Sarferaz, Compendium on enterprise resource planning: Market, functional and conceptual view based on SAP S/4HANA. Springer Nature.**
4. **K. Ganesh , Sanjay Mohapatra , S. P. Anbuudayasankar , P. Sivakumar, Enterprise Resource Planning: Fundamentals of Design and Implementation, Springer.**
5. **Irene Tobajas, Business Intelligence Essentials You Always Wanted to Know, Vibrant Publishers.**
6. **Devin Knight, Erin Ostrowsky, Mitchell Pearson, Bradley Schacht, Microsoft Power BI Quick Start Guide: The ultimate beginner's guide to data modeling, visualization, digital storytelling, and more, Packt Publishing.**

7. **Greg Deckler, Brett Powell, Microsoft Power BI Cookbook : Convert raw data into business insights with updated techniques, use cases, and best practices, Packt Publishing.**
8. **Lejla Turulja, Nijaz Bajgoric, Amer Celjo, Mirjana Pejić Bach, Integrating ERP Systems and Knowledge Management, Springer.**
9. **Pankaj Prasoon, Strategic AI in ERP: Driving Business Innovation and Competitive Advantage, Notion Press.**
Web Resources
1. **https://www.oracle.com/in/erp/what-is-erp/**
2. **https://www.ibm.com/think/topics/sap**
3. **https://www.in4velocity.com/blog/business-intelligence-in-erp/**
4. **https://www.uneecops.com/blog/erp-and-bi-two-sides-of-the-same-coin/**
5. **https://share.google/1c2ChsYP2Zn2qBgUE**
6. **https://learn.microsoft.com/en-us/power-bi/**
7. **https://www.datacamp.com/tutorial/tutorial-power-bi-for-beginners**
8. **https://www.edureka.co/blog/power-bi-tutorial/**

**** Latest edition of the book and latest version of the software are recommended.**

Course outcomes (COs) and Cognitive Level Mapping

COs	CO Description	Cognitive levels
CO1	**Describe** ERP concepts and architecture, **analyze** its role in business integration and **evaluate** its strategic benefits for organizational efficiency.	**K2 (Understand)** **K4 (Analyze)** **K5 (Evaluate)**
CO2	**Demonstrate** ERP implementation frameworks, **examine** customization vs. standardization decisions and **develop** ERP models aligned with business processes.	**K3 (Apply)** **K4 (Analyze)** **K6 (Create)**
CO3	**Recall** core ERP technologies, **classify** BI components and **use** ERP–BI integration for performance optimization.	**K1 (Remember)** **K2 (Understand)** **K3 (Apply)**
CO4	**Explain** BI interface and data modeling principles, **implement** data transformation techniques and **design** interactive reports using visual tools.	**K2 (Understand)** **K3 (Apply)** **K6 (Create)**
CO5	**Execute** DAX functions for business analysis, **analyze** data relationships and trends and **justify** performance report for decision-making.	**K3 (Apply)** **K4 (Analyze)** **K5 (Evaluate)**
CO6	**Create** advanced BI dashboards, **evaluate** their effectiveness in business contexts and **interpret** insights to support strategic decisions.	**K6 (Create)** **K5 (Evaluate)** **K2 (Understand)**