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| **School:**  | **School of Engineering and technology** |
| **Department** | **Department of Computer Science and Engineering** |
| **Program:**  | **B.Tech.** |
| **Branch:** | **CSE** |
| 1 | Course Code | **New Code (major changes)** |  |
| 2 | Course Title | **Business Intelligence**  |
| 3 | Credits | 3 |
| 4 | Contact Hours (L-T-P) | 3 | 0 | 0 |
|  | Course Status | Core /Elective/Open Elective |
| 5 | Course Objective | In this course, students are intended to have gained an understanding of how business professionals can use analytics techniques to formulate and solve relevant problems and how we can use analytics to support decision making. We will learn the principles of developing, reporting, and analyzing business data. In support of these activities selected analysis tools and methods will be utilized.  |
| 6 | Course Outcomes(must be 6 COs, following verbs given in Bloom’s Taxonomy) | 1. Define and recall the importance of data in business by introducing Intelligence in business strategies.
2. Explain the process of data analytics and recognize the best practices for data mining and pitfalls of managing data analytics projects. Show how data can improve business performance and inform decisions for managing business application areas.
3. Identify the detailed account of and discuss fundamental concepts, theories, methods and models within Business Intelligence and Data Warehousing
4. Analyzing business intelligence using different categorization of operations such as extraction, cleansing, integrating, visualizing, and reporting to identify the functionalities of BI Life Cycle
5. Evaluate the impact of DM and DW and identify the Issues and challenges.in managing capabilities and cost in Business by decision analysis and decision processes.
6. Adapt the basics and learnings available to Build the relationship of data in production and operational systems for data Intelligence using BI.
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| 7 | Course Description | After finishing the course the student will be able describe and comprehend all the concepts related with Business Intelligence, how to manage the internal and external information in order to make the best decisions for the purpose of giving the best service, and obtain a good profitability.  |
| 8 | Outline syllabus | CO Mapping |
|  | **Unit 1** | **Introduction to BI** |  |
| A | Introduction, Definition, History and Evolution, BI Segments, Difference between Information and Intelligence, Defining BI Value Chain, Factors of BI System, Real time BI, BI Applications | CO1 |
| B | BI Essentials: Introduction, Creating BI Environment, BI Landscape, Types of BI, BI Platform, Dynamic roles in BI, Roles of BI in Modern Business | CO1 |
| C | BI Types: Introduction, Multiplicity of BI Tools, Types of BI Tools, Modern BI, the Enterprise BI, Information Workers | CO1 |
|  | **Unit 2** | **Data Mining (DM) Tools and Techniques** |  |
| A | Architecture of the Data: Introduction, Types of Data and Models (Enterprise Data, Enterprise Subject Area, Enterprise Conceptual, Enterprise Conceptual Entity), Granularity of data, Reporting and Query Tools, Data Partitioning, Metadata, TDQM. | CO2 |
| B | Introduction to DM, Definition, Mining parameters, How DM works? Types of relationships, Architecture of DM, Functionalities of DM, Classification on DM System, Various risks in DM, Advantages and disadvantages of DM,  | CO2, CO6 |
| C | DM Techniques, Statistical Perspective on DM, Statistics-need, Similarity Measures, Decision Tree-Illustrations, Neural Network, Neural Network versus Conventional Computers, Genetic Algorithms, Applications of Genetic Algorithm | CO2, CO6 |
|  | **Unit 3** | **Data Warehouse (DW) and Knowledge Management (KM)**  |  |
| A | Introduction to DW, Advantages and Disadvantages of DW, Data Mart, Aspects of Data Mart, Online Analytical Processing, Characteristics of OLAP, OLAP Data Modeling, Difference between OLAP and OLTP, Multidimensional Data Model, Data Modeling using Schema | CO3, CO6 |
| B | Different Ways of DW, Types of Business Models, B2B BI Model and Its Types, Electronic Data Interchange & E-Commerce Models, Advantages of E-Commerce for B2B, Systems for Improving B2B E-Commerce, B2C BI Model and its Need | CO3, CO6 |
| C | Introduction of KM, Characteristics, Knowledge Assets, Generic KM Process, KM Technologies, Essentials of KM Process | CO3, CO6 |
|  | **Unit 4** | **Data Extraction (DE) and BI Life Cycle (BILC)** |  |
| A | Introduction to DE, Role of ETL process, Importance of Source Identification, Various DE techniques, Logical and Physical extraction methods, Change data capture | CO4 |
| B | Introduction of BILC, Enterprise Performance Life Cycle (EPLC) Framework Elements, Life Cycle Phases, Human Factors in BI Implementation, BI Strategy and Objectives, BI Development Stages, Steps  | CO4, CO6 |
| C | BI User Model, Evolution of BI, Content Management System, End User Segmentation, Basic Reporting and Querying, Online Analytical Processing, OLAP Techniques and Applications, Applying the OLAP to Data Warehousing, Future of Business Intelligence | CO4, CO6 |
|  | **Unit 5** | **BI Issues and Challenges**  |  |
| A | Critical Challenges for BI success, Cross-Organizational Partnership, Business Sponsors, Dedicated Business Representation, BI App Development methodology, Data Standardization, Business Profitability | CO5 |
| B | BI Strategy and Planning to implement BI Solution, Understand Limitations of BI, BI Usage, TCO, Managing the TCO of the BI, Factors that Affect TCO | CO5, CO6 |
| C | Implementation of BI, BI Platform, BI Platform Capability Matrix, BI Target Databases, Data Mart, BI Products and Vendor, The Big Four BI vendors | CO5, CO6 |
|  | Mode of examination | Theory |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 30% | 20% | 50% |  |
|  | Text book/s\* | 1. Business Intelligence: A Managerial Approach (2014) Turban, Sharda, Delen, King, Publisher: Prentice Hall, Edition: 2nd, ISBN: 13-978-0-136- 10066-9
2. Turban, Efraim, Ramesh Sharda, and Dursun Delen. Business intelligence and analytics: systems for decision support. Pearson Higher Ed, 2014.
3. Jiawei Han, Micheline Kamber, Jian Pei, Data Mining Concepts and Techniques, Third Edition
 |  |
|  | Other References | 1. Turban, Efraim, Ramesh Sharda, and Dursun Delen. "Decision support and business intelligence systems (required)." Google Scholar (2010).
2. Chen, Hsinchun, Roger HL Chiang, and Veda C. Storey. "Business intelligence and analytics: From big data to big impact." MIS quarterly 36.4 (2012).
3. Business Intelligence Guidebook: From Data In… (Kindle Edition)by Sherman, Rick
4. Business Intelligence For Dummies (Kindle Edition)by Scheps, Swain
5. Berry, M. y Linoff, G. (2004). Data Mining Techniques. For Marketing, Sales and Customer Relationship Management. Indianapolis: Wiley Publishing Inc
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CO and PO Mapping

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| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | Define and recall the importance of data in business by introducing Intelligence in business strategies.  | PO1, PO2, PO3, PO4,, PO9, PO11, PSO2 |
| 2. | Learn and Explain the best practices for data mining and pitfalls of managing data analytics projects. Show how data can improve business performance. | PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO10, PO11, PSO1, PSO2, PSO3 |
| 3. | Identify and Use the tools to develop, implement and administrate wide range of BI artifacts | PO1, PO2, PO3, PO4, PO5, PO9, PO10, PSO1, PSO2, PSO3 |
| 4. | Analyze various modeling techniques and apply business intelligence methods to various situations | PO1, PO2, PO3, PO4, PO5, PO6, PO11, PO12, PSO1, PSO2, PSO3 |
| 5. | Evaluate the impact of DM and DW and identify the issues and challenges.in managing capabilities and cost in Business by decision analysis and decision processes. | PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO2, PSO3 |
| 6. | Adapt the basics and learnings available to build the relationship of data in production and operational systems for data Intelligence using BI | PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO11, PO12, PSO1, PSO2, PSO3 |

**PO and PSO mapping with level of strength for Course Name xxxx (Course Code yyyy)**

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| **CSD 401** | **COs** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO****2** | **PSO****3** |
| **CO1** | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 2 |
| **CO2** | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 3 | 2 | 2 | 2 | 3 |
| **CO3** | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 3 |
| **CO4** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 2 |
| **CO5** | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 3 | 2 | 1 | 2 | 2 | 3 |
| **CO6** | 3 | 1 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 3 | 2 | 3 | 2 | 2 | 2 |

***Average of non-zeros entry in following table (should be auto calculated).***

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| **Course Code** | **Course Name** | **PO 1** | **PO2** | **PO 3** | **PO 4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO 10** | **PO 11** | **PO 12** | **PSO 1** | **PSO 2** | **PSO 3** |
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***Strength of Correlation***

***1.*** Addressed to ***Slight (Low=1) extent 2.*** Addressed to ***Moderate (Medium=2) extent***

***3.*** Addressed to ***Substantial (High=3) extent***