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| 1 | **Name of Course/Module : DATABASE MANAGEMENT SYSTEM** | | | | | | |
| 2 | **Course Code: BIT 231** | | | | | | |
| 3 | **Name(s) of academic staff:** | | | | | | |
| 4 | **Rationale for the inclusion of the course /module in the programme:**  This course offers the knowledge on fundamental elements of relational database management systems as well as importance of data & data management. | | | | | | |
| 5 | **Semester and Year offered:** year 2 semester 3 | | | | | | |
| 6 | **Course Hours** | Face to Face | | | | ILT | TSLT |
| L | T | P | O |
| L=Lecture  T=Tutorial  P=Practical  O=Others  TSLT=Total student learning time | 45 | 11 | 24 | 6 | 80 | 166 |
| 7 | **Credit Value:4** | | | | | | |
| 8 | **Prerequisite:** Nil | | | | | | |
| 9 | **Course Learning Outcomes:**  On completion of this course students will be able to:   * Introduce the fundamental concepts and methods necessary for the design and use of a database system. * Demonstrate practical experience in applying these concepts and methods using commercial database management systems. * Identify the Advantages & Disadvantages of E-R Data Model. | | | | | | |
| 10 | **Transferable Skills:**   * Critical Thinking & Problem Solving Skills * Information Management & Life Long Learning * Evaluating results | | | | | | |
| 11 | **Teaching –learning and assessment strategy**   * Lectures * Tutorials   At the end of the programme, students are given an opportunity to evaluate the course and the lecturer. | | | | | | |
| 12 | **Synopsis:**  This course introduces the fundamentals of database technology. Topics covered include: database concepts, Database System Architecture, E-R model, relational model, database design theory, database languages, transaction management, concurrency control and database recovery. | | | | | | |
| 13 | **Mode of Delivery:**  Lectures, Tutorials, Practical. | | | | | | |

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| 14 | **Assessments Methods and Types:**  Assignments 20%  Mid Exam 20%  Final Exam 50%  Quiz 10%  **Total 100%** | | | | | |  |  |  |
| 15 | **Content Outline of the course/module and the SLT per topic** | | | | | |  |  |  |
|  | **No** | **Subject description** | **Face to face** | | |  | **ILT** | **Total** |
| **Lecture** | **Tutorial** | **Practical** | **Others** |
| 1. | **Introduction to the Database Systems:**   * Importance of Data & Data   Management   * How Data are Stored in   Database   * Different Database Systems * Physical & Logical Structure of   Database   * Database Management Systems and Database   Systems   * Database Architecture * Difference Between Distributed   Database & Relational  Database   * History | 6 | 3 | - | - | 9 | 18 |
| 2. | **The Relational Data Models:**   * Entity Relationship and Object * ER Diagram * Importance of ER Diagram * Relational Model * Advantages and Disadvantages of E-R Data Model | 3 | - | 2 | - | 5 | 10 |

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|  |  | 3. | **Relational Algebra &Calculas:**   * The fundamental Operations of Relational Algebra Operators:   Select, Project, Rename, Union,  Intersection, Minus, Cartesian  Product, Theta Join, Equijoin,  Natural Join, Division   * Unary & Binary Operator * Project * Union (Union, Union All, Intersect) * Set Different (Minus Operation) * Cartesian Product | 5 | - | 3 | - | 8 | 16 |
| 4. | **SQL:**   * Sql Introduction * Types of Sql (DDL, DML, DCL) * Execution Process of Sql * Execution Process of Sql * Sql Fundamentals: Multi table   Queries   * Duplicate Rows * Row Selection * Search Conditions * The Comparison Test   (=,<,>,<=,>=)   * The Range Test (BETWEEN) * The Set Membership Test (IN) * The Pattern Matching Test   (LIKE)   * The Null Value Test (IS NULL) * Compound Search Conditions   (AND , OR and NOT)   * Sorting Query Results (ORDER   BY Clause)   * Developing Sub Queries | 5 | - | 10 | - | 15 | 30 |
| 5. | **Conceptual Design:**   * Conceptual Design Process * Requirement Analysis * Identify the Relation | 4 | - | 2 | - | 6 | 12 |
| 6. | **Logical Design:**   * Logical Design Process * Design Entity Relation Diagram * Create Tables and Constraint * Create Referential Keys | 4 | - | 3 | - | 7 | 14 |
|  |  | 7. | **Normalization:**   * Use of Normalization * Different form of Normalization | 2 | - | 2 | - | 4 | 8 |
| 8. | **Database Technology:**   * Different Database Technologies * Database Client & Server Processing * OLAP & OLTP Database Techniques | 3 | 2 | - | - | 5 | 10 |
| 9. | **Distributed Architecture:**   * Distributed Database   Architecture   * Advantages and Disadvantage of Distributed Database | 3 | 2 | - | - | 5 | 10 |
| 10. | **Database Evaluation and Transaction:**   * Transaction Management * ACID Properties * Database Evaluation Process | 4 | 2 | - | - | 6 | 12 |
| 11. | **Data Analysis:**   * Data Analysis Process * Types of Data Analysis * Data Analysis Steps | 4 | 2 | - | - | 6 | 12 |
| 12. | **Database and the World Wide Web:**   * Web Data Management * Web Search * Web Crawling | 2 | - | 2 | - | 4 | 8 |
|  | **Total** | 45 | 11 | 24 | - | 80 | 160 |
| 16. | **Main references supporting the course:**   * Database System Concepts by Abraham Silberschatz and S Sudarshan. * Database Management Systems by Raghu Ramakrishnan | | | | | |  |  |  |