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**University of Management & Technology**

 **(Faculty of Information Systems)**

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| **Course Title** | Database Management Systems |
| **Course Code** | IS 240 |
| **Program** | BBIS |
| **Credit Hours** | 3 |
| **Duration** | 15 Sessions |
| **Pre requisite (if any)** | IS 125 |
| **Resource Person** | Abdul Ghafar |

**Capsule Statement**

It is said that at the heart of any software system there is a “Database” involved. The computer revolution has claimed overwhelming response from industry that has dire need of efficient, accurate and reliable information management. This course will develop understanding of Database System concepts i.e. database development processes, perform database modeling & construction and administration of databases based on the real world systems.

**Learning Objectives**

The course is intended to equip students with database management concepts and implementation.It will provide learning both in theoretical and practical aspects of the database systems.It is said that at the heart of any software system there is a “Database” involved. The computer revolution has claimed overwhelming response from industry that has dire need of efficient, accurate and reliable information management. This course will develop understanding of Database System concepts i.e. database development processes, perform database modeling & construction and administration of databases based on the real world systems.

**Learning Methodology:**

The course is intended to equip students with database management concepts and implementation. It will provide learning both in theoretical and practical aspects of the database systems. The concepts of Database designs will be given using business case demonstrations. The students will be asked to solve Database Design exercises. There will be hands on training on Database design tools and also Database Management System software so that participants can develop the designed databases into working applications. There will lab works for developing expertise in the respective tools so that participants have practical exposure to solve real world problems in database management systems. There will be a term project to ensure participants can correlate and develop a comprehensive database management system for a given database module in an organization.

**Course Contents**

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| **Session** | **Topics to be Covered** | **Text Book**  | **Activities** |
| **01** | Database Concepts, Flat files v/s Database, Entity Sets, Database Approach, Enterprise Data Model, Advantages of Database Approach, Components of Database Environment | Chapter 1 | Class Discussion |
| **02** | **The Database Development Process** System Development Life CycleThe Role of CASE and RepositoryManaging the people involved in Database Development | Chapter 2 | Assignment / Quiz /Class Activity |
| **03** | **Modeling Database in the Organizations**E-R Model Overview, Entities and Attributes, Modeling Relationships, Super-types and SubtypesEER Models, Super-types and Sub-types, Generalization and Specialization, Logical Database Design and Relational Model,  | Chapter 2, 4 | Assignments / Quiz /Class Activity |
| **04** | Normalization practices, Identifying Dependencies, 3NF, BoyCodd normal form.Physical Database Design Process, Designing Field, Data Dictionary Concepts, Denormalization | Handouts | Assignments / Quiz / Lab Activities |
| **05** | **Physical Database Design**Introduction to Oracle SQL, Query Types, DCL, DDL, DML , Create Table, Keys,  | Chapter 4,5 | Project Phase I |
| **06** | Create Sequence, Create View, Drop objects, Update objects, Effect of DDL Statements |  |  |
| **07** | DML commands, Insert, Update, DeleteRollback & SavePoints, Commit | Chapter 5,6 | Quiz  |
| **08** | Select Tables, Where Clause, Relational operators, Special operators, Logical operators, Order By Clause , Use of Alias |  |  |
| **09** | Joins, Cartesian product, Inner Join, Outer Join, Self Join  |  |  |
| **10** | Sub Queries, Sub-Query Types |  |  |
| **11** | Single Row Functions and their Types, Date Functions, Number Functions, Text Functions , Conversion Functions | Chapter 7 | Project Phase II  |
| **12** | Group By Clause, Summary Functions, Multiple column Grouping |  |  |
| **13** | Introduction to PL/SQL, Transaction concept, Structure Control Statements, Variables & Arrays | Chapter 10 | Assignment / Quiz / Surprise Quiz |
| **14** | Loops and Conditions, Procedure and Functions. |  |  |
| **15** | Presentations |  | **Final Project** |

**Marks Distribution**

Mid Term Exam 15%

End Term Exam 35%

Quizzes + Assignments 10 + 10 %

Class Participation 05%

Practicals 10%

Project 15%

Total 100%

**Referenced Text**

**1. Modern Database Management (13 Edition, 2017)**

By **Jeffrey a. Hoffer, Mary b. Prescott,**

**2. Database Systems: Design, Implementation, and Management (12 Edition);**

 Carlos Coronel, Steven Morris

3. **Fundamentals of Database Systems (9th Edition) 9th Edition**

by Ramez Elmasri (Author), Shamkant B. Navathe (Author)

4. ORACLE 12g Introduction to SQL Guide

5. ORACLE 12g PL/SQL Guide

Extra reading material will also be supplied as and when required.