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**MULTIMEDIA UNIVERSITY OF KENYA**

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*(MMU is ISO 9001:2015 Certified)*



**FACULTY OF COMPUTING & INFORMATION TECHNOLOGY**

**DEPARTMENT OF IT**

**COURSE OUTLINE**

|  |  |
| --- | --- |
| **Code & Name** | Unit Code: Database systems |
| **Prerequisite** | Unit Code: None |
| **Cohort** | BCS/BSE Y2S1 Sep 2025 |
| **Lecturer** | Kirika Ndegwa |
| **Contact** | ndegwa.mmu@gmail.com |

**Purpose**

The course introduces a learner to concepts of data, efficient data storage and practises to ensure data integrity and accuracy is maintained in the modern work environment.

**Learning outcomes**

By the end of this course the students should be able to:

1. Explain the concepts of database systems.
2. Demonstrate the use of Database Management Systems and Query languages.
3. Apply the modeling techniques to database design and implementation.

**Course Description**

Introduction: Definition of data, information, DBMS and database systems. Types of database models: filing, hierarchical, network, relational, object-based. Relational data models: entities, attributes, domain and atomicity. Database design phases: conceptual, logical and physical database design. Normalization. Entity Relationship Diagrams. SQL: Data definition language, Data manipulation language. Implementation of and manipulation of database: data entry: append, edit, delete: field, names, types, size, index. Manipulating records: sorting: finding/searching. Queries, deleting, updating. views, appending and deleting. Maintaining a database. Reports: merging, labels, forms/screens, printing. Limitation of relational database management systems such as MS-ACCESS, ORACLE, MySQL, MS SQL SERVER

# Delivery Methodology

Lectures, laboratory exercises, assignments and projects

# Learning Resources

Books, Computers, Internet, Journals Software required Whiteboard and Markers

# Course Content

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| **WEEK** | **TOPIC** | **OUTLINE** |
| WK1 | Introduction | Introduction: Definition of data, information, DBMS and database systems. Types of database models: filing, hierarchical, network, relational, object-based. |
| WK2 | Relational data model | entities, attributes, domain and atomicity. Database design phases: conceptual, logical and physical database design. |
| WK3 | Relational data model | Entity Relationship Diagrams |
| WK4 | Relational data model | Entity Relationship Diagrams |
| WK5 | CAT 1 |  |
| WK6 | Normalization | Normalising relations. 1NF to 3NF |
| WK7 | Normalization | Normalising relations. 1NF to 3NF |
| WK8 | SQL | Data definition language |
| WK9 | SQL | Data manipulation language. Implementation of and manipulation of database |
| WK10 | SQL | data entry: append, edit, delete: field, names, types, size, index |
| WK11 | CAT 2 |  |
| WK12 | SQL | Maintaining a database. Reports: merging, labels, forms/screens, printing. Transaction management |
| WK13 | Relational | Limitation of relational database management systems |
| WK14 | Revision |  |

**Course Assessment**

Continuous Assessment Tests 30%

End of Semester Examination 70%

**Course Textbooks**

1. Coronel, Morris, Rob (2010): Database Systems: Design, Implementation and Management, 9th edition, Cengage Learning.
2. J. Hoffer, V. Ramesh, H. Topi (2011): Modern Database Management, 10th edition, Pearson Education, Inc.
3. Dušan Petković (2008): Microsoft® SQL ServerTM 2008: A Beginners Guide, The McGraw-Hill Companies

**Course Journals**

1. International Journal of Advanced Computer Science and Technology (IJACST)
2. Advances in Computational Sciences and Technology (ACST)
3. I[nternational Journal of Intelligent Information and Database Systems](http://www.google.co.ke/url?sa=t&rct=j&q=DISTRIBUTED+DATABASE+SYSTEMS+journals&source=web&cd=5&ved=0CEEQFjAE&url=http%3A%2F%2Fwww.inderscience.com%2Fijiids&ei=gEdsT6qfLMe-8AOQm5zADQ&usg=AFQjCNHyQFRdo5YLdH1qm3o5MfCSDLVVzw&cad=rja) (IJIIDS)

**Reference Textbooks**

1. Ramakrishnan, R. & Gehrke J. (2003). *Database Management Systems* (3rd ed.). McGraw Hill.
2. Ullman, J. & Widom J. (2002). *A first Course in Database Systems* (2nd ed.). Prentice Hall. ISBN 0130353000, 9780130353009
3. Hoffer,J., Ramesh, V. and Toppi, H. (2010). *Modern Database Management* (10th ed.). Pearson Prentice Hall.

**Reference Journals**

1. *Journal* of Information *Systems* Education
2. Journal of Computer Science and Application (JCSA)
3. International Journal of Information Sciences and Application (IJISA)

Approved by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_