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| UM SEAL JUL '09_new | COURSE SYLLABUS | |
| **VISION**  A leading institution of higher learning recognized for its quality transformative education serving the nation and the world.  **MISSION**  To provide a dynamic and supportive academic environment through the highest standards of instruction, research and extension in a non-sectarian institution committed to democratizing access to education.  **UM College of Computing Education Program Educational Objectives and Relationships to UM Mission** | | |
| **PROGRAM EDUCATIONAL OBJECTIVES (PEO):**  Within 2-5 years after graduation the University of Mindanao Information Technology graduates will: | | **MISSION** |
| 1. Establish expertise in a specific field of Information Technology and demonstrate professionalism, integrity, innovation, and excellence in any assigned and chosen role. | | 🗸 |
| 1. Serve as an agent for change and development of the community peers and the organization through ethical leadership and influence. | | 🗸 |
| 1. Pursue advanced learning through graduate studies, professional improvement and opportunities. | | 🗸 |

**Student Outcomes and Relationships to Program Educational Objectives**

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| **STUDENT OUTCOMES (SO)**  Upon completion of the program, the University of Mindanao students will demonstrate: | | **PEO** | | |
| 1 | 2 | 3 |
| A | Knowledge for Solving Computing Problems | 🗸 |  |  |
| B | Problem Analysis | 🗸 |  |  |
| C | Design / Development of Solution | 🗸 |  |  |
| D | Modern Tool Usage | 🗸 |  |  |
| E | Individual and Team Work |  | 🗸 |  |
| F | Communication |  | 🗸 |  |
| G | Computing Professionalism and Society | 🗸 | 🗸 |  |
| H | Ethics | 🗸 | 🗸 |  |
| I | Life-long Learning |  | 🗸 | 🗸 |

**COURSE INFORMATION**

1. Course Number **: IT224L**
2. Course Name **: Database Management System1**
3. Course Description **: This subject covers the discussion on basic concepts and definitions of database programming, the basics of Relational Database as one of the fundamental data storage technology of an Accounting Information System. It also includes discussion on the processes involves in the development of database. In this course, the students will be able to learn on how to design database based on database design concepts and principles, able to document design using ERD and use SQL to manipulate data and information. Also, in particular the subject focuses on database analysis design and management applicable to students taking up BSIT.**
4. Pre-requisite **: CS211L**
5. Co-requisite **: None**
6. Credit **: 3.0 units Lecture**
7. Class/Lab Schedule **: 4 hours Lec / 6 hours per week**
8. **COURSE OUTCOMES (CO)**

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| CO 1 | Analyze and translate different artifacts collected about the organization to user requirements using various models. |
| CO 2 | Design a relational database from a formulated set of user requirements and recommendations following relational design principles and using standard design notations and tools. |
| CO 3 | Translate design to an actual database and compose basic SQL statements that twill retrieve information requirements of the organization represents by its need for reports. |
| CO 4 | Realize the list of important characteristics, skills and attitude of a professional database designing based on the experiences with other students. |

1. **Alignment of Course Outcome to Student Outcomes**

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|  | **SECOND EXAMINATION** | | | | | | |
| Week 6  To  Week 7 | * MODELING DATA IN THE ORGANIZATION * Entities, relationships and attributes * ERD diagram * Time-dependent and time stamps * ENHANCED ERD MODEL * Supertype/subtype * Specialization and generalization * Data Modeling Structure * LOGICAL DATABASE DESIGN and THE RELATIONAL MODEL * Properties of relations * Normalization * Transform ER to logical equivalent | | CO 3  CO 4 | | * Lecture and Demonstration * Hands-on | | * Online Assignments * Oral Recitation * Lab Quiz |
| **THIRD EXAMINATION** | | | | | | |
| Week 8 | * SQL FUNCTIONS * SQL AGGREGATE FUNCTION   + AVG   + Count   + First   + Last   + Max   + Min   + Sum * SQL SCALAR FUNCTIONS   + Ucase   + Lcase   + Mid   + Len   + Round   + Now   + Format | | CO 3 | | * Lecture and Demonstration * Research Works * Hands-on | | * Online Assignments * Oral Recitation * Lab Quiz |
| Week 9 | * PROJECT CONSULTATION AND PRESENTATION | CO 1  CO 2  CO 3  CO 4 | | Project Progress Monitoring | | A program with Database Implementation Output | |
|  | **FINAL EXAMINATION** | | | | | | |

1. **TEXTBOOK**

1. **SUGGESTED REFERENCES**
2. **COURSE EVALUATION**

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| **Assessment methods** | | **Weights** | |
| **LECTURE - 40%** | | | |
|  | **EXAMINATIONS** |  | 60% |
|  | Exam 1 | 10% |  |
|  | Exam 2 | 10% |  |
|  | Exam 3 | 10% |  |
|  | Exam 4 | 30% |  |
|  | **CLASS PARTICIPATIONS** |  | 40% |
|  | Assignments | 5% |  |
|  | Quizzes | 10% |  |
|  | Oral Recitation | 10% |  |
|  | Research | 15% |  |
|  | TOTAL |  | **100%** |
| **LABORATORY** | * **60 %** | | |
|  | **EXAMINATIONS** |  | 50% |
|  | Exam 1 | 15% |  |
|  | Exam 2 | 15% |  |
|  | Final Exam | 20% |  |
|  | **LAB EXERCISES/ASSIGN/FIELD WORK** |  | 40% |
|  | LAB QUIZZES |  | 10% |
|  | TOTAL |  | **100%** |

1. **POLICIES AND GUIDELINES**
   1. Attendance is counted from the first regular class meeting.
   2. A validated student identification card must always by worn be all students while attending classes.
   3. Cheating is strictly prohibited. Any form of dishonesty shall be dealt with accordingly. Honesty is called for at all times.
   4. Valid examination permits are necessary in taking the examinations as scheduled. CELLULAR PHONES or any ELECTRONIC GADGETS and PRESCRIBED PRC CALCULATORS are **NOT** allowed during EXAMINATIONS.
   5. Base-20 grading policy should be observed. Students who obtained failing scores in major exams are recommended to attend the tutorial class.

Prepared by:

**SOMERSET ELCID R. SIANG EFRHAIN LOUIS PAJOTA MARTZEL BASTE**

IT Faculty IT Faculty IT Faculty

Reviewed by:

**FE B. YARA, MSIS**

BSIT, Program Coordinator

Noted by: Approved by:

**RAMCIS N. VILCHEZ, MIT** **RONNIE V. AMORADO, PhD**

Dean, College of Computing Education VP, Academic Planning and Services

**Wednesday - Lesson 01**

In our first lesson, we'll explore the basic structure and history of relational databases. Then, you'll understand what SQL is and how it is used with a relational database.

**Friday - Lesson 02**

In this lesson, you'll learn how to use SQL to sort and retrieve data from tables. We'll talk about important query terms that enable you to communicate with your database, as well as syntax rules that will enable you to create clear and understandable queries while avoiding system generated errors.

Week 2

**Wednesday - Lesson 03**

In this lesson, you'll learn how to use SQL to filter retrieved data. You'll practice sorting retrieved data using the ORDER BY clause. You'll be able to sort single and multiple columns, and you'll know how to specify sort directions such as ascending and descending order. You'll also learn additional query terms that will help you customize your SQL queries.

**Friday - Lesson 04**

Today, you'll learn how to reformat retrieved data with calculated fields and functions. You'll also learn how to create alternate names for columns and you'll discover the secret behind merging columns with the concatenation symbol.

Week 3

**Wednesday - Lesson 05**

In this lesson, we'll discuss gathering significant statistics from data using aggregate functions. You'll also learn how to use the GROUP BY clause in conjunction with an aggregate function to gather important statistics from a table. Then you'll find out how to use the HAVING clause in conjunction with an aggregate function to filter groups of data from a table.

**Friday - Lesson 06**

Today's lesson is all about subqueries. You'll learn how to extract data from multiple tables simultaneously, how to use calculated fields in subqueries, how to use the DATEPART () function in subqueries, and how to use aggregate functions in subqueries. Then we'll talk about qualification—a technique used to combine a table name with a column name so there's no question about which table the column name refers to.

Week 4

**Wednesday - Lesson 07**

In this lesson, you'll learn how to use joins to gather information from two or more tables simultaneously. You'll learn how to use the inner join, self-join, natural join, and the outer join. Then you'll become familiar with the term Cartesian product.

**Friday - Lesson 08**

In today's lesson, you'll discover how to manipulate data using the INSERT, UPDATE, and DELETE statements. You'll learn how to insert partial and complete rows into a table, and how to update information already stored in a table. You find out how to transfer data to a new table, how to transfer data to an existing table, and how to delete rows from a table.

Week 5

**Wednesday - Lesson 09**

Today, you'll find out how SQL can be used to create and maintain tables. You'll learn how to use the CREATE TABLE keywords to create a table, then we'll discuss how to use the ALTER TABLE, DROP TABLE, ADD COLUMN, and DROP COLUMN keywords to manipulate the tables themselves. You'll also find out how to define a primary key, data type, and field size.

**Friday - Lesson 10**

In this lesson, you'll learn how and why views are used in SQL. You'll learn how to create and use views to simplify complex queries, summarize data, and manipulate data stored in tables. I'll also teach you how to update and delete a view.

Week 6

**Wednesday - Lesson 11**

Today, you'll learn how transaction processing, constraints, and indexes are implemented in SQL. You'll work through an example that demonstrates how a transaction is created, how constraints are used in the creation of a table, and how indexes are used to improve the performance of a database by optimizing the speed at which queries are processed.

**Friday - Lesson 12**

In our last lesson, you'll find out how stored procedures, triggers, and cursors are implemented in SQL. You'll see how stored procedures are created and executed, as well as how triggers work. You'll also see how cursors are declared in SQL.

* write and execute simple Structured Query Language (SQL) statements.
* create arithmetic statements using SQL.
* select data from a relational database using specified criteria and present the data in a sorted sequence.
* use predefined SQL functions.
* retrieve data from multiple tables in a relational database.
* create and execute subqueries.
* format output retrieved from a relational database.
* update data in a relational database by using data manipulation statements.
* create and manage tables including keys, indices, and constraints.
* create and use views and sequences.
* control user access via privileges, passwords, roles.
* use Oracles date and time routines.
* use hierarchical retrieval statements