

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: DATA BASE MANAGEMENT II

CODE NO.: EDP319-4 SEMESTER: FIVE

PROGRAM: COMPUTER PROGRAMMER ANALYST

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DEAN, SCHOOL OF BUSINESS &
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June 93
DATE



DATA BASE MANAGEMENT II

EDP319-4

COURSE NAME

COURSE CODE

LENGTH OF COURSE: 4 periods per week for one semester

REQUIRED TEXT:

- 1) Database Processing: Fundamental, Design, Implementation, by David Kroenke, 4th edition
- 2) Using SQL, by James R. Groff and Paul N. Weinberg

PURPOSE:

This course is a continuation of Data Base Management I where more advanced design and implementation of systems will be completed. It will extend the concepts of database management to include such topics as the use of information repositories, the various types of data models, backup and recovery, and privacy and security.

Practical applications will be developed to encompass more advanced design and database manipulation. This will be accomplished through the use of Sybase, a relational database management system.

STUDENT EVALUATION:

The student's final grade will consist of the following components:

Tests (3 @ 20)	60%
Project - Sybase/SQL:	
- Phase 1	20%
- Phase 2	20%
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	100%

ASSIGNMENT DEADLINES:

Each project must be handed in on **TIME**, otherwise, they are subject to a 10% deduction per day late.

NOTE: There will be **no re-writes** in this course due to poor performance.

GRADING:

A+	90-100%
A	80- 89%
B	70- 79%
C	60- 69%
R	0- 59%

PART 'A' - The following modules pertain specifically to the theoretical concepts in the course.

Module 1: This module provides a review of the concepts discussed in Database Management I (EDP215).

Objectives: The student should be able to recall the following topics:

- 1) file processing vs database processing systems
- 2) functions of a database management system (DBMS)
- 3) using object diagrams to capture data requirements
- 4) data modelling
- 5) database design using structures such as trees, simple networks, and complex networks
- 6) the relational model and normalization
- 7) database implementation with the relational model using SQL
- 8) database administration (DBA)
- 9) data structures for database processing

Module 2: This module describes data modelling techniques used to capture business data requirements.

Objectives: Upon completion of this module, the student should be able to:

- 1) describe the various types of data models used in organizing a company's data requirements
- 2) understand how each type of model fits into the systems development methodology
- 3) understand the pitfalls encountered in data modelling
- 4) define subject views and explain their purpose in the modelling process

Module 3: This module describes problems inherent in the multi-user database environment.

Objectives: Upon completion of this module, the student should be able to:

- 1) identify problems caused by concurrent processing
- 2) explain methods to prevent loss of updates and the "deadly embrace"
- 3) describe the problems related to database recovery
- 4) explain methods for recovery after certain types of failures
- 5) define the terms transaction, before image, after image, rollback and rollforward.
- 6) describe the problems associated with database security and how database management software handles security
- 7) explain object-oriented and subject-oriented security

Module 4: This module gives an overview of information repository/ data dictionary systems.

Objectives: Upon completion of this module, the student should be able to:

- 1) describe the major components of an information repository/data dictionary system and how they are used to describe and manage "metadata".
- 2) describe the factors involved in selecting a repository/data dictionary
- 3) explain the role of CASE tools in a metadata environment

Module 5: This module describes the concepts of resource sharing and client-server architectures.

Objectives: Upon completion of this module, the student should be able to:

- 1) describe characteristics of multi-user and distributed processing architectures

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- 2) understand the use of resource sharing systems for the processing of downloaded data
- 3) understand the use of client-server systems for multi-user transaction processing

PART 'B': The following modules pertain specifically to the Sybase Database Management System (a relational system) and to the SQL fourth generation language. These will be discussed concurrently with the theoretical concepts in Part A.

MODULE 1: This module introduces the basic concepts related to data retrieved.

Objectives: Upon completion of this module, the student should be able to:

- 1) list the tables that are in the demonstration database
- 2) query the database retrieving column and row data
- 3) query the database using conditions to restrict data retrieved
- 4) use boolean expressions in the condition of a query
- 5) use an editor to change the SQL buffer
- 6) rename column headings in the retrieved data
- 7) use the numeric functions in data retrieval
- 8) define the meaning of a null value
- 9) sort the data output

MODULE 2: This module introduces the concepts of organizing data and summarizing results.

Objectives: Upon completion of this module, the student should be able to:

- 1) use aggregate functions
- 2) organize data into groups (GROUP BY)
- 3) set conditions on groups (HAVING)

MODULE 3: This module introduces the concepts of joins and subqueries.

Objectives: Upon completion of this module, the student should be able to perform:

- 1) a join based on an equality
- 2) a join with other conditions included
- 3) a join which joins a table to itself (self-join)
- 4) a join that includes non-matching rows (outer join)
- 5) a join of more than two tables
- 6) a query with multiple levels
- 7) a sub-query with comparison operators
- 8) a sub-query for an existence test

MODULE 4: This module introduces the concept of data definition and manipulation.

Objectives: Upon completion of this module, the student should be able to:

- 1) create a table from an existing table
- 2) insert data into a table
- 3) update data in a table
- 4) delete data from a table

MODULE 5: This module introduces the Data Workbench facility and Transact SQL.

Objectives: Upon completion of this module, the student should be able to:

- 1) edit and run a query
- 2) run batches with multiple queries
- 3) format the results
- 4) retrieve and edit commands using the History List
- 5) create database, tables, rules, defaults, datatypes, and indexes
- 6) retrieve and manipulate data using SQL extensions and functions
- 7) create new tables from existing tables
- 8) create and use temporary tables

MODULE 6: This module introduces the concept of data control.

Objectives: Upon completion of this module, the student should be able to:

- 1) control access to the server, a database, commands, and objects
- 2) create and use views to control access
- 3) update tables via views
- 4) explain what "triggers" are and what they are used for

MODULE 7: This module introduces more advanced topics in Sybase.

Objectives: Upon completion of this module, the student should be able to:

- 1) describe and use batches
- 2) describe and use stored procedures
- 3) explain and write transactions
- 4) explain and use backup and restore procedures on a database