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 &   DATE
HOSPITALITY

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) The Guide to SQL Server, by Aloke Nath

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, data warehouses, backup and recovery, privacy and security, and client/server architecture.

Practical applications will be developed to encompass more advanced design and database manipulation. This will be accomplished through the continued use of Sybase, a relational database management system. The student will become familiar with the Data workbench, which is a set of window-based tools that interface to the SQL Server.

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%
	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 except in situations out of the control of the student (such as illness, urgent family matters, etc.) in which a re-write may be issued at the discretion of the instructor.

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GRADING:

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

Before proceeding with the objectives of this course, the student is asked to recall, for review purposes, the following topics covered in Data Base Management I (EDP215).

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

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

Module 1:   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 2:   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

4)   use Excelerator to create data models and to document entity and
     attribute definitions

Module 3:   This module describes the concepts of resource sharing
                   and client-server architectures as well as distributed
                   database processing.

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

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

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 trans-
     action processing

4)   describe the fundamental concepts of distributed database
     processing

5)   describe the major problems encountered in concurrency control
     and failure/recovery in a distributed system

Module 4:   This model describes a Data warehouse and its role in the decision-support environment.

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

1) describe the purpose and structure of a Data Warehouse

2) differentiate between "snapshot" data and "ongoing" data with respect to the operational environment vs the Data Warehouse

3) understand how data is transferred from the operational environment to the Data Warehouse

4) design and implement a Data Warehouse

Module 5:   This module discusses the network and hierarchical data models.

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

1) explain the CODASYL DBTG network data model

2) illustrate how DBTG sets are used to represent objects

3) discuss how schemas and subschemas are defined

4) explain the characteristics of databases based on the hierarchical model

5) illustrate how trees, simple networks and complex networks are represented in DL/I

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.

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MODULE 1:   This module reviews the concepts of joins and introduces
                  the concepts of 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 2:   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

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MODULE 3:   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 4:   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