SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: DATABASE MANAGEMENT

Course No.: CET301

Program: COMPUTER ENGINEERING

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Chairperson Date

CET301-5

DATABASE MANAGEMENT

GENERAL OBJECTIVES

The objective of this course is to study database processing fundamentals and to provide students with an opportunity to investigate a variety of approaches to database management.

A study of database management system theory will parallel the application of the theory in lab projects. VAX/RDB will be studied as a representative Relational Database system. VAX DATATRIEVE will be studied as an alternate, more "user-friendly" interface to a database. The use of CDD, the Common Data Dictionary to centralize data definitions will be studied. Finally, the nature of a Codasyl database will be investigated through the study of "SEED" or another similar DBMS.

For each of these systems, students will study the use of its data manipulation language, report generator, query language, data dictionary and other distinctive features. Where relevant, Fortran will be used as the application language to access the database from within user programs.

A series of related assignments will apply the principles learned in each section. In some cases, analysis and modification of existing databases will be used as the basis of assignments; in others, the design and implementation of new systems will be required.

TEXTBOOK:

"Database Processing - Fundamentals, Design, Implementation" by David Kroenke and K. Dolan
(3rd Edition, SRA)

VAX/RDB NOTES

Course notes supplied by the Instructor

EVALUATION:

3 Theory Tests	60%
Assignments	40%

COURSE OUTLINE

CET301

In this course a student will develop an understanding of the following objectives and be able to apply this knowledge to specific tasks as outlined below. (Some minor modificatons to these objectives may be required if time constraints apply)

BLOCK 1 INTRODUCTION TO DATABASE CONCEPTS
(Chap. 1 and 2)

1. Identify the nature of database processing and file processing.
2. Understand the advantages and disadvantages of database processing.
3. Identify and describe the functions of a database management system.
4. Identify the role of the various components of a database system.
5. Define the terms schema, sub-schema and internal view.
6. Understand the difference between flat files and non-flat files.
7. Identify the elements in the VAX Information Architecture and where they are appropriately applied.

BLOCK 2 DATABASE STRUCTURES AND THE RELATIONAL MODEL
(CHAP. 4,5,6, parts of 9,11)

1. Understand the process of defining objects and domains in specifying a database.
2. Understand the terms relations, normalization and keys and how to apply them in database definition.
3. Understand compatible and noncompatible unions, differences and intersections.
4. Understand the three types of binary relationships between records and how they are combined in trees, simple networks and complex networks.
5. Understand the process of database design and implementation.

BLOCK 3 VAX/RDB RELATIONAL DATABASE MANAGEMENT SYSTEM

1. Understand the elements of DML: RDB Data Manipulation Language and how to use it to store, modify, and erase data in a Database.

3. Be able to use advanced DML.

4. Understand how to use Fortran programs to access RDB databases to create viable applications.

5. Understand the process of Rdb database design and creation.

6. Be able to use the CDD, theCommon Data Dictionary effectively..

BLOCK 4 VAX DATATRIEVE

1. Understand the DATATRIEVE environment and how to perform data retrieval and maintenance.

2. Understand how to use DATATRIEVE Procedures, and how to use DATATRIEVE with RDB.

3. Understand how to use Datatrieve to format displays and write reports.

4. Be able to generate graphics in the Datatrieve environment.

BLOCK 5 DATABASE ADMINISTRATION AND MICROCOMPUTER DATABASES

(Chap 7,10)

1. Understand the role of a DBA, Data Base Administrator in the management of a database.

2. Understand the nature of the microcomputer database environment and how it differs from mainframe environments.

3. Distinguish among the various classes of microcomputer databases.

BLOCK 6 DATA STRUCTURES AND THE CODASYL MODEL
(Chap.13 and Appendix B)

1. Understand physical structures such as sequential lists, linked lists, and inverted lists and how networks can be represented using them.

2. Understand the nature of database processing using the CODASYL model.

3. Show how trees, simple networks and complex networks are represented in the hierarchical model.

4. SEED Database Management System: A Network System

   a) List the steps in creating a SEED database and understand the components of the system.

   b) Understand the process of establishing relationships between a set of data attributes and synthesizing logical views into an overall logical schema in SEED system.

   c) Analyze an existing SEED database (if time permits).

GRADING SCHEME

COURSE: CET301

1. **TESTS**

Written tests will be announced about one week in advance. Quizzes may be conducted without advance warning.

2. **ASSIGNMENTS**

Assignments not completed by the assigned due-date will be penalized. All assignments must be completed satisfactorily to complete the course.

3. **GRADING SCHEME**

A+	90	-	100%	Outstanding achievement
A	80	-	89%	Excellent achievement
B	66	-	79%	Average Achievement
C	55	-	65%	Satisfactory Achievement
I	Incomplete: Course work not complete at Mid-term. Only used at mid-term.			
R	Repeat			
X	A temporary grade that is limited to instances where special circumstances have prevented the student from completing objectives by the end of the semester. An X grade must be authorized by the Chairman. It reverts to an R if not upgraded in an agreed-upon time, less than 120 days.			

4. **UPGRADING OF INCOMPLETES**

When a student's course work is incomplete or final grade is below 55%, there is the possibility of upgrading to a pass when the student's performance warrants it. Attendance and assignment completion will have a bearing on whether upgrading will be allowed. A failing grade on all tests will remove the option of any upgrading and an R grade will result. The highest grade on re-written tests or assignments will be 56%.

Where a student's overall performance has been consistently unsatisfactory, an R grade may be assigned without the option of make-up work.

The method of upgrading is at the discretion of the teacher and may consist of one or more of the following options: assigned make-up work, re-doing assignments, re-writing of tests, or writing a comprehensive supplemental examination.