SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

## COURSE OUTLINE

Course Title:  __DATABASE MANAGEMENT__

Course No.:  __CET301__

Program:  __COMPUTER ENGINEERING__

Semester:  __5__

Date:  __SEPTEMBER 1987__

Author:  __TYCHO BLACK__

New: __X__   Revision: ____

APPROVED:  _L.P. Graziette_                _September , 1987_

Chairperson            Date

## CET301-5

### DATABASE MANAGEMENT

GENERAL OBJECTIVES

The objective of this course is to provide students with an opportunity to investigate a variety of approaches to database management, including RDB, a Relational database system, SEED, a Codasyl DBMS, and Powerhouse, a Fourth Generation Language.

After a study of database fundamentals, 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. Powerhouse will be used to introduce students to the advantages of Fourth Generation Languages in the implementation of database management systems. Finally, the nature of a Codasyl database will be investigated through the study and use of "SEED".

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:

VAX/RDB NOTES available in the Bookstore

Course notes supplied by the Instructor

EVALUATION:

| | |
|---|---|
| 3 Theory Tests | 60% |
| Assignments | 40% |

## COURSE OUTLINE

### CET301

**BLOCK 1      INTRODUCTION TO DATABASE CONCEPTS**

1.  The nature of a database.

2.  File processing vs. Database processing.

3.  File organization.

4.  Data structures for Database Processing.

    a) Sequential Lists
    b) Linked Lists
    c) Inverted Lists

5.  Logical record relationships in databases.

    a) Tree (Hierarchical)
    b) Simplex Networks
    c) Complex Networks

6.  Database Models

    a) Relational Models
    b) Codasyl Database Models


**BLOCK 2  VAX/RDB RELATIONAL DATABASE MANAGEMENT SYSTEM**

1.  The elements of DML: RDB Data Manipulation Language.

2.  Storing, Modifying, and Erasing Data in a Database.

3.  Advanced DML.

4.  Using Fortran programs to access RDB databases.

5.  Considerations in database design and creation.

## BLOCK 3    VAX DATATRIEVE

1. Introduction to the DATATRIEVE environment.

2. Data retrieval and Maintenance.

3. VAX Common Data Dictionary (CDD).

4. Using DATATRIEVE Procedures.

5. Using DATATRIEVE with RDB.

6. Formatting displays and writing reports.

7. Writing DATATRIEVE customized programs.

## BLOCK 4    POWERHOUSE AND FOURTH GENERATION LANGUAGES

1. The Nature of Fourth Generation Languages.

2. The Fourth Generation system development life cycle versus the traditional system development life cycle.

3. The creation and maintenance of a Powerhouse Dictionary.

4. User access to Powerhouse.

5. Generating Screens using QUICK.

6. Producing Reports using QUIZ.

7. Analyzing a Powerhouse system.

## BLOCK 5    SEED: A CODASYL DATABASE MANAGEMENT SYSTEM

1. The components of the SEED System.

2. Schema and Sub-schema definition.

3. Accessing and updating a database with DML.

4. Incorporating DML in application programs.

5. Analyzing a SEED database.

## 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 by 10% per day late. All assignments must be completed satisfactorily to complete the course.

3. **GRADING SCHEME**

   | | | | | |
   |---|---|---|---|---|
   | A | 80 | – | 100% | Outstanding 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.