SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: DATABASE MANAGEMENT and DESIGN

CODE NO. : CSD 304   **SEMESTER:** V

PROGRAM: COMPUTER ENGINEERING TECHNOLOGY

AUTHOR: DOUGLAS MCKINNON

DATE: Aug 2000   **PREVIOUS OUTLINE DATED:** Feb 2000

APPROVED:

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                                DEAN   **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S): Completion of Computer Engineering Technician or approval of the Dean

LENGTH OF COURSE: 16 weeks   **TOTAL CREDIT HOURS:** 64

I.   COURSE DESCRIPTION:

This course will introduce the student to important database terminology
and concepts including data modeling, database design, querying
databases, security, and distributed database environment.
Practical skills are developed through the analysis and design of relational
databases using Entity-Relationship and Semantic Object Modeling
techniques. A representative Relational Database system and data
manipulation language will be studied. The course is intended to deal with
Database Management issues and security techniques at a fairly detailed
level.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate
the ability to:

1.   Explain the difference between traditional file processing and data
     base management as well as the components and concepts that
     relate to database management.

     Potential Elements of the Performance:

     - Describe the nature of database processing and file processing
     - Describe the limitations of traditional file processing and the
       difference between flat files and non-flat files
     - Discuss the advantages and disadvantages of database
       processing
     - Identify and describe the functions of a database management
       system
     - Describe what a Data Base Management System (DBMS) is
     - Identify and appreciate the different functions of a Generic DBMS
     - Identify the different types of DBMS's (Hierarchical versus
       Relational)
     - Describe what a database application is
     - Define and apply the terms schema, sub-schema, logical view,
       and physical view

2.   Design a variety of database models based on data normalization
     techniques.

Potential Elements of the Performance:

- Describe the concept of the physical properties of data as it relates to defining objects and domains
- Describe terms such as: entities, attributes, relations, normalization, modification anomalies, keys (and how to apply them in database definition), functional dependencies, and uniqueness
- Demonstrate the differences between the various normal forms of data
- Describe and appreciate the following attribute relationships: one-to-one; many-to-one; many-to-many
- Define compatible and noncompatible unions, differences and intersections of data
- Develop and implement in a team atmosphere, various models of data and databases
- Describe and appreciate the process of Object Oriented Data Modeling and use it in Database Design
- Design and develop semantic object models of data
- Design and develop entity relationship models of data

3.   Produce various programs that will extract and manipulate data from Databases through the use of Data Manipulation languages such as SQL on a PC Based Database tool such as Access and/or Salsa.

Potential Elements of the Performance:

- Use the common data dictionary, entity relationship diagrams and semantic object model diagrams to create effective and structured database tables
- Define forms that allow adding, modifying, viewing and deleting of data from multiple tables
- Design applications that allow a user to manipulate data within the context of a database environment such as Access and/or Salsa
- Develop and implement a variety of structured queries using SQL

4.   Introduction to the emerging technologies and applications relating to databases such as ODBC, Data Warehousing, Intranet and Internet Databases; Multimedia Databases, Object Databases, Enterprise Modeling and SQL3.

Potential Elements of the Performance:

- Illustrate the various non-traditional implementations of databases
- Define and describe various emerging aspects and database implementations
- Define and design databases in the context of Open Database Connectivity (ODBC); Data Warehousing; Intranet and Internet; Multimedia Applications; Enterprise
- Appreciate the significance SQL has had on database development

III.   TOPICS:

1.   Database Management Concepts

2.   Database Design and Data Modeling

3.   Database Development and SQL Programming

4.   Emerging Database Technologies

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

"Database Processing" by David Kroenke, Prentice Hall, 7th edition, 1999

"Learn Access 2000" by John Preston, Sally Preston, and Robert Ferrett, Prentice Hall, 2000

a) Additional reference material will either be given to the students or placed in the library for the student's use
b) Handouts, guidance and material as it relates to the individual topics
c) Use of research modes such as INTERNET, Library Data Base Searches, and articles

Individual Student Resources: participation and teamwork
Box of diskettes
Individual research
Documentation

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V.   EVALUATION PROCESS/GRADING SYSTEM:

Tests and Quizzes   60%
Assignments and Lab Work   40%

The tentative breakdown is as follows:

3 Formal Theory Tests   @   15% each
3 Quizzes (best 3 out of 4)   @   5% each
   (quizzes may be either in written or practical form)
4 Assignments   @   5% each
2 Assignments   @   10% each

Some minor modifications to the above percentages may be necessary.
The Professor reserves the right to adjust the mark up or down 5% based
on attendance, participation, leadership, creativity and whether there is an
improving trend.

The following semester grades will be assigned to students in
postsecondary courses:

Grade	Definition	Grade Point Equivalent
A+	90 - 100%	4.00
A	80 - 89%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see *Policies & Procedures Manual – Deferred Grades and Make-up*).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has been impossible for	

the faculty member to report grades.

VI.   SPECIAL NOTES:

Special Needs:
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 491 so that support services can be arranged for you.

Retention of course outlines:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Rights and Responsibilities*. Students who engage in "academic dishonesty" will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:
The Professor reserves the right to adjust the number of tests, practical tests and quizzes based on unforeseen circumstances. The students will be given sufficient notice to any changes and the reasons thereof.

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

Assignment Due Dates:
All assignments must be completed satisfactorily to complete the course. Late hand in penalties will be 5% per day. Assignments will not be accepted past one week late unless there are extenuating and legitimate circumstances.

Tests:
Written tests will be conducted as deemed necessary, generally at the end of each block of work. They will be announced about one week in advance. Quizzes may be conducted without advance warning.

Upgrading of Incomplete:
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 50%.

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

Attendance:
A student who is absent for 3 or more times without any valid reason or effort to resolve the problem will result in action taken.

NOTE: If action is to be taken, it will range from marks being deducted to a maximum of removal from the course.

VII.   PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the instructor.

VIII.   DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.