

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

COURSE OUTLINE

COURSE TITLE: DATA BASE MANAGEMENT II

CODE NO.: CSD303 SEMESTER: FALL 97

PROGRAM: COMPUTER PROGRAMMER/PROGRAMMER ANALYST

AUTHOR: DENNIS OCHOSKI

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APPROVED: *J. Hunter*
DEAN

May 22/97
DATE

DATABASE MANAGEMENT II

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TOTAL CREDITS: 4

PREREQUISITE(S): CSD204

- I. COURSE DESCRIPTION:** This course is a continuation of Data Base Management I where more advanced design and implementation of systems will be completed. A major focus of the course is on the role of data management within an organization. It will extend the concepts of database management to include such topics as backup and recovery, privacy and security, information repositories, data warehouses, and various implementation models.

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

II. TOPICS TO BE COVERED:

1. Problems/Solutions in a Multi-User Environment.
2. Data/Database Administration.
3. Information Repository/Data Dictionary Systems.
4. Data Warehouses.
5. Network and Hierarchical Data Base Models.
6. Advanced Implementation with MicroSoft Access.

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III. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

A. Learning Outcomes:

	Approx. % of Course Grade
1. Understand the problems inherent in a multi-user database environment, and provide solutions to those problems.	25%
2. Understand the importance of data/database administration's role within an organization.	10%
3. Understand how an information repository/data dictionary system is used to capture and track an organization's data requirements.	10%
4. Understand how a data warehouse is used to provide decision-support personnel with historical data needed for trend analysis.	20%
5. Differentiate/compare the Relational Model with the Network and Hierarchical Models.	10%
6. Create databases in MicroSoft Access incorporating advanced concepts and techniques.	<u>25%</u>
	100%

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B. Learning Outcomes and Elements of the Performance:

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

1. Understand the problems inherent in a multi-user database environment, and, provide solutions to those problems.
(chapters 15 and 16 - Kroenke)

Elements of the performance:

- identify problems caused by concurrent processing
- explain methods to prevent loss of updates and the "deadly embrace"
- define the terms; logical transaction, before image, after image, rollback, and rollforward
- describe the problems related to database recovery
- explain methods for recovery after certain types of system failures
- describe the problems associated with database security and how database management software handles security implementation
- explain object-oriented and subject-oriented security.
- describe the characteristics of various multi-user processing architectures
- understand why client-server systems have advantages over other architectures

2. Understand the importance of data/database administration's role in an organization.
(chapter 15 - Kroenke)

Elements of the performance:

- understand the importance and role of data/database administration in managing organizational resources
- understand how project level data administration activities support the development of a database system
- understand how system level database administration functions are used to successfully management a database environment
- understand what skills data/database administration requires and why it needs a balance of people, technical, and business skills to carry out its roles effectively
- understand the complexity involved in managing a database environment and how computer-based tools can be used to support data/database administration activities
- understand the management issues involved in initiating, staffing, and locating data administration in the organization

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3. Understand how an information repository/data dictionary system is used to capture and track an organization's data requirements.
(lecture notes)

Elements of the performance:

- describe the major components of an information repository/data dictionary system and how they are used to describe and manage "metadata"
- describe the factors involved in selecting a repository/data dictionary system
- explain the role of CASE tools in a metadata environment
- use a CASE tool to create data models and to document entity and attribute definitions

4. Understand how a data warehouse is used to provide decision-support personnel with historical data needed for trend analysis.
(lecture notes)

Elements of the performance:

- describe the purpose and structure of a data warehouse
- differentiate between "snapshot" data and "ongoing" data with respect to the operational environment vs the data warehouse environment
- understand how data is transferred from the operational environment to the data warehouse
- design and implement a data warehouse

5. Differentiate/compare the Relational Model with the Network and Hierarchical Models.
(chapters 13, 14, and Appendix)

Elements of the performance:

- explain the characteristics of databases based on the CODASYL DBTG network data model
- illustrate how DBTG sets are used to represent objects and relationships between objects
- discuss how schemas and subschemas are defined
- explain the characteristics of databases based on the Hierarchical data model
- illustrate how trees, simple networks and complex networks are represented in DL/I

6. Create a database in MicroSoft Access incorporating advanced concepts and techniques. (chapters 1 to 5 - Grauer & Barber)

Elements of the performance:

- discuss the importance of data validation and how it is implemented in Access
- distinguish between a bound control, an unbound control, and a calculated control, and, explain how each type of control is entered on a form
- modify an existing form to include a combo box, command buttons, and colour
- describe the similarities between forms and reports with respect to bound, unbound, and calculated controls
- list the sections that may be present in a report and explain the purpose of each
- use the Query By Example (QBE) grid to create and modify a select query
- explain the use of multiple criteria rows within the QBE grid to implement And and Or conditions in a query
- define referential integrity and explain how its enforcement maintains consistency within a database
- explain how a subform is used in conjunction with a one-to-many relationship and use the Form Wizard to create a subform
- create a report based on a query
- create a main form containing two subforms linked to one another
- use the Cascade Update and Cascade Delete options in the Relationships window to relax enforcement of referential integrity
- create a main and a subform based on a query and discuss the advantage of using queries rather than tables as the basis for a form or report
- create a parameter query and explain how it can be made to accept multiple parameters
- use aggregate functions in a select query
- use the Import command to add external tables to an existing database

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IV. EVALUATION METHODS:

The mark for this course will be arrived at as follows:

Quizzes:

outcome #1	25%
outcomes #2 & #3	20%
outcomes #4 & #5	20%
Group Project	<u>35%</u>
Total	100%

The grading scheme used will be as follows:

A+	90 - 100%	Outstanding achievement
A	80 - 89%	Excellent achievement
B	70 - 79%	Average achievement
C	60 - 69%	Satisfactory achievement
R	Repeat	
X	Incomplete	A temporary grade limited to special circumstances that have prevented the student from completing the objectives by the end of the semester. An X grade reverts to an R grade if not upgraded within a specified time period.

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V. ASSIGNMENT/PROJECT SPECIFIC INFORMATION

1. Assignments/Projects will be assigned to student "project teams", each consisting of two or three students.
2. It is the responsibility of the project team to clarify any system requirements with the instructor.
3. At various intervals, the instructor will require each project team to report on the progress made on their respective assignment/project. At that time, each team member will be required to complete a Peer Evaluation Form used to "grade" each team member's contribution to the project. A sample of the evaluation form is attached.
4. At the completion of a project, the respective project team will present and demonstrate the functionality of their system to the instructor.
5. The grade assigned to the overall assignment/project and to each team member will be determined using these sources:
 - a) Peer Evaluation Form
 - b) Presentation of project to instructor(s)

**** Note:** When a project is presented to the instructor, each team member will be required to demonstrate his/her assigned task(s). The project will receive an overall grade and each team member will receive an individual grade which may or may not be equivalent to the overall project grade or to the grades of other team members.

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VI. SPECIAL NOTES

1. In order to pass this course the student must obtain an overall **quiz** average of 60% or better, as well as, an overall **assignment** average of 60% or better. A student who is not present to write a particular quiz, and does not notify the instructor beforehand of their intended absence, may be subject to a zero grade on that quiz.
2. Assignments must be submitted by the due date according to the specifications of the instructor. Late assignments will normally be given a mark of zero. Late assignments will only be marked at the discretion of the instructor in cases where there were extenuating circumstances.
3. The instructor reserves the right to modify the assessment process to meet any changing needs of the class. Consultation with the class will be done prior to any changes.
4. The method of upgrading an incomplete grade is at the discretion of the instructor, and may consist of such things as make-up work, rewriting tests, and comprehensive examinations.
5. Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.
6. Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

VII. PRIOR LEARNING ASSESSMENT:

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

VIII. REQUIRED STUDENT RESOURCES

Texts: DATABASE PROCESSING: Fundamentals - Design - Implementation, 5th edition,
by David Kroenke
Prentice Hall Publishing

EXPLORING MICROSOFT ACCESS, Version 2.0,
by Robert Grauer and Maryann Barber
Prentice Hall Publishing

Peer Evaluation

Please rate each member of your group, INCLUDING yourself, on the items listed below using the following scale.

- 5 - Excellent
- 4 - Above Average
- 3 - Average
- 2 - Below Average
- 1 - Poor
- 0 - Non-participative

Item	Member 1 Name	Member 2 Name	Member 3 Name	Member 4 Name
Overall Attitude				
Attendance at Meetings				
Doing Required Work				
Doing Extra Work				
Helping Others With Work				
Problem Solving				
Knowledge Contribution				
Totals				

Comments: _____

You must also provide a list of specific tasks performed by yourself. These tasks include such things as database design/modelling, programming, writing user's guide, etc. Indicate your percentage contribution to each task. (ie. If you participated in the creation of a particular report, you may have felt that your contribution was 40% and other members contributed to the remaining 60%).

TASK

% CONTRIBUTION

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

COMMENTS:

YOUR NAME: _____