SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: **MICRO COMPUTER APPLICATIONS**

Course No.: **CET128**

Program: **COMPUTER ENGINEERING TECHNOLOGY**

Semester: **SECOND(2)**

Date: **JANUARY 1994**

Author: **PETER SAVICH**

Previous
Outline Dated: **JANUARY 1993**

Previous
Author: **FRANK TURCO**

APPROVED: _Ll Chaguith_   _94-01-29_
                    Dean   **Date**

APPROVED: _____   _____
                  Coordinator   Date

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C O U R S E   O U T L I N E

PREREQUISITES: NONE

However, the student is expected to have skills equivalent to the
CET 105 course learning outcomes concerning: the MS DOS ver 5.0
operating system, and Wordperfect ver 5.1 wordprocessing.

LENGTH OF COURSE: 4 HOURS PER WEEK comprised of:

                     1 hour per week theory (combined sections)
                     1 hour lab on one day & a
                     2 hour lab on another day

TOTAL CREDIT HOURS: 64

I.   PHILOSOPHY/GOALS

This course is intended to provide for the student, the
necessary skills related to **application software for the PC
environment** (at the introductory post-secondary level). This
course continues to discuss the similarities and differences
in typical PC application software packages initiated in the
CET 105 course.   Two particular applications software
packages: spreadsheet analysis, and database management will
be studied in-depth.   Sault College uses the licensed
application software packages: dBASEIV (for database
management) and LOTUS 123 (for spreadsheets) and the student
is expected to gain familiarity with these packages. With
respect to Dbase IV and LOTUS 123 several practical exercises
will be completed which apply these applications to a variety
of typical problems.

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The student will also be expected to do an independent study of an application software package not previously covered. The topic to be chosen, is at the student's discretion, but is subject to the Instructor's approval. The purposes of the independent study are: to build confidence, interest, and good literature searching techniques for the student, that are essential to maintaining currency in the computer related profession.

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II. PERFORMANCE OBJECTIVES

At the end of this course the student will be able to:

1. Describe the general concepts encompassing the following generic application software packages: wordprocessing, spreadsheets, and database management.

2. List and describe the variety of software application programs available for the IBM PC and Compatible computers.

3. List several spreadsheet application software packages and differentiate between them as to: price, availability, hardware requirements, and currency.

4. List several database management application software packages and differentiate between them as to: price, availability, hardware requirements, and currency.

5. Explain the relationship between DBASE IV and Structured Query Language (SQL).

6. Demonstrate proficiency in LOTUS 123.

7. Demonstrate proficiency in dBASE IV.

8. Demonstrate some proficiency in the application software he/she studied (independently).

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III.   TOPICS TO BE COVERED

    1.   Generic application software packages: wordprocessing,

        spreadsheets, and database management.

    2.   What are spreadsheets?

    3.   Typical applications of spreadsheets.

    4.   Common features and components of spreadsheets.

    5.   Specific details related to LOTUS 123.

    6.   Spreadsheet design and macro coding.

    7.   What is a database?

    8.   Typical applications of databases.

    9.   Common features and components of a database.

    10. Specific details related to dBASE IV.

    11. Programming with dBASE IV.

    12. SQL programming

    13. Independent study of application software presentations

        to classmates and professor.

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<u>IV.</u>   <u>**LEARNING ACTIVITIES / REQUIRED RESOURCES**</u>

LEARNING ACTIVITIES

<u>Module 1</u>   SPREADSHEET APPLICATIONS USING LOTUS 123

Module 1 Lotus 123 for DOS (release 2.3) textbook

In this module, spreadsheet applications will be investigated using LOTUS 123. Anticipated length of module is 4 to 5 weeks.

The students will be tested on or will apply the following learning outcomes and at the end of this module the student should be able to:

1.   Within the "ready" mode, enter data, perform worksheet navigation, enter labels, enter numbers and formulas, specify range, and enter functions.

2.   Use the "file" sub-menu to change the default directory, save a worksheet, and retrieve a worksheet file.

3.   Use the "system" sub-menu option to temporarily leave Lotus123 and create a directory.

4.   Use the "move" and "copy" sub-menu to move and copy data.

5.   Use the "edit" function key and alter a formula in a given cell.

6.   Differentiate between relative reference, and absolute reference.

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7.   Use the "worksheet" sub-menu to erase the current worksheet data, change row height, change column width, and insert/delete rows and columns.

8.   Use the "range" sub-menu to change data appearance: format values, align labels, and erase a range of data.

9.   Use the "graph" sub-menu to create a graph, change graph type, add X-axis labels, add a title, add a legend, add grid lines, add graph to worksheet, and re-size a graph.

10. Use the "print" sub-menu to print a worksheet, preview a worksheet, and change page setup.

11. Print graphs produced in "123" using Lotus123's "printgraph" sub-menu.

12. Print graphs produced originally using Lotus123 by importing the graphs into a wordperfect document, then printing the wordperfect document.

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Module 2   DBASE IV: DATABASE MANAGER

"Database Management Using dBASE IV and SQL" textbook by Robert
Grauer and Maryann Barber.

This module introduces students to dBASE IV as a representation of
single-user data base management system software. Anticipated
length of this module is: 3 weeks Part I; 3 weeks Part II; 3 weeks
Part III; and 2 weeks Part IV.

The student will be tested on or will apply the following learning
outcomes and at the end of this module the student should be able
to:

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Part I

Introduction to dBase
</div>

1. Discuss and contrast the following database management types:
    free form, flat file, and relational database and be able to
    identify which of the following features are supported by the
    database: sort & retrieve, search & report, and inter-relate.

2. Distinguish between the different versions of dBASE.

3. Differentiate between report generation and data entry;
    describe the primary data entry operations.

4. Load dBASE and arrive at the dot prompt.

5. Define the terms: field, record, file, file structure.

6. Create and/or modify a dBase file structure by using the
    CREATE, MODIFY STRUCTURE, and DISPLAY STRUCTURE commands.

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7. Add, modify, or delete records by using the APPEND, EDIT, BROWSE, DELETE, RECALL, and PACK commands.

8. List some or all records in a file through variations of the DISPLAY command.

9. Obtain summary information by using the SUM, COUNT, and AVERAGE commands.

10. Explain how to use the dBase on-line help facility.

11. Define the command buffer; use the arrow keys when entering commands in the dot prompt mode.

12. Describe the concept of indexing and how indexes are created in dBase.

13. Differentiate between master and open index.

14. Define and build a concatenated index.

15. Describe how to list records in ascending as well as descending sequence; also how to index on a calculated field.

Part II
The Control Center

16. Use the report generator to create and/or modify report forms; describe the use of pull-down menus within the report generator and the significance of the quick layout option.

17. Define the dBase record pointer; discuss how the SET ORDER and REPORT FORM commands alter its position within a DBF file.

18. Define a report band: list the different types of report bands and describe when and where they are generated.

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19. Differentiate between character, numeric, date, and logical fields as they are used within a file structure.

20. Define mail merge; describe several similarities associated with the procedure for creating mailing labels and form letters.

21. Describe the relational and logical operators that provide query and conditions for dBase.

22. Use the FIND and LOCATE commands to move individual records within a DBF file.

23. Use the SET FILTER TO command to establish a filter condition.

24. Create a dBase query file.

25. Discuss several considerations in the design of a file structure.

26. Use the dBase screen generator to create customized screens for data entry and file maintenance.

27. Describe in general terms the functions of various statements in the format file produced by the screen generator.

28. Name the six panels in the control center.

29. Use the application generator to create a quick application consisting of a sign-on banner, input screen, report form and label form.

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Part III

Command-Level Programming

30. Describe the requirements of a menu-driven program

31. Define structured programming and pseudocode and list the dBase statements use to implement the basic building blocks of structured programming.

32. Distinguish between dBase interactive and command modes.

33. List the three coding standards to follow when writing dBase programs.

34. Define debugging in dBase; distinguish between errors in compilation and errors in execution.

35. Discuss the need for proper documentation of programs; describe several elements used in program documentation.

36. State how a system may be tested before its programs are completed; describe what is meant by top-down testing.

37. List and elaborate on the three basic file maintenance operations: addition, modification, and deletion of existing records.

38. Perform file maintenance at the dot prompt and file maintenance through a program; describe the advantages and disadvantages of each method.

39. Differentiate between a program and a procedure; explain what is meant by a dBase procedure file.

40. Describe the general function of SET commands; list at least five set commands and the specific purpose of each.

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Part IV

Relational Databases: Implementation in dBASE IV and

Introduction to Structured Query Language (SQL)

41. List the characteristics of a relational database.

42. Define one-to-many relationship and define a many-to-many relationship and describe how they are implemented in relational databases.

43. Define relational integrity.

44. Explain the SELECT and SET RELATION commands and how they are used to implement relational concepts in dBase.

45. Describe the output of the DISPLAY STATUS command as it pertains to relational database.

46. Explain the relationship between SQL and dBase IV and how do you go back and forth between the two.

47. Describe the purpose of the following SQL commands: CREATE DATABASE, DBDEFINE, SHOW DATABASE, START DATABASE, STOP DATABASE, and DROP DATABASE.

48. Use the SQL SELECT command for multiple-file queries; define the concept of join operation.

49. Explain the SQL edit window and its use with interactive SQL commands.

50. Show how SQL tables can be maintained as DBF files through ordinary dBase commands: APPEND, EDIT, BROWSE, DELETE, and PACK; describe the purpose of the SQL commands DBCHECK and RUNSTATS.

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Module 3:INDIVIDUAL STUDY OF AN APPLICATION SOFTWARE PACKAGE NOT
PREVIOUSLY DISCUSSED

The final module provides the student, the opportunity to study a
particular software application package that he/she may be
interested in. The main objective of this module is to suggest
independent study, extra-curricular to the classroom (or
workplace), is a requirement of the student (or worker) in
computer technology. Two expected learning outcomes are: gaining
confidence and good study techniques, that will be most beneficial
in the workplace. Another learning outcome expected is that the
student appreciates that although he/she may not work specifically
with the tools presented in this course (in industry), the learning
strategies employed can be used to learn other software. The two
concepts of life-long learning and independent study to remain
current, is important particularly in the constantly changing
technologies of computers and telecommunications.

Specifically, for this module, the student will be required to:

1.   Perform a computer literature search of application
      software.

2.   Identify a package of interest to the student and
      possibly of interest to the student's classmates.

3.   Discuss and gain approval of topic from the Instructor.

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4. Prepare a formal report on his/her findings (8 to 12 pages).

5. Demonstrate software to class and list alternative or competing software packages available.

REQUIRED RESOURCES

Student will be expected to do individual research on topic with guidance from the Instructor.

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V.   Required Student Resources

1.   Previously purchased in 1st semester, Four Module
textbooks by Maran Graphics:

Computers Simplified

WordPerfect Version 5.1 for DOS

Lotus Release 2.3 for DOS

MS-DOS 5.0 Simplified User Guide for Microsoft

Authored by: Richard and Ruth Maran

Published by: Prentice Hall Canada

2.   "Database Management Using dBASE IV and SQL" by Robert
Grauer and Maryann Barber, Publishers: McGraw-Hill. ISBN
0-07-832719-9

3.   At least five (5) 3.5" high density floppy disks.
Students may wish to also purchase "double density"
5 and 1/4" disks for labs in room A2020. Unless a student
has a "high density" disk drive at home, he/she should
not buy the "high density" 5 and 1/4" disks. **Using a
"high density disk" in the "low density drives" is not
reliable.**

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VI.   SPECIAL NOTES

1.   Students with special needs are encouraged to discuss required accommodations confidentially with the instructor.

2.   Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

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VII. ASSESSMENT

VII. Method(s) of Evaluation

1.   Tests

The student will be assessed through a series of three (3) written tests. Assignments must be completed and demonstrated and mark recorded before these tests will be given. Thus, individual students will be completing tests before other students depending upon mastery of the learning outcome, or time constraints. Students, are encouraged to offer "peer tutoring" to each other within the class, with significantly advanced skills students helping others less advanced in the class. Some limitations may be imposed during a testing session but the peer tutor is encouraged to be a participant when his/her students actually perform the "hands-on" test. All test questions are individualized and are of the same complexity, with the marking scheme and objectives being tested given out before initiating the test.

Each test will be weighted to 20% of the final mark. In all tests the testing concept is open book, using a computer, perform some tasks previously demonstrated in the assignment(s). All tests are designed to be completed in less than 1 hour.

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The concept of **"mastery learning"** has been incorporated into the evaluation system of this course. This implies that the student may contract for an A+, or A final grade. Thus, failing one particular test, means re-doing the test again, the questions altered, but testing or measuring the same learning outcomes. The test will be re-given when the student is ready. A formal "peer tutoring" situation may constitute being more "ready" for a test. In the recent past, students because of high demands on lab time and teacher availability, have learned more from "peer tutoring" than in the past.

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The entire class should have completed tests by certain milestone
dates. The tentative dates for completion of the preceding
assignments and tests are for the lab periods during the week of:

Test	Tentative Date	Concepts
1	Feb 14 - 18/94	Spreadsheets in general and Lotus123 & Wordperfect 5.1
2	March 21 - 25/94	Databases & dBASE IV
3	April 18 - 22/94	dBASE IV and SQL

Re-writes of tests

A re-write for a failing student is possible only if certain
conditions are met. The student must have a formal peer tutoring
arrangement made and verified. If the peer tutor is a classmate
then a 100% performance during the re-write will translate into a
further bonus of 2% for the peer tutor.

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2.   Quizzes

The student will be assessed through a series of unannounced quizzes. The total weight of these quizzes are not to exceed 10% of the final mark. The student should expect an "easy" 2 minute, one or two word answer quiz every lecture. The only way to get permission to write a missed quiz is to agree to attend an extra hour outside of class to make up for the missed hour. In the past, students volunteered to attend another section's lab time and provide peer tutoring.

3.   Assignments

The student will be assessed through a series of lab assignments. Collectively these assignments will be weighted to 25% of the final mark.

4.   Seminar

The student presentation to the class in the last week will be worth 5% of the final mark.

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5.   Attendance

The student attending 15 out of the 16 lectures and labs offered,
will receive a 2% bonus for excellent attendance.

Summary of Final Mark

*	1.	Tests	60%
	2.	Quizzes	10%
	3.	Assignments	25%
**	4.	Seminar	5%

                                100%

        4.   Attendance   2% bonus only

Some minor modifications to the above percentages may be necessary.

* -   All required assignments must be completed satisfactorily
          to take a particular test in this course. Late hand in
          penalties may be 5% per day. Assignments may not be
          accepted past one month late unless there are extenuating
          and legitimate circumstances.

** -   Seminar must be completed, presented and submitted to
          pass the course.

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TENTATIVE SCHEDULE:

The following is provided as a reasonable guide to the time spent on each of the major areas in this course.

DBASEIV	48 HOURS
LOTUS	16 HOURS
	_____
	64 HOURS
SEMINAR	10 HOURS (external to class)

Course Grading Scheme

A+	90+	outstanding achievement
A	80 - 89	above average achievement
B	70 - 79	average achievement
C	55 - 69	satisfactory achievement
U		unsatisfactory given at midterm only
S		satisfactory given at midterm only
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 have the Dean's approval and has a maximum time limit of 120 days.

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VIII.   Additional Resource Materials (available in college
          bookstore, Audiovisual Center, and/or library)

There are many other books on Lotus 1-2-3, dBASE IV and SQL
programming.

1.   Sault College Software Support:

            Lotus notes
            dBASE notes

2.   Sault College bookstore sells the popular series:

            MS DOS For Dummies
            Wordperfect For Dummies
            Lotus 123 For Dummies
            dBASE for Dummies

3.   Video Tapes:
            Six Part TVO Series: Bits and Bytes
            Spreadsheets
            Advanced Spreadsheet and Programming
            Word Processing 1
            Word Processing 2
            Word Processing 3
            Computer Applications/Software Introduction
            Applications
            Electronic Publishing

Periodicals: PC Mag, Byte Mag, Computing Canada
                Computers in Education
                Computers in Nursing

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   3.   Video Tapes:
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                      Spreadsheets
                      Advanced Spreadsheet and Programming
                      Word Processing 1
                      Word Processing 2
                      Word Processing 3
                      Computer Applications/Software Introduction
                      Applications
                      Electronic Publishing

        Periodicals: PC Mag, Byte Mag, Computing Canada
                       Computers in Education
                       Computers in Nursing