SAULT COLLEGE OF APPLIED ARTS A TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: MATHEMATICS

Code No.: MTH 413

Program: COMPUTER SCIENCE, ELECTRICAL, ELECTRONICS & MECHANICAL TECHNOLOGY

Semester: J[

Date: JUNE, 1984

Author: K.G. CLARKE

New: Revision

APPROVED:

Chairperson Date

CALEMDAR DESCRIPTION

MATHEMATICS	MTH 413
Course Name	Course Number

PHILOSOPHY/GOALS:

When the student has successfully completed this course he will have demonstrated an acceptable ability to pass tests based upon the course contents as listed elsewhere. If, after completing the course, the student takes further courses (or employment) In which he is required to apply this material he should then, through practice, be able to develop a good command of this subject matter.

METHOD OF ASSESSMENT (GRADING METHOD);

The students will be assessed by tests. These tests will include periodic tests based upon blocks of subject matter and may, at the instructor's discretion include unannounced surprise tests on current work and/or a final test on the whole course. A letter grade will be based upon a student's weighted average of his test results. See also the mathematics department's annual publication "To the Mathematics Student" which is presented to the students early in each academic year.

TEXTBOOK(S):

Washington - "Basic Technical Mathematics with Calculus"

OBJECTIVES:

The basic objective Is for the student to develop an understanding of the methods studied, knowledge of the facts presented and an ability to use these in the solution of problems. For this purpose exercises are assigned. Tests will reflect the sort of work contained in the assignments. The level of competency demanded Is the level required to obtain an overall passing average on the tests. The material to be covered is listed on the following pages.

NOTE:

MTH 413 will include the topic "COMPLEX NUMBERS" which is needed in all programs except mechanical. A mechanical student with the ability to handle a technology program should have no trouble with this topic and it will provide good practice in right triangle trig and in algebra. Students who decide to take a technician program after starting out in technology mathematics may transfer to first semester technician math any time before September 16.

ENTRY TO COURSE:

Grade 12 math is a prerequisite and advanced math is strongly recommended. Students with only a general math background ma^ have difficulty with this course, especially so if their marks were not high. Our mathematics pretest will be written by all incoming students. Results will be made available to major subject instructors who will counsel the students with regard to choice of math courses. Students planning to take a technology program should take MTH 413. Those planning to take a technician program may take either MTH 413 or MTH 120.

ENTRY TO SUBSEQUENT COURSE (SEMESTER II):

Any student who has a "C" grade or better in MTH 413 (or a credit) is eligible for admission to either technology or technician math in semester two.

If certain conditions are met a student with an "R" grade in MTH 413 may be granted a "C" grade in MTH 120 and entry to second semester technician mathematics. The conditions are:

1. 50% to 54% in MTH 413;
2. Good attendance in MTH 413 (80% or better);
3. All tests in MTH 413 have been written.

Occasionally a student who does not have clear entry to MTH 220 is given special permission to take MTH 120 and MTH 220, both at the same time. Such permission is given only on the basis of analysis of the student's overall performance. The student will usually be a conscientous, hard working, regular attending student who has trouble in only the one subject. Hence he may be able to afford the time to take an extra subject in semester two. Passing the two math courses will put the student back in step with his original class. If a student meets the following conditions he should be considered for such special permission:

1. 40% or better in MTH 413;
2. Good overall attendance (80% or better);

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ENTRY OF SUBSEQUENT COURSES (SEMESTER II) - Continued

3. All MTH 413 tests written;
4- All other first semester subjects clear;
5. The chairman and/or instructors in the student's major subject area support the proposal-

A student who desires such permission should approach his program chairman. In consultation with the MTH 413 and MTH 220 instructors, the chairman may grant permission.

Whenever MTH 120 and MTH 220 are taken in parallel, MTH 120 is regarded as a co-requisite. Hence, if MTH 120 is failed, both courses will have to be repeated. It is the responsibility of the student to arrange to have his MTH 220 instructor officially informed of his grade in MTH 120. If in doubt the MTH 220 instructor should submit an "X" grade pending the results of MTH 120.

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Topic No.	No. of Classes	Topic Description	Assignments	References
1	6	Scientific Notation, Estimation and Dimensional Analysis - exact and approximate numbers - scientific notation and estimation of answers - practical problems - dimensional problems - conversion of units and the (SI) metric system	Text Exercises Bl. B2, B3, C4. 1-5	Text App. B, C, 1-5
2	16	Review of Basic Algebra - review of fundamentals - special products and factoring - operations with fractions - linear equations in one unknown - problems based on linear equations - exponents and radicals	Text Exercises 1-1 to 1-4, 1-6 to 1-12, 5-1 to 5-8, 10-1 to -7	Text Ch. 1 5, 10
	8	Review of Basic Trigonometry - angles and systems of measurement - functions of 30, 45, 60 - use of the calculator " solution of right triangles	Text Exercises 3-1 to 3-6	Text Ch. 3
	9	Introduction to Complex Numbers - real and imaginary numbers - operations with complex numbers - geometric representation of complex numbers - trigonometric, polar and exponential numbers - powers and roots of complex numbers - demoivre's theorem	Text Exercises 11-1 to 11-8	Text Ch. 4
		Systems of Linear Equations - solving systems of two equations in two unknowns a) graphically b) algebraically c) by determinants - solving systems of three equations in three unknowns a) algebraically b) by determinants	Text Exercises 4-1 to 4-7	Text Ch. 4