

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: MATHEMATICS

Code No.: MTH 413-4

Program: ELECTRICAL, ELECTRONICS & MECHANICAL TECHNOLOGY

Semester:

Date: JUNE, 1986

Author: J. REAL

New:

Revision:

APPROVED



Date: June •?//^

CALENDAR DESCRIPTION

MATHEMATICS

MTH 413-4

COURSE NAME

COURSE NUMBER

PHILOSOPHY/GOALS;

It has been found that most students registered in this advanced level, pre-calculus course, still need additional practice with some basic algebra and trigonometry, before they can successfully complete the calculus courses in semesters three to six. Although most of the topics, with the possible exception of complex numbers, should look familiar to the students, the presentation and expectations will probably be more demanding.

METHOD OF ASSESSMENT (GRADING METHOD);

The students will be assessed by written tests only - four or five pre-scheduled, period long tests. A letter grade will be based on a student's weighted average of the test results. See accompanying Mathematics department grading system for the range of marks for each letter grade.

TEXTBOOK(S)

Calter - "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 page(s):

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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 may 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 conscientious, 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)

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
	5	Numerical Computation - Exact and approximate numbers. Units of measurement. Dimensional analysis. Scientific notation. Percentage calculations.	Ex. 1-8, 10,11	Ch. 1
	6	Review of Basic Algebra Addition, subtraction, multiplication, and division of algebraic expressions. Exponents. Simple equations and word problems (don't cover extensively) Literal equations and formulas.	Ex. 1-4 Ex. 1-6	Ch. 3 Ch. 4
18		More Basic Algebra- Factors and factoring. Literal equations and formulas. Fractions and fractional eqns. Systems of linear equations. Determinants. Radicals and radical equations -	Ex. 1-7 Ex- 1-5 Ex. 1-3,5 Ex. 1-3	Ch. 7 Ch. 8 Ch. 9 Ch. 10
	7	Review of Basic Trigonometry Angular measurement. Trigonometric functions. Solution of right triangles.	Ex. 1-3	Ch. 6

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TOPIC NO.	NO. OF CLASSES	TOPIC DESCRIPTION	ASSIGNMENTS	REFERENCES
		Complex Numbers-	Ex. 1-3,5	Ch. 18
		Real and imaginary numbers. Operations with complex numbers in rectangular form. Graphing complex numbers. Trigonometric and polar form. DeMoivre's theorem. Exponential form (optional).	Ex. 4	