SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title	MATHEMATICS
Code No.:	MTH 220-4
program:	ELECTRICAL AND ELECTRONIC TECHNICIANS
Semester	II (3 HOURS PER WEEK)
Date:	JUNE, 1985
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New: ReVision

APPROVED: Ch^ir^erson Date c^t-^y'Sy^^^'^

CALENDAR DESCRIPTIOK

MATHEMATICS	MTH 220-4
COURSE NAME	COURSE NUMBER

PHILOSOPHY/GOALS:

Exponents, radicals, logarithmic relationships, solution of quadratic and radical equations, ratio and proportion, analytical trigonometry, trigonome of the oblique triangle, radian measure, trigonometric identities and equations•

METHOD OP ASSESSMENT (GRADING METHOD):

The students will be assess by tests. These tests will include periodic te 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 t whole course. A letter grade will be based upon a student's weighted avera of his test results. See also the mathematics department* s annual publieat "To the Mathematics Student" which is presented to students early in each academic year.

TEXTBOOK(S):

Calter: Technical Mathematics with Calculus

NOTE:

The electrical course will differ from the parallel mechanical course by th inclusion of the topic "Complex Numbers". The two courses are out of step throughout the semester,

ENTRY TO COURSES:

Entry to MTH 220 can be earned by passing one of the first semester math courses, either MTH 413 or MTH 120.

In special circumstances a student who has failed one of these courses and is otherwise a very good student, may be permitted to take MTH 120 and MTH in the same semester. For details see the course outline for the first semester math course taken by the student under consideration (MTH 413 or M 120).

ENTRY TO SUBSEQUENT COURSES:

Satisfactory completion of MTH 220 is required for admission to third semes technician math courses.

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NOTES:

The course outline covers the second semester mathematics for technicians ii
the Electronic and Electrical Technician programs.

For demonstrating solutions to Quadratic Equations, the filmstrips No•'s 11!
and 1169 respectively. When possible, subject-related problems should be g;
for application.

TOPIC OBJECTIVES:

Complex Numbers:
The student will be required to:
a) Express a complex number is rectangular, polar or trigonometric form
b) Convert from any form to any other form.
c) Perform arithmetic and algebraic operations with complex numbers including multiplication, division, addition, subtraction, use of brackets, powers and roots.

Radicals:
The student will be required to:
a) Simplify algebraic expressions involving powers and radicals.

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TOPICAL OBJECTIVES - Continued

3. Quadratic Equations:
The student will be required to:
a) Recognize and solve quadratic equations by quadratic formula,

b) Be able to use the discriminant to identify the kind of roots a quadratic equation has without solving the equation.

c) Be able to solve radical equations including the rejection of extraneous roots.

4. Variation:
The student will be required to:
a) Be able to solve problems using a constant of proportionality.

^' A^glQs and Oblique Triangles:
The student will be required toi
a) Be able to find any trigonometric function of any angle,
b) Be able to find the angles corresponding to any given function value
c) Be able to use radian angle measure in solving problems,
d) Be able to solve problems involving oblique triangles by use of the sine and cosine laws.

6. Graphs of Trigonometric Functions:
The student will be required to:
a) Understand and use the concepts of amplitude, period, frequency and phase angle .

b) Plot curves of trigonometric and inverse trigonometric functions.

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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 the in the solution of problems. For this purpose exercises are assigned, Tes 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 in the tests. The material to be covered is listed below:

TOPIC NO,	PERIODS	TOPIC DESCRIPTION	ASSIGNMENTS	REFERE
1	9	COMPLEX NUMBERS - Complex Numbers - Operations with Complex Numbers in Rectangular Form - Graphing Complex Numbers - Trigonometric and polar Forms of Complex Number - Vectors - Alternating-Current Calculations	TEXT, EX 18-1, 2r 3, 5, 6 (part)	TEXT, CH 18 omitt Section
		RADICALS - Simplification of Radicals - Operations with Radicals - Radical Equations	TEXT, EX, 10-1,2,3	TEXT CHAPTER
		QUADRATIC EQUATIONS - Solution by Formula - Fractional and radical equations	TEXT, EX 11-5	TEXT CHAPTER Section only
		VARIATION - Direct Variation - The Power Function - Inverse Variation - Functions of More than One Variable	TEXT, EX 16 1 to 16-4	TEXT CHAPTER

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11	ANGLES AND OBLIQUE TRIANGLES - Trigonometric Functions of any Angle - Radian Measure and Arc Length - Uniform Circular Motion - Law of Sines - Law of Cosines - Applications - Addition of Vectors	TEXT, EX 12-1 TO 12-3, EX 13-1 TO 13-4	TEXT CHAPTERS 12 & 13
8	GRAPHS OF TRIGONOMETRIC FUNCTIONS - The Sine Curve - Cosine and Tangent Curves - Polar Co-ordinates - Two Applications of the sine or Cosine Waves	TEXT, EX 14-1 TO 14-4	TEXT CHAPTER