SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title   MATHEMATICS

Code No.:   MTH 554-4

Program: MECHANCIAL TECHNOLOGY

Semester: III

Date: SEPTEMBER, 1986

Author: W, MACQUARRIE

                                    New: Revision:

APPROVED: _____   _____
            Cl^irg^r^pfVV^   Date

CALENDAR DESCRIPTION

MATHEMATICS   MTH 554-4

COURSE NAME   COURSE NUMBER

PHILOSOPHY/GOALS:

In this course, the student is introduced to the subject of Calculus and w
cover functions, limits, derivatives, how to find and use derivatives in a
variety of engineering problems (maxima/minima, related rates, etc.) and a
an introduction to indefinite and definite integrals, how to work with the
use them to solve a variety of engineering problems (ares under/between,
curves, volumes of solids of revolution, and motion problems).

METHOD OF ASSESSMENT (GRADING METHOD);

1. Three to four tests per semester.

2. Several short (possibly unannounced) quizzes per semester.

3. Final grade is a weighted average of the above.

4. See also the Mathematics Department's annual publication, To the
    Mathematics Student for further details, numerical percent equiv-
    alents for letter grades, etc.

5. Depending on individual circumstances, a failing grade at the end
    of a semester may be upgraded by writing a two-hour comprehensive
    examination.

TEXTBOOK(S):

Calter, P., Technical Mathematics with Calculus.

MTH544-4,..MECHANICAL.

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TOPIC
NUMBER     PERIODS      TOPIC DESCRIPTION


             7          Introduction to Differential Calculus
                        Functional notation
                        Limiting value of a function
                        Differentiation-delta method

                        Practical applications- rectiline motion

            12          Differentiation by Rule
                        Differentiation formulas

                        Composite function and the chain rule
                        Implicit differentiation
                        Electrical applications
                        Successive differentiation

            10          Practical Application of Differentiation
                        Gradients
                        Tangents to curves
                        Maxima and minima
                        (Aviation should finish the semester here)
                        Related rate problems

             5          Differential and Integral
                        (For Mechanical, give more application time)
                        Differential formulas
                        Applications of differential
                        Integration as anti-differentiation
                        Applications of indefinite integration

             9          Definite Integration
                        Areas under a curve

                        Fundamental theorem of integral calculus
                        Computations with definite integrals
                        Application to areas, volume, motion
                           electrical problems
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