SAULT æLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE. ONTARIO

CQUESEQUILIME

COURSE TITLE: MATHEMATICS

CODE NO.: MTH 143-5   **SEMESTER:** II

PROGRAM: MECHANICAL/ELECTRICAL/ELECTRONICS/COMPUTER/ ARCHITECTURAL/CIVIL TECHNICIAN

AUTHOR: J. MCGAULEY

DATE: JAN 1996   SEPT. 1994
_____**PREVIOUS OUTLINE DATED:**_____

APPROVED:

       DEAN   DATE

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COURSE NAME   **COURSE NUMBER**

TOTAL CREDIT HOURS: 64

PREREQUISITEOS): MTH 142

SUBSTITUTEXS): MTH 220, MTH 221, MTH 426, MTH **251,** MTH 612

I. PHILOSOPHY/GOALS:

This course is a continuation of MTH142-5(from Sem. 1) for engineering technology students. Topics of study include plane analytic geometry, geometry, complex numbers, and functions including trigonometric, exponential and loganthmic functions. This course also includes an introduction to statistics.

The goals of this course are, first to show that mathematics does play a most important role in the development and understanding of the various fields of technology and, secondly to ensure that students acquire the mathematical and critical thinking skills necessary to analyze and solve engineering technology problems.

IL TERMINAL PERFORMANCE OBJECTIVES:

After studying each of the foUowing topics the student should be able to:

Topicl: Units of Measurement and Approximate Numbers

1.   Convert units of measurement from one system to another.
2.   Perform basic arithmetic operations on approximate numbers.

Topic 2: Geometry

1.   Solve practical problems to find the sides and angles of right triangles.
2.   Solve practical problems to find the area of a triangle or quadrilateral.
3.   Solve problems involving the circumference, diameter, area or tangent to a circle.
4.   Compute surface areas and volumes of spheres, cyUnders, cones, and other solid figures.

Topic 3: Plane Analytic Geometry

1.   Write the equation of a line using the slope-intercept form, the point-slope form or the two-point form.
2.   Write the equation of a circle, ellipse, or parabola from given information.
3.   Make a graph of any of the above conic sections.

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IL TERMINAL PERFORMANCE OBJECXrVES: (continued)

Topic9: Exponential and Logarithmic Functions

1.   Define the logarithnuc and exponential function.
2.   Graph logarithmic and exponential functions.
3.   Convert expressions between exponential and logarithmic form.
4.   Evaluate, manipulate, and simplify logarithnuc expressions.
5.   Solve exponential and logarithmic equations.

TopiclO: Statistics

1.   Organize data into frequency distributions, frequency histograms, or frequency polygons.
2.   Calculate the mean, median and mode.
3.   Calculate the range and standard deviation.

IIL TOPICS TO BE COVEREEh   **Approximate Time Frames**
                                               (no. hours)

(1)   Units of Measurement and Approximate Numbers   5
(2)   Geometry   9
(3)   Plane Analytic Geometry   U
(4)   Trigonometric Functions of any Angle   3
(5)   Vectors and Obiique Triangles   7
(6)   Complex Numbers   9
(7)   Graphs of Trigonometric Functions   5
(8)   Additional Topics in Trigonometry   8
(9)   Exponential and Logarithmic Functions   11
(10) Statistics   5

IV. LEARNING ACTIVITIES: **REQUIRED RESOURCES:**

Ul   Units of Measurement and
       Approximate Numbers

1.1   The metric system (SI)   Question 1-40. p.A-9
                                               Appendix B

1.2   Calculators and Approximate numbers   Questions 1-52, p.l5

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IV.   LEARNING ACTIVITIES: (continued)

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V. EVALUATION METHODS:

a.   Four - f ive tests per semester. Test questions will be of near equal dif f iculty to questions assigned in the exercises.

b.   Final grade is a weighted average of these tests.

> 90-100   A+
> 80- 89   A
> *65*   79 = B
> 55   64 = C
> 0 - 54 - R (or x)

<u>A credit for this course</u> may be allowed upon presentation of proof of standing in the appropriate grade D mathematics courses (MAGOA and MCAOA).

All tests are scheduled in advance. Hence, attendance is mandatory. Unexcused absence from a test will result in a mark of zero for that test. If a student is prevented from writing a test by iUness, the instructor should be notified before the time of the test. Upon retum to class, the student should see the instructor immediately to arrange a time for a make-up test. The student should have a note from the college nurse or a doctor.

VI. REQUIRED STUDENT RESOURCES:

1,   Text:
       Washington. Basic Technical Mathematics with Calculus
       Sixth edition, metric version. Benjamin/Cummings Pub. Co. 1995

2.   Calculator: (Recommended) SHARP Scientific calculator EL-531G. The use of some kinds of calculators may be restricted during tests.

VIL SPECIAL NOTES:

Students with special needs (e.g. physical limitations, visual impairments. hearing impairments, learning disabibties) are encouraged to discuss required accommodations confidentiaUy with the instructor.

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