SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: Mathematics

CODE NO: MTH 120-4   **SEMESTER:** 4 Hours/Week

PROGRAM: Environmental Eng./Pulp and Paper/Water Resources

AUTHOR: Mathematics Department

DATE: June 1997   **PREVIOUS OUTLINE DATED:** June 1996

APPROVED: *<Z7/2<7^   ffc^A^*
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TOTAL CREDITS:

PREREQUISITES: None

SUBSTITUTE(S): MTH 119, **MTH** 142

LENGTH OF COURSE: **TOTAL CREDIT HOURS: 68**

I. COURSE DESCRIPTION:

This course consists of an introduction to technical calculations, and a review of plane geometry, basic trigonometry and mensuration, that will give the successful student an ability to work with plane and/or solid shapes and right triangle trigonometry. An ability to calculate distances, areas and volumes of standard shapes and basic algebraic formulae is the primary goal. The course concludes with a review of secondary school algebra.

II. STUDENT PERFORMANCE OBJECTIVES:

The basic objectives are that the student develop an understanding of the methods studied, demonstrate a knowledge of the facts presented and show an ability to use these in the solution of problems. To accomplish these objectives, exercises are assigned. The material to be covered is listed below.

III. TOPICS TO BE COVERED: **Approximate Time Frame**

1. Principles of geometry, Pythagorean theorem,   6 hours
    vocabulary and simple formulae of various
    shapes.

2. Basic trigonometry, including angles, trig.   7 hours
    functions, right triangles, use of calculator and
    applied problems.

3. Mensuration of basic standard shapes   16 hours
    (distance, areas and volumes) using their
    straight forward standard formulae.

4. Algebra review, fundamental operations,   26 hours
    vocabulary, exponents, radicals, add,
    subtract, multiply and divide expressions,
    simple equations and applications, special
    products, factoring, L.C.D., operations on
    algebraic fractions, fractional equations and
    formula manipulation.

5. Mensuration as above where formula   8 hours
    rearranging is required.

IV. LEARNING ACTIVITIES:

TOPIC NUMBER	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
1	GEOMETRY PRINCIPLES Pythagorean Theorem Vocabulary of Geometry Simple basic shapes and related formulae	Chapter 2 Exercise 2.1 pages 51-52 Exercise 2.2 pages 57-58
2	BASIC TRIGONOMETRY Angles Trig, functions defined Right triangles Applications Review	Chapter 4 Exercise 4.1 Odds page 107 Exercise 4.2 Some odds, page 111 Exercise 4.3 Odds page 115 Exercise 4.4 Odds page 119 Exercise 4.5 Odds page 122 Review Exercise 4.6 Odds page 124
3	MENSURATION OF BASIC STANDARD SHAPES Distances Areas Volumes Using straight forward standard formulae	Chapter 2 Exercise 2.3 pages 61 Exercise 2.4 pages 64 Exercise 2.6 pages 70 Review Exercise pages 72-74 Handout sheets by instructors

IV. LEARNING ACTIVITIES (Continued):

TOPIC NUMBER	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
4	ALGEBRA REVIEW	Chapter 1 and 6
	Numbers, Literal Symbols, Laws of Algebra, Zero	Exercise 1.1, 1.2 Odds Exercise 1.4 Odds page 21 and pages 5 & 10
	Exponents Scientific Notation, Roots and Radicals Add/Subtract Algebraic Expression	Exercise 1.6 Odds page 26 Exercise 1.5 Odds page 23 Exercise 1.7 Odds page 30
	Multiply Algebraic Expressions Divide Algebraic Expressions Simple Equations Literal Equations and Formulae Applied Verbal Problems/Review	Exercise 1.8 Odds page 32 Exercise 1.9 Odds page 34 Exercise 1.10 Odds page 38 Exercise 1.11 Odds page 41 Exercise 1.12 Odds page 44 Review Exercise Odds page 46 as required
	Special Products Factoring: - Common Factor/Difference of Squares - Trinomials Equivalent Fractions Multiply/Divide Fractions Add/Subtract Fractions Equations with Fractions Review Handout Sheet of Various Formulae	 Exercise 6.1 Odds page 167 Exercise 6.2, 6.3 pages 171 and 176 Exercise 6.5 Odds page 181 Exercise 6.6 Odds page 184 Exercise 6.7 Odds page 189 Exercise 6.8 Odds page 194
5	MENSURATION OF DISTANCES, AREAS, VOLUMES where formula arrangement is required	Instructor Handout and Text

V.   REQUIRED RESOURCES / TEXTS / MATERIALS:

1.   Text: Washington - "Basic Technical Mathematics With Calculus", Sixth Edition, Metric Ed., Benjamin Cummings.

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

VI. EVALUATION PROCESS/GRADING SYSTEM:

MAJOR ASSIGNMENTS AND TESTS

While regular tests will normally be scheduled and announced beforehand, there may be an unannounced test on current work at any time. Such tests, at the discretion of the instructor, may be used for up to 30% of the overall mark.

At the discretion of the instructor, there may be a mid-term exam and there may be a final exam, each of which can contribute up to 30% of the overall mark.

The instructor will provide you with a list of test dates. Tests may be scheduled out of regular class time.

ATTENDANCE

It is your responsibility to attend all classes during the semester. Research indicates there is a high correlation between attendance and student success.

If you are absent from class, it is your responsibility to find out from your instructor what work was covered and assigned and to complete this work before the next class. Your absence indicates your acceptance of this responsibility.

Unexcused absence from a **test may result in** a **mark of zero ("0").** Absence may be excused on compassionate grounds such as verified illness or bereavement. On return from an excused absence, you should ask your instructor to schedule the writing of a make-up test. Failure to do so will be considered as an unexcused absence.

VI. EVALUATION PROCESS/GRADING SYSTEM (Continued):

METHOD OF ASSESSMENT (GRADING METHOD)

A+	Consistently outstanding	(90% -100%)
A	Outstanding Achievement	(80% - 89%)
B	Consistently above average achievement	(70% - 79%)
C	Satisfactory or acceptable achievement in all areas subject to assessment	(55% - 69%)
X or R	A temporary grade, limited to situations with extenuating circumstances, giving a student additional time to complete course requirements **(See below)**	(45% - 54%)
R	Repeat - The student has not achieved the objectives of the course, and the course must be repeated	(0% - 44%)
CR	Credit exemption	

The method of calculating your weighted average will be defined by your instructor. Since grades are based upon averages, it follows that good marks in some tests can compensate for a failing mark in another test.

Make-Up Test (if applicable)
An "X" grade may be assigned at the end of the regular semester if you have met _ALL_ of the following criteria.

- an overall average between 45% and 54% was achieved
- at least 50% of the tests were passed
- at least 80% of the scheduled classes were attended
- all of the topic tests were written

If you are assigned an "X" grade, you may convert it to a "C" grade by writing a make-up test on topics agreed to by the instructor. This test will be available at the time agreed to by your instructor.

At the end of the regular term, it is your responsibility to obtain your results from your instructor and, in the event of an "X" grade, to inquire when the make-up test will be available.

The score you receive on this make-up test will replace your original test score and be used to re-calculate your weighted average. If the re-calculated average is 55% or greater, a "C" grade will be assigned. If the re-calculated average is 54% or less, an "R" grade will be assigned.

VI. EVALUATION PROCESS/GRADING SYSTEM (Continued):

"R" and "X" Grades at the end of the Semester
If an "X" grade is not cleared by the specified date, it will become an "R" grade. Except for extenuating circumstances, an "X" grade in Math will not be carried into the next semester.

"R" Grades during the Semester
A student with a failing grade and poor attendance (less than 80% attendance) may be given an "R" at any time during the semester.

VII. SPECIAL NOTES:

Special Needs
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717, 491 so that support services can be arranged for you.

Advanced Standing
Students who have completed an equivalent post-secondary course must bring relevant documents to the Coordinator, Mathematics Department.

Retention of Course Outlines
It is the responsibility of the student to retain all course outlines for possible future use in gaining advanced standing at other post-secondary institutions.

Substitute course information is available at the Registrar's office.

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

VIII. PRIOR LEARNING ASSESSMENT:

There is a MTH 120 Challenge exam in place.

Students who wish to apply for advanced credit in the course should consult the instructor or the Prior Learning Assessment Office (E2203).