SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE GiiLWE

COURSE TITLE: MATHEMATICS

CODE NO.: MTH120-4 **SEMESTER:** I 4 HRS/WK

PROGRAMS: ENVIRONMENTAL ENG./PULP & PAPER/WATER RESOURCES

AUTHOR: W. MACQUARRIE

DATE: JULY 1994 **PREVIOUS OUTLINE DATED:** JULY 1993

APPROVED:

DEAN   DATE

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

MATHEMATICS   **MTH 120-4**

Course Name   Course Number

TOTAL CREDIT HOURS: 68

PREREQUISITE: None

SUBSTITUTE: MTH 119, MTH 142

I. PHILOSOPHYAGOALS

An introduction to technical calculations, including a review of geometry, basic trigonometry an mensuration, giving the successful student an ability to deal with plane and solid shapes, right triangle trigonometry, including an ability to calculate distances, areas and volumes of standard shapes, including basic formula rearrangement. 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. Test questions will be of near equal difficulty to questions assigned in the exercises. 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 below and on the following page:

III. TOPICS TO BE COVERED: TIME FRAME:

(1)   Principles of geometry, Pythagorean
         theorem, vocabulary and simple
         formulae of various shapes.   6 hrs.

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

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

MATHEMATICS

Course Name

MTH 120-4

Course Number

III. TOPICS TO BE COVERED: (Cont'd)

TIME FRAME:

(4) Algebra review, fundamental operations, 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

26 hrs.

(5) Mensuration as above where formula rearranging is required

8 hrs.

IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:
(REFERENCES)

TOPIC NO.	NO. OF PERIODS	TOPIC DESCRIPTION	REFERENCES
1.	6	GEOMETRY PRINCIPLES .Pythagorean Theorem .Vocabulary of Geometry .Simple basic shapes & related formulae	Appendix "C", Pg. A-18 - A-22
2.	7	BASIC TRIGONOMETRY .Angles .Trig. Functions Defined .Right Triangles .Applications .Review	Chapter 3 Ex. 3.1 Odds Ex. 3.2 Some Odds Ex. 3.3 Odds Ex. 3.4 Odds Ex. 3.5 Odds Ex. 3.6 Odds
3.	16	MENSURATION OF BASIC STANDARD SHAPES .Distances .Areas .Volumes Using straight forward standard formulae	Appendix "C", Pg. A-22 to A-25 Handout sheets by instructor

MATHEMATICS   MTH 120-4

Course Name   Course Number

IV. LEARNING ACTIVITIES: REQUIRED RESOURCES:
                                          (REFERENCES)

TOPIC NO.	NO. OF PERIODS	TOPIC DESCRIPTION	REFERENCES
	26	ALGEBRA REVIEW	Ch. 1 and Ch. 5
		.Numbers, Literal Symbols, Laws of Algebra, Zero	Ex. 1.1, 1.2, 1.3 - odds
		.Exponents	Ex. 1.5 Odds
		.Scientific Notation, Roots & Radicals	Ex. 1.6, 1.7 Odds
		.Add/Subtract Algebraic Expressions	Ex. 1.8 Odds
		.Multiply Algebraic Expressions	
		.Divide Algebraic Expressions	Ex. 1.9 Odds
		.Simple Equations	Ex. 1.10 Odds
		.Literal Equations & Formulae	Ex. 1.11 Odds
		.Applied Verbal Problems/Review	Ex. 1.12 Odds
			Ex. 1.13 &. Ex. 1.14 Od as required
		.Special Products	
		.Factoring -	
		- Common Factor/Difference of Squares	Ex. 5.1 Odds
		- Trinomials	
		.Equivalent Fractions	Ex. 5.2 Odds
		.Multiply/Divide Fractions	
		.Add/Subtract Fractions	Ex. 5.3 Odds
		.Equations with Fractions	Ex. 5.4 Odds
		Review	Ex. 5.5 Odds
		.Handout Sheet of Various Formulae	Ex. 5.6 Odds
			Ex. 5.7 Odds
		MENSURATION OF DISTANCES, AREAS, VOLUMES where formula rearrangement is required	Ex. 5.8
			Instructor Handout and Text
5.	8		

V. EVALUATION METHODS:

The student's progress will be assessed by periodic written tests. The student's final grade is based upon an (weighted) average of the test results. ATTENDANCE AT ALL TESTS IS REQUIRED. Unexcused absence from a test will result in a mark of zero for that test. A student may be prevented from attending a test by <u>illness or bereavement</u>. Upon return to classes, the student must see the instructor at the end of the first mathematics class attended to arrange a time and place for a make up test. In addition, if the absence is due to illness the student must present a note from the student's doctor or from the College nurse.

If, at the end of the semester, a student has an average between 45% and 54%, the instructor will consider permitting the student to do make up work in hope of raising his/her standing to a passing level. If a student has not written all the topic tests, or if the student has attended fewer than 80% of the scheduled classes, or if the student has not done all of the assigned work during the semester, then the make up privilege will not be granted. At the discretion of the instructor a student who is granted the make up privilege may be required to write one topic test in hope of raising his/her average or he/she may be required to write an examination on the whole course. Such tests and examinations are not provided for the purpose of obtaining grades higher than "C".

Due to circumstances beyond the control of the instructor, the time available for the student to prepare for the make up test or examination is usually so limited that the student has little opportunity to improve. Hence, the student should make diligent efforts to avoid any need for make up privileges.

As in any other subject the student is preparing to be a technologist as well as studying the subject. Hence, on tests the student is expected to produce neat, legible, well laid out solutions which show clearly how the answer was obtained. If anything less is required, this will be indicated in the test. Failure to show such solutions may render correct answers worthless. As happens in the workplace if anything you put on paper can be misread it will be. In addition to loss of marks on individual questions, up to 25% of the marks available on a test can be subtracted as a penalty for
untidiness. Marks lost in such penalties can be redeemed by a student willing to put forth the required effort. Proper solutions as described above should be produced for all your assigned work. Such practice will make it easier for you to produce the required quality of work on tests. If when you look at a page of your work it makes you feel proud of its appearance, than you are probably on target.

MATHEMATICS   MTH 120-4

Course Name   Course Number

V. EVALUATION METHODS: (cont'd)

Marks allotted to each question on a test are usually shown. Please enquire if they are not. The questions on a test do not necessarily have equal values.

AVERAGE	GRADE
90% to 100%	A+
80% to 89%	A
65% to 79%	B
55% to 65%	C
0% to 54%	R

A passing grade will be based on a minimum average of 55%.

VI. REQUIRED STUDENT RESOURCES:

TEXTBOOK(S):
1.   WASHINGTON - "BASIC TECHNICAL MATHEMATICS WITH CALCULUS", Fifth (Metric) Edition, Benjamin Cummings.

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

VII. SPECIAL NOTES:

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

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