SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	MATHEMATICS
CODE NO.:	MTH 126-4 **SEMESTER:** II
PROGRAM:	FORESTRY TECHNICIAN
AUTHOR:	K. PELEW
DATE:	JULY 1992 **PREVIOUS OUTLINE DATED:** JUNE 1991

APPROVED: _____
           DEAN   "DATE   V7/f*-

MATHEMATICS   MTH 126-4

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TOTAL CREDIT HOURS: 68

PREREQUISITE: MTH 113-4 or MTH 099-4

I. PHILOSOPHY/GOALS:

When the student has successfully completed this course he/she will
have demonstrated an acceptable ability to pass tests based upon the
course contents as listed elsewhere. If, after completing the course,
the student takes further courses (or employment) in which he/she is
required to apply this material he/she should then, through practice,
be able to develop a good command of this subject matter.

II. STUDENT PERFORMANCE OBJECTIVES:

The basic objectives are that the student will develop an understanding
of the methods studied, knowledge of the facts presented and an ability
to use these in the solution of problems. To accomplish these
objectives exercises are assigned. Test questions 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 on
the tests. The material to be covered is listed on the following
pages.

III. TOPICS TO BE COVERED: **TIME FRAME:**

1. Review of Special Products
    and Factoring

2. Fractions, Fractional Equations
    and Formulas   *J* 20 hours

3. Algebraic and Graphical Solution
    of Systems of Equations   18 hours

4. Ratio, Proportion and Variation   8 hours

5. Trigonometry   12 hours

6. Exponents, Powers and Roots,
    Quadratic Equations   10 hours

                                         68 hours

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

TEXT: ESSENTIALS OF MATHEMATICS
Fifth Edition. Russell & Vernon
Person

1.0 REVIEW OF SPECIAL   EXERCISES
     PRODUCTS AND FACTORING

1.1 Factoring by removal of a   13-3   (Pg-214)
     common factor

1.2 Factoring the difference   13-5   (pg. 218)
     between two squares

1. 3 Factoring trinomials that   13-7   (pg. 221)
      are Perfect Squares

1.4 Factoring trinomials of   13-11   (pg. 226)
     the type x^2 + px + q

1.5 Factoring trinomials of   13-13   (pg. 229)
     the type ax^2 + bx + c

1.6 Factoring the sum and the   13-14   (pg. 230)
     difference of two cubes

2.0 FRACTIONS, FRACTIONAL
     EQUATIONS, FORMULAS

2.1 Reducing fractions to   14-1   (pg. 241-242)
     lowest terms

2.2 Multiplication and   14-2   (pg. 245-246)
     division of fractions

2.3 Addition and subtraction   14-3   (pg. 253-254)
     of fractions

2.4 Solving fractional   15-1   (pg. 262-263)
     equations   15-2   (pg. 265-266)
                                               15-3   (pg. 267-268)
                                               15-4   (pg. 270-271)

2.5 Solving formulas   15-5   (pg. 275-277)

2.6 Solving word problems   15-6   (pg. 277-281)
     involving fractional
     equations

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

3.0 <u>ALGEBRAIC AND GRAPHICAL</u>   EXERCISES
     <u>SOLUTION OF SYSTEMS OF</u>
     <u>EQUATIONS</u>

3.1 Solving systems of   16-1   (pg. 289)
     equations by addition or
     subtractions
3.2 Solving systems of
     equations by substitution   16-2   (pg. 291)

3 . 3 Solving systems of
     equations by comparison   Handout assignment

3.4 Solving word problems by
     using systems of   16-4   (pg. 296-297)
     equations in two unknowns

3.5 Solving systems of
     equations in three   16-5   (pg. 299-300)
     unknowns

3.6 Solving word problems by
     using systems of   16-6   (pg. 301-302)
     equations in three
     unknowns

3.7 Graphing a linear
     equation   17-2   (pg. 322)

3.8 Solving systems of
     equations graphically   17-3   (pg. 326)

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

4.0 <u>RATIO, PROPORTION AND</u>   EXERCISES
     <u>VARIATION</u>

4.1 Write the ratio of   25-1   (pg. 477)
     numbers or quantities in   Handout exercises
     simplest form

4.2 Solve a proportion for an   Handout exercises
     unknown term   25-2   (pg. 480-481)

4.3 Proportional Division   25-3   (pg. 482-483)

4.4 Direct, Joint and Inverse   25-4   (pg. 486-487)
     Variation   25-5   (pg. 488-489)
                                     25-6   (pg. 491-493)

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

5.0	TRIGONOMETRY	EXERCISES	
5.1	Standard position of an angle	37-1	(pg. 648-649)
5.2	Trigonometric Ratios or Functions	37-2	(pg. 651)*
5.3	Use calculators to find trigonometric and inverse functions	38-1 38-2	(pg. 656-657) (pg. 659)
5.4	Find the function values in any right triangle	39-1	(pg. 665)
5.5	Solve right triangles	39-2	(pg. 668)
5.6	Solve word problems by using trigonometry	39-4	(pg. 674-675)
5.7	Find the functions of angles of any size	40-1	(pg. 685)
5.8	Find an angle from a given function value	40-2	(pg. 687)
5.9	Find the values of all the functions of an angle, given one function value	40-3	(pg. 688-689)
5.10	The Sine Law	45-1	(pg. 74.8-749)
5.11	The Cosine Law	45-2	(pg. 752-754)

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

6.0 <u>EXPONENTS, POWERS AND</u>   EXERCISES
     <u>ROOTS</u>
     <u>QUADRATIC EQUATIONS</u>

6.1 Multiplication and   18-1   (pg. 338-339)
     Division
     Power of a power
     Power of a product
     Power of a fraction

6.2 Zero exponent   18-2   (pg. 343-344)
     Negative exponent

6.3 Roots of numbers   18-3   (pg. 348-349)
     Fractional exponents

6.4 Scientific Notation   18-5   (pg. 353-354)
                                   Handout assignment

6.5 Solving a pure quadratic   20-1   (pg. 380-381)
     equation

6.6 Solving a quadratic   20-2   (pg. 385)
     equation by factoring

6.7 Solving a quadratic   20-3   (pg. 388)
     equation by completing a
     square

6.8 Solving a quadratic   20-4   (pg. 392)
     equation by use of the
     quadratic formula

6.9 Solving word problems   20-5   (pg. 395-396)
     involving quadratic
     equations

6.10 Graphical solution to   23-1   (pg. 451-452)
     systems involving   23-2   (pg. 454)
     quadratics (if time
     permits)

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V. METHOD OF EVALUATION

The final grade will be derived from the results of five topic tests each of which will constitute 20% of the final mark. The grading system used will be as follows:

$$
\begin{array}{lcrl}
\text{A+} & = & 90 & - & 100\% \\
\text{A} & = & 80 & - & 89\% \\
\text{B} & = & 65 & - & 79\% \\
\text{C} & = & 55 & - & 64\% \\
\text{R} & = & 0 & - & 54\% \\
\end{array}
$$

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

VI. REQUIRED STUDENT RESOURCES:

TEXTBOOK: "Essentials of Mathematics"; Fifth Edition. Person Electronic calculator which includes trigonometric functions

VII. ADDITIONAL RESOURCE MATERIALS

Consult the clerk(s) in the Learning Resource Centre and/or the Learning Assistance Centre.

VIII. 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 the students.