

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: JUNE 1991 PREVIOUS OUTLINE DATED: JUNE 1989

APPROVED:

DEAN



DATE

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TOTAL CREDIT HOURS: 60

PREREQUISITE: MTH 113-4 or MTH 099-4

I. PHILOSOPHY/GOALS:

When the student has successfully completed this course he 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 is required to apply this material he 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:

1. Review of Special Products and Factoring
2. Fractions, Fractional Equations and Formulas
3. Algebraic and Graphical Solution of Systems of Equations
4. Ratio, Proportion and Variation
5. Trigonometry
6. Exponents, Powers and Roots, Quadratic Equations

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IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

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

1.0	<u>REVIEW OF SPECIAL PRODUCTS AND FACTORING</u>	EXERCISES	
1.1	Factoring by removal of a common factor	13-3	(pg. 214)
1.2	Factoring the difference between two squares	13-5	(pg. 218)
1.3	Factoring trinomials that are Perfect Squares	13-7	(pg. 221)
1.4	Factoring trinomials of the type $x^2 + px + q$	13-11	(pg. 226)
1.5	Factoring trinomials of the type $ax^2 + bx + c$	13-13	(pg. 229)
1.6	Factoring the sum and the difference of two cubes	13-14	(pg. 230)
2.0	<u>FRACTIONS, FRACTIONAL EQUATIONS, FORMULAS</u>		
2.1	Reducing fractions to lowest terms	14-1	(pg. 241-242)
2.2	Multiplication and division of fractions	14-2	(pg. 245-246)
2.3	Addition and subtraction of fractions	14-3	(pg. 253-254)
2.4	Solving fractional equations	15-1 15-2 15-3 15-4	(pg. 262-263) (pg. 265-266) (pg. 267-268) (pg. 270-271)
2.5	Solving formulas	15-5	(pg. 275-277)
2.6	Solving word problems involving fractional equations	15-6	(pg. 277-281)

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IV. **LEARNING ACTIVITIES:**

REQUIRED RESOURCES:

3.0 ALGEBRAIC AND GRAPHICAL
SOLUTION OF SYSTEMS OF
EQUATIONS

EXERCISES

3.1 Solving systems of equations by addition or subtractions

16-1 (pg. 289)

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 equations in two unknowns

16-4 (pg. 296-297)

3.5 Solving systems of equations in three unknowns

16-5 (pg. 299-300)

3.6 Solving word problems by using systems of equations in three unknowns

16-6 (pg. 301-302)

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 VARIATION</u>	EXERCISES	
4.1	Write the ratio of numbers or quantities in simplest form	25-1	(pg. 477)
		Handout exercises	
4.2	Solve a proportion for an unknown term	Handout exercises	
		25-2	(pg. 480-481)
4.3	Proportional Division	25-3	(pg. 482-483)
4.4	Direct, Joint and Inverse Variation	25-4	(pg. 486-487)
		25-5	(pg. 488-489)
		25-6	(pg. 491-493)

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IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

	<u>TRIGONOMETRY</u>	EXERCISES	
5.0			
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. 748-749)
5.11	The Cosine Law	45-2	(pg. 752-754)

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IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

	<u>EXPONENTS, POWERS AND ROOTS</u> <u>QUADRATIC EQUATIONS</u>	EXERCISES	
6.0			
6.1	Multiplication and Division Power of a power Power of a product Power of a fraction	18-1	(pg. 338-339)
6.2	Zero exponent Negative exponent	18-2	(pg. 343-344)
6.3	Roots of numbers Fractional exponents	18-3	(pg. 348-349)
6.4	Scientific Notation	18-5	(pg. 353-354) Handout assignment
6.5	Solving a pure quadratic equation	20-1	(pg. 380-381)
6.6	Solving a quadratic equation by factoring	20-2	(pg. 385)
6.7	Solving a quadratic equation by completing a square	20-3	(pg. 388)
6.8	Solving a quadratic equation by use of the quadratic formula	20-4	(pg. 392)
6.9	Solving word problems involving quadratic equations	20-5	(pg. 395-396)
6.10	Graphical solution to systems involving quadratics (if time permits)	23-1 23-2	(pg. 451-452) (pg. 454)

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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:

A+	=	90	-	100%
A	-	80	-	89%
B	-	65	-	79%
C	-	55	-	64%
R	-	0	-	54%

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.