

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: COLLEGE PREPARATORY MATHEMATICS


CODE NO.: MTH 098-5 **SEMESTER:** II

PROGRAM: GENERAL ARTS & SCIENCE

AUTHOR: K. PELEW

DATE: JULY 1993 **PREVIOUS OUTLINE DATED:** JULY 1992

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DEAN, 'SCHOOL OF SCIENCES &
NATURAL RESOURCES

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COLLEGE PREP. MATHEMATICS

MTH 098-5

COURSE NAME

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TOTAL CREDIT HOURS: 85

PREREQUISITE(S): MTH 097-5

I. PHILOSOPHY/GOALS:

The objectives of this course are to develop the student's skill in performing:

- (i) basic algebraic operations
- (ii) graphical and algebraic solution of simultaneous linear equations
- (iii) solution of practical problems involving the application of linear equations in one and two variables.

Emphasis on the overall importance of the Pythagorean Theorem and its applications will be stressed.

A survey of geometry will enable the student to identify a variety of basic plane and solid figures encountered and to determine their perimeters, areas and volumes appropriately in both British and metric units.

An introduction will be made to trigonometry and its application in the solution of the right triangle.

II. STUDENT PERFORMANCE OBJECTIVES:

The basic objectives are that the student will 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.

III. TOPICS TO BE COVERED:

TIME FRAME:

- | | |
|----------------------------------------------------------------------|----------|
| 1. Signed Numbers | |
| 2. Introduction to Algebra | |
| 3. Simple Equations | |
| 4. Ratio and Proportion | 32 hours |
| 5. Basic Algebraic Operations | 18 hours |
| 6. Factoring | |
| 7. Graphical and Algebraic Solution of Simultaneous Linear Equations | 24 hours |
| 8. The Pythagorean Theorem | |
| 9. Introduction to Geometry | 11 hours |
| 10. Introduction to Trigonometry | 85 hours |

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IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

Text: INTRODUCTION TO
TECHNICAL MATHEMATICS
Fourth Edition - Allyn J.
Washington & Mario F. Triola

1.0 SIGNED NUMBERS

EXERCISES

1.1 State the meanings of given expressions involving operations with signed numbers. Locate on a number scale the approximate positions of given signed numbers and compare their size by inserting the symbols $<$ or $>$ or $=$ between the given numbers. Find the absolute value of each given set of numbers.

3-1 pg. 94-95

1.2 Addition and Subtraction of Signed Numbers

3-2 pg. 100-101

1.3 Multiplication of Signed Numbers

3-3 pg. 105

1.4 Division of Signed Numbers

3-4 pg. 108-109

1.5 Order of Operations

3-5 pg. 114-115

2.0 INTRODUCTION TO ALGEBRA

2.1 Given Basic Algebraic Expressions:
a) Identify the number of terms
b) State the like terms.
Evaluate given formulas by using the indicated values.

4-2 pg. 128-130

2.2 Simplify given algebraic expressions by performing indicated operations.

4-3 pg. 134-136

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IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

3.0 SIMPLE EQUATIONS

EXERCISES:

3.1 Solving a Simple Equation

5-1 pg. 145-146

3.2 Simple Formulas and
Literal Equations

5-2 pg. 149-150

3.3 From Statement to Equation

5-4 pg. 160-162

4.0 RATIO AND PROPORTION

4.1 Write the ratio of given
numbers or quantities in
simplest form.
Solve a proportion for an
unknown term.

5-5 pg. 165-167

5.0 BASIC ALGEBRAIC OPERATIONS

5.1 Algebraic Addition and
Subtraction

7-1 pg. 214-216

5.2 Multiplication and
Division of Monomials

7-2 pg. 222-223

5.3 Multiplication with
Multinomials

7-3 pg. 225-226

5.4 Division with Multinomials

7-4 pg. 231-233

6.0 FACTORING

6.1 Common Monomial Factors

8-1 pg. 241-243

6.2 The Difference Between Two
Squares

8-2 pg. 247-248

6.3 Trinomials

8-3 pg. 254-255

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IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

7.0 GRAPHS

EXERCISES:

7.1 The Rectangular
Coordinate System

13-2 pg. 395-396

8.0 SIMULTANEOUS LINEAR
EQUATIONS

8.1 Graphical solution of Two
Simultaneous Equations

14-1 pg. 431-432

8.2 Algebraic Substitution in
Two Equations

14-2 pg. 436-437

8.3 Addition-Subtraction
Method in Two Equations

14-3 pg. 441-442

8.4 Algebraic Methods in
Three Equations

14-5 pg. 452-454

8.5 Solution of Stated
Problems

14-6 pg. 460-461

9.0 THE PYTHAGOREAN THEOREM

9.1 Application

15-3 pg. 482-484

10.0 INTRODUCTION TO GEOMETRY

10.1 Basic Geometric Figures

6-1 pg. 182-184

10.2 Perimeter

6-2 pg. 188-192

10.3 Area

6-3 pg. 197-199

10.4 Volume

6-4 pg. 202-204

10.5 Angles

15-1 pg. 469-471

10.6 Properties of Triangles,
Quadrilaterals, Circles

15-2 pg. 476-478

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IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

11.0 TRIGONOMETRY OF RIGHT
TRIANGLES

EXERCISES:

11.1 The Trigonometric Ratios

16-1

pg. 521-523

11.2 Values of the
Trigonometric Ratios

16-2

pg. 528-529

11.3 Right Triangle
Applications

16-3

pg 534-537

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V. METHOD OF EVALUATION:

The final grade will be derived from the results of three topic tests each of which will be of equal weight in determining 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: Introduction to Technical Mathematics. Fourth Edition.
Allyn J. Washington, Mario F. Triola.
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 students.