

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: COLLEGE PREPARATORY MATHEMATICS

CODE NO.: MTH 93-5 **SEMESTER:**

PROGRAM: GENERAL ARTS & SCIENCE

AUTHOR: JOHN MCGAULEY AND ELIZABETH KONTSCIEDER

DATE: - JUNE 1996 **PREVIOUS OUTLINE DATED:** N/A

APPROVED:

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DATE

COURSE NAME**COURSE CODE****TOTAL CREDIT HOURS: 80****PREREQUISITE:****SUBSTITUTE(S):****I. PHILOSOPHY/GOALS**

The objectives of this course are to develop the student's skill in performing algebraic operations including exponents, radicals, fractional equations, and variation and in solving and graphing linear and quadratic equations.

Technical Option:

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.

The student will use trigonometry to find both sides and angles in right and oblique triangles.

Business Option:

The student's skill in solving problems involving percent will be developed.

An introduction will be made to the mathematics of buying and selling.

The student will solve for the unknown quantity in simple interest, bank discount, compound interest, and present value questions.

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 or 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.

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

1.	Basic Concepts	5 hours
2.	Exponents and Radicals	5 hours
3.	Fractional Equations	5 hours
4.	Variation	5 hours
5.	Graphing Linear Equations	10 hours
6.	Quadratics and Circles	10 hours
		40 hours

Technical Option:

7.	Units of Measurement	10 hours
8.	Geometry	15 hours
9.	Trigonometry	10 hours
10.	Statistics	5 hours
		<hr/> 40 hours

Business Option:

7.	Percent	5 hours
8.	Mathematics of Buying and Selling	15 hours
9.	Simple Interest	10 hours
10.	Bank Discount, Compound Interest, and Present Value	10 hours
		40 hours

COLLEGE PREPARATORY MATHEMATICS**MTH 93-5****COURSE NAME****COURSE CODE****IV. LEARNING ACTIVITIES:****BASIC CONCEPTS:**

	EWEN		KEEDY
Order of Operations	1.2 10-13	Addition of Real Numbers	3.3 177-182
Addition of Signed Numbers	1.6 28-32	Subtraction of Real Numbers	3.4 183-190
Subtraction of Signed Numbers	1.7 32-34	Multiplication of Real Numbers	3.5 191-196
Multiplication and Division of Signed Numbers	1.8 34-36	Division of Real Numbers	3.6 197-202
		Properties of Real Numbers	3.7 203-214

EXPONENTS AND RADICALS

	EWEN		KEEDY
Multiplication of Monomials	6.4 210-212	Exponential Notation and Order of Operations	3.8 215-222
Division by a Monomial	6.6 215-217	Properties of Exponents and Scientific Notation	3.9 223-232
Radicals	Handout	Introduction to Roots and Radical Expressions	10.1 609-614
		Multiplying and Simplifying Radical Expressions	10.2 615-620
		Operations with Radical Expressions	10.4 625-630
		Rational Numbers as Exponents	10.6 639-644

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IV. LEARNING ACTIVITIES:

FRACTIONAL EQUATIONS

	EWEN		KEEDY
Equations with Fractions	7.4 233-237	Solving Rational Equations	9.3 567-572
Formulas	7.7 244-247	Formulas	9.5 583-586
Substituting Data into Formulas	7.8 247-251		

VARIATION

	EWEN		KEEDY
Direct Variation	8.4 268-275	Variation	9.7 593-602
Inverse Variation	8.5 275-279		

GRAPHING LINEAR EQUATIONS

	EWEN		KEEDY
Linear Equations in Two Variables	9.1 282-288	Graphs	5.1 303-310
Graphing Linear Equations	9.2 288-294	Graphing Linear Equations	5.2 311-316
Slope of a Line	9.3 294-301	Graphing Using Slope and Y-intercept	5.3 317-326
Equation of a Line	9.4 301-306	Other Equations of Lines	5.4 327-332
Solving Pairs of Linear Equations by Graphing	10.1 309-315	Graphing Inequalities in Two Variables	5.6 337-342

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IV. LEARNING ACTIVITIES:

QUADRATICS AND CIRCLES

	EWEN			KEEDY	
Solving Quadratic Equations by Factoring	12.1	346-349	Basics of Solving Quadratic Equations	11.1	671-680
Quadratic Formula (omit word problems)	12.2	349-352	Quadratic Formula	11.2	681-686
Graphs of Quadratic Equations	12.3	353-358	Parabolas and Circles	12.1	743-752
Circles		Handout			

UNITS OF MEASUREMENT (Technical Option)

	EWEN			KEEDY	
Introduction to the Metric System	4.1	121-124	Linear Measures - British and Metric		Appendix A
Length	4.2	124-128	Capacity, Weight, Mass and Time		Appendix B
Mass and Weight	4.3	128-130			
Volume and Area	4.4	130-134			
Time	4.5	134-139			
Temperature	4.6	136-138			
Metric and English Conversion	4.7	139-143			

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IV. LEARNING ACTIVITIES: (Technical Option Continued)

GEOMETRY

	EWEN		KEEDY
Angles and Polygons	13.1 363-371	Right Angles and Pythagorean Theorem	Appendix C
Quadrilaterals	13.2 371-376	Basic Geometric Figures	7.1 401-410
Triangles	13.3 376-387	Perimeter	7.2 411-414
Similar Triangles	13.4 387-391	Area - Rectangles and Squares	7.3 415-418
Circles	13.5 392-400	Area - Parallelograms, Triangles and Trapezoids	7.4 419-424
Radian Measure	13.6 400-405	Circles	7.5 425-432
Prisms	13.7 405-409	Volume and Surface Area	7.6 433-440
Cylinders	13.8 409-414	Similar Triangles	7.9 461-466
Pyramids and Cones	13.9 415-421		
Spheres	13.10 422-424		

TRIGONOMETRY

	EWEN		KEEDY
Trigonometric Ratios	14.1 429-434	Angles and Rotation	12.1* 2-6
Using Trigonometric Ratios to Find Angles	14.2 434-437	Trigonometric Functions	12.2* 7-12

IV. LEARNING ACTIVITIES: (Technical Option Continued)

Using Trigonometric Ratios to Find Sides	14.3	437-439	Trigonometric Functions and Right Triangles	12.3* 13-18
Solving Right Triangles	14.4	439-442	Solving Right Triangles and Applications	12.4* 19-24
Solving Oblique Triangles: Law of Sines	14.8	459-463	Law of Sines	12.5* 25-28
Solving Oblique Triangles: Law of Cosines	14.10	469-474	Law of Cosines	12.6* 29-32

STATISTICS

	EWEN			KEEDY
Other Graphs	15.4	490-492	Basic Descriptive Statistics	Handout
Mean Measurement	15.5	492-493		
Grouped Data	15.7	496-503		
Variance and Standard Deviation	15.8	503-506		

* from the 4th edition - available as a supplement to the 6th edition.

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IV. LEARNING ACTIVITIES - (Business Option)

PERCENT

Numbers and Percent	4.1	pp. 119-130
Percent Problems	4.2	pp. 131-145

MATHEMATICS OF BUYING AND SELLING

Trade Discounts	5.1	PP 149-160
Cash Discounts	5.2	PP 161-168
Inventory Valuation	5.3	PP 169-178
Markup	5.4	PP 179-191
Markdown and Tax	5.5	PP 193-198

SIMPLE INTEREST

Time	7.1	pp. 249-258
Calculating Simple Interest	7.2	pp. 259-269
Solving for Other Interest Variables	7.3	pp. 271-283

BANK DISCOUNT, COMPOUND INTEREST AND PRESENT VALUE

Bank Discount	8.1	pp. 287-296
Compound Interest (omit tables; use formula p. 307)	8.2	pp. 297-304
Present Value (omit tables; use formula p. 307)	8.3	pp. 305-310

V. METHOD OF EVALUATION:

The final grade will be derived from the results of a variety of evaluation devices. Some examples of devices that might be used are tests, quizzes, and assignments. Details regarding the evaluation method used in a specific section of this course can be obtained from the professor.

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%.

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VI. REQUIRED STUDENT RESOURCES:

1. TEXTBOOK: Ewen, D. and Nelson, R. (1994). Elementary Technical Mathematics (6th ed.). Toronto: PWS Publishing Company.

The Business Option section requires the textbook: Mathematics for Business Careers (2nd ed.) by Cain and Carman. This textbook may be available from the Learning Assistance Centre.

During the 1996/97 school year, those students who have already purchased the textbook Essential Mathematics by Keedy, Bittinger, and Rudolph may continue to use their textbook.

2. CALCULATOR: Sharp Scientific Calculator. **EL 531G. The use of some kinds of calculators may be restricted during tests.**

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.