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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE, MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE	MATHEMATICS
CODE NO.:	MTH 426-4 **SEMESTER** II
PROGRAM:	MECHANICAL/ELECTRICAL/ELECTRONICS/COMPUTER TY
AUTHOR:	J. REAL
DATE:	JULY 1992 **PREVIOUS OUTLINE DATED:** JUNE 1991

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MATHEMATICS MTH 426-4

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TOTAL CREDIT HOURS: 60

PREREQUISITE(S): lyLATHEMATICS 119 (B grade or better)

I. **PHILOSOPHY/GOALS**:

This course is a continuation of the MTH 119 course at the technology level. Complex numbers, exponents and radicals, oblique triangles, graphing trigonometric functions, exponential and logarithmic functions, trigonometric identities and equations, and variation topics are included.

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.

III. TOPICS TO BE COVERED:	**TIME FRAME:**(no. periods)
1. Exponents and Radicals	11
2. Complex Numbers	.7
3. Trigonometric Functions of Any Angle	6
4. Vectors and Oblique Triangles	8
5. Graphs of Trigonometric Functions	6
6. Exponential and Logarithmic Functions	11
7. Additional Topics in Trigonometry	8
8. Variation	3

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IV. LEARNING ACTIVITIES

1.0	Exponents and Radicals	Chapter 10
1.1	Integral exponents	Questions 1-64, p. 292
1.2	Fractional exponents	Questions 1-68, p. 297
1.3	Simplest radical form	Questions 1-64, p. 301
1.4	Addition and subtraction of radicals	Questions 1-44, p. 304
1.5	Multiplication of radicals	Questions 1-60, p. 307
1.6	Division of radicals	Questions 1-52, p. 310
1.7	Equations with radicals	Questions 1-32, p. 398
1.8	Review exercise	Questions 1-88, p. 312
2.0	Complex Numbers (optional for Mechanical TY	Chapter 11
2.1	Basic definitions	Questions 1-52, p. 319
2.2	Basic operations With complex numbers	Questions 1-60, p. 322
2.3	Graphical representation of complex numbers	Questions 1-32, p. 324
2.4	Polar form of complex numbers	Questions 1-40, p. 329
2.5	Exponential form of a complex number	Questions 1-32, p. 332
2.6	Products, quotients, powers and roots of complex numbers	Questions 1-40, p. 338
2.7	Review exercise	Questions 1-68, p. 346

IV, LEARNING ACTIVITIES CONTINUED

3.0	Trigonometric Functions of Any Angle	Chapter 7
3.1	Signs of trigonometric functions	Questions 1-24, p. 207
3.2	Trigonometric functions of any angle	Questions 1-55, p. 214
3.3	Radians	Questions 1-60, p. 219
3.4	Applications of the use of radians (Mechanical only)	Questions 1-40, p. 225
3.5	Review exercise	Questions 1-76, p. 227
4.0	Vectors and ObliQue Triangles	Chapter 8
4.1	Introduction to vectors	Questions 1-36, p. 234
4.2	Components of vectors	Questions 1-24, p. 237
4.3	Vector addition by components	Questions 1-24, p. 242
4.4	Application of vectors	Questions 1-24, p. 245
4.5	Oblique triangles, the sine law	Questions 1-32, p. 252
4.6	The law of cosines	Questions 1-32, p. 257
4.7	Review exercise	Questions 1-56, p. 259

IV. LEARNING ACTIVITIES - CONTINUED

5.0	Graphs of Trigonometric Functions	Chapter 9
5.1	Graphs of y= ASinx and y = ACosx	Questions 1-20, p. 264
5.2	Graphs of y=ASinbx and y=ACosbx	Questions 1-20, p. 268
5.3	Graphs of y=ASin(bx+c) and y=ACos (bx+c)	Questions 1-24, p. 271
5.4	Review exercise	Questions 1-24, p. 286
6.0	Exponential and Logarithmic Functions	Chapter 12
6.1	The exponential and logarithmic functions	Questions 1-56, p. 352
6.2	Graphs of exponential and logarithmic functions	Questions 1-24, p. 355
6.3	Properties of logarithms	Questions 1-60, p. 360
6.4	Logarithms to base 10	Questions 1-44, p. 364
6.5	Natural logarithms	Questions 1-44, p. 368
6.6	Exponential and logarithmic	Questions 1-52, p. 372
6.7	Review exercise	Questions 1-56, p. 379

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IV. LEARNING ACTIVITIES - CONTINUED

7.0	Additional Topics in Trigonometry	Chapter 19
7.1	Fundamental trigonometric identities	Questions 1-56, p. 528
7.2	Sine and cosine of the sum and difference of two angles	Questions 1-36, p. 533
7.3	Double angle formulas	Questions 1-33, p. 538
7.4	Trigonometric equations	Questions 1-32, p. 546
7.5	Inverse trigonometric functions	Questions 1-72, p. 552
7.6	Review exercise	Questions 1-84, p. 555
8.0	Variation	Chapter 17
8.1	Ratio and proportion	Questions 1-36, p. 489
8.2	Variation	Questions 1-48, p. 495
8.3	Review exercise	Questions 1-48, p. 497

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V. METHOD OF EVALUATION:

a. Four - five tests per semester.

b. Final grade is a weighted average of these tests.

90	-	100	=	A+
80	-	89	=	A
65	-	79	=	B
55	-	64	=	C
0	-	54	=	R (or X)

Under special circumstances an X grade may be assigned to allow the student to continue with the next math course (technician or technology level). If unsuccessful with this next course, both courses would have to be repeated. Such a student would have demonstrated good attendance, written all tests, and have a final course average greater than 45%. If successful with the next course *i* *C* grade will be assigned for this course (MTH 426). If unsuccessful with the next course, the student will receive an R grade in both.

All tests are scheduled in advance. Hence, attendance is mandatory. Unexcused absence from a test will result in a mark of zero for that test. If a student is prevented from writing a test by illness, the instructor should be notified before the time of the test. Upon return to class, the student should see the instructor immediately to arrange a time for a make-up test. The student should have a note from the college nurse or a doctor.

VI. REQUIRED STUDENT RESOURCES:

Washington, Basic Technical Mathematics with Calculus
Fifth edition, metric version. Benjamin/Cummings Pub. Co. 1990

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.