

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE, MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: TECHNOLOGY CALCULUS
CODE NO.: MTH57a-4 SEMESTER: IV
PROGRAM: MECHANICAL TECHNOLOGY
AUTHOR: JOHN REAL
DATE: AUGUST 1991 PREVIOUS OUTLINE DATED: JUNE 1989

APPROVED:


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DATE

TECHNOLOGY CALCULUS

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COURSE NAME**COURSE NUMBER****TOTAL CREDIT HOURS: 64****PREREQUISITE(S): MTH551****I. PHILOSOPHY/GOALS:**

This course deals with applications of simple integration, velocity, acceleration, areas, volumes, centroids, moments of inertia, work, fluid pressure, differentiation and integration of transcendental functions, and methods of integration.

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:

1. Applications of Integration.
2. Differentiation of Transcendental Functions.
3. Methods of Integration.

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IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

1.0	<u>Applications of Integration</u>	Chapter 25
1.1	Applications of the indefinite integral,	Questions 1 - 12, 21, p. 769
1.2	Areas by integration.	Questions 1 27, p. 775
1.3	Volumes by integration.	Questions 1 26, p. 782
1.4	Centroids.	Questions 1 24, p. 789
1.5	Moments of inertia.	Questions 1 24, p. 794
1.6	Other applications.	Questions 1 28, p. 799
1.7	Review Exercise.	Questions 1 4, p. 802 9 40
2.0	<u>Differentiation of Transcendental Functions</u>	Chapter 26
2.1	Derivatives of sine and cosines functions.	Questions 1 - 50, p. 809
2.2	Derivatives of other trig, functions.	Questions 1 - 46, p. 813
2.3	Derivatives of inverse trigonometric functions.	Questions 1 - 41, p. 817
2.4	Applications.	Questions 1 - 8, 11 - 16, p. 821
2.5	Derivatives of logarithmic functions.	Questions 1 - 48, p. 826
2.6	Derivatives of exponential functions.	Questions 1 - 48, p. 829
2.7	Applications.	Questions 1 - 32, p. 833
2.8	Review	Questions 1 - 50, p. 835

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IV. LEARNING ACTIVITIES: (cont'd)

REQUIRED RESOURCES:

3.0	<u>Methods of Integration</u>	Chapter 27
3.1	The general power formula.	Questions 1 - 24, p. 843
3.2	The basic logarithmic form.	Questions 1 - 28, p. 846
3.3	The exponential form,	Questions 1 - 24, p. 850
3.4	Basic trigonometric forms.	Questions 1 - 24, p. 853
3.5	Other trigonometric forms.	Questions 1 - 28, p. 858
3.6	Inverse trigonometric forms.	Questions 1 - 28, p. 862
3.7	Integration by parts.	Questions 1 - 16, p. 866
3.3	Integration by trigonometric substitution.	Questions 1 - 16, p. 870
3.9	Review.	Questions 1 - 36 p. 874

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V. METHOD OF EVALUATION:

1. Three - four tests per semester.
2. Final grade is a weighted average of these tests

90 - 100	³¹	A+
80 - 89	=	A
65 - 79	sm	B
55 - 64	^{SB}	C
0 - 54	ⁱ	R or X)

Under special circumstances, an X grade may be assigned to allow the student to continue with the next math, course. If unsuccessful with this next course, both courses would have to be repeated.

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.