

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: TECHNICAL MATHEMATICS

CODE NO MTH 626-4 SEMESTER III

PROGRAM: AVIATION

AUTHOR: W. MACQUARRIE

DATE JULY 1992 PREVIOUS OUTLINE DATED: JUNE 19 88

APPROVED:


DEAN, SCHOOL OF SCIENCES &
NATURAL RESOURCES

DATE ^ f ^ ^ .

TECHNICAL MATHEMATICS

- MTH 626-4

COURSE NAME

COURSE NUMBER

TOTAL CREDIT HOURS: 64

PREREQUISITE(S): MTH 613-3

I. PHILOSOPHY/GOALS:

This course is a continuation of MTH 613 (a beginning calculus course). It includes differentiation and integration of algebraic, trigonometric and inverse trigonometric functions, exponential and logarithmic functions and applications of these. It is intended to give the student a mathematical understanding of many topics that arise in other courses.

II. STUDENT PERFORMANCE OBJECTIVES:

The basic objective is for the student to develop an understanding of the methods studied^ knowledge of the facts presented an ability to use these in the solution of problems. For this purpose exercises are assigned. Tests 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 in the tests. The material to covered is listed below.

III- TOPICS TO BE COVERED:

Approximate Time Frames

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|--|---------|
| 1. <u>Applications of Integration</u> , including indefinite integrals, areas, volumes, centroids, moments of inertia, work and pressure in liquids. | 15 hrs, |
| 2. <u>Derivatives of Trig, and Inverse Trig. Functions</u> | 17 hrs. |
| 3. <u>Derivatives of Exponential and Logarithmic Functions</u> | 17 hrs. |

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IV, LEARNING ACTIVITIES

TOPIC NUMBER	NO. OF PERIODS	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
15		<u>Applications of Integration</u>	CHAPTER 2 5
		Applications of indefinite integral.	Ex. 25.1 Odds 1-27 ±
		Areas of integration.	Ex. 25.2 Odds 1-31
		Volumes of integration.	Ex. 25.3 Odds 1-25
		Centroids.	Odds 25.4 Odds 1-17
		Moments of inertia.	Ex. 25.5 Odds 1-15
		Work.	Ex. 25.6 Odds 1-21
		Liquid pressure.	Ex. 25.7 Odds - as required.
17		<u>Trigonometric and Inverse Functions</u>	CHAPTERS 19 & 26
		Review of basic trig, relations, graphs, identities.	Ch. 19 Ex. 19.1, 19.2, 19.3, 19.4
		Derivatives of sine and cosine functions.	Ex. 26,1 Odds 1-47
		Derivatives of other trigonometric functions.	Ex. 26,2 Odds 1-43
		Inverse trigonometric functions and derivatives.	Ex. 26.3 Odds 1-39
		Applications.	Ex. 2.6.4 1-11 +
17		<u>Exponential and Logarithmic Functions</u>	CHAPTERS 10, 12, & 26
		Review rules for exponents and logarithms.	Ex. 10;1, 10.2, 12.1, 12.3
		Derivatives of logarithmic functions.	Ex. 26.5, Odds 1-43
		Derivatives of exponential functions.	Ex. 26.6 Odds 1-39
		Applications.	Ex. 26.7 Odds 1-15
			Ex. 26.8 As required.

COURSE NAME**COURSE NUMBER****IV. LEARNING ACTIVITIES: (CONTINUED)**

The student will be expected to attend all classes punctually and do all the assigned work.

Work will be assigned from the previously listed exercises in the textbook.

At the discretion of the instructor, other exercises in the textbook may be used and work may be assigned from handouts supplied by the instructor.

V. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS ETC.)

The student's progress will be assessed by written tests. The student's final grade is based upon an average of the test results. ATTENDANCE AT ALL TESTS IS REQUIRED. Unexcused absence from a test will result in a mark of zero for that test. A student may be prevented from attending a test by illness or bereavement. Upon return to classes, the student must see the instructor at the end of the first mathematics class attended to arrange a time and place for a make up test. In addition, if the absence is due to illness the student must present a note from the student's doctor or from the College nurse.

If, at the end of the semester, a student has an average between 45% and 54%, the instructor will consider permitting the student to do make up work in hope of raising his/her standing to a passing level. If a student has not written all of the topic tests, or if the student has attended fewer than 80% of the scheduled classes, or if the student has not done all of the assigned work during the semester, then the make up privilege will not be granted. At the discretion of the instructor a student who is granted the make up privilege may be required to write one topic test in hope of raising his/her average or, he/she may be required to write an examination on the whole course. Such tests and examinations are not provided for the purpose of obtaining grades higher than "C".

Due to circumstances beyond the control of the instructor, the time available for the student to prepare for the make up test or examination is usually so limited that the student has little opportunity to improve. Hence, the student should make diligent efforts to avoid any need for make up privileges.

Make up tests will not be made available in this course in any other circumstances than those described above.

The final mark (grade) will be based on the average results of several tests.

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COURSE NAME**COURSE NUMBER****V. EVALUATION METHODS:** (cont'd)

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

A passing grade will be based on a MINIMUM average of 55%.

As in any other subject the student is preparing for his working career as well as studying the subject. Hence, on tests the student is expected to produce neat, legible, well laid out solutions which show clearly how the answers were obtained. If anything less is required, this will be indicated in the test. Failure to show such solutions may render correct answers worthless. As happens in the workplace if anything you put on paper can be misread it will be. In addition to loss of marks on individual questions, up to 25% of the marks available on a test can be subtracted as a penalty for untidiness. Marks lost in such penalties can be redeemed by a student willing to put forth the required effort. Proper solutions as described above should be reduced for all your assigned work. Such practice will make it easier for you to produce the required quality of work on tests. If when you look at a page of your work it makes you feel proud of its appearance, than you are probably on target.

Marks allotted to each question on a test are usually shown. Please enquire if they are not. The questions on a test do not necessarily have equal values.

Full attendance at all scheduled classes is required. Any student with unexcused absences exceeding 10% of the classes will have his math grade reduced, provided that this does not reduce the grade below a

VI. REQUIRED STUDENT RESOURCES

Basic Technical Mathematics with Calculus., Washington, Alan J., 5th (metric) Ed., Benjamin Cuimnings.

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.

our instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

