

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

COURSE OUTLINE

COURSE TITLE: TECHNICAL MATHEMATICS
CODE NO.: MTH 613-4 SEMESTER: II
PROGRAM: AVIATION
AUTHOR: K. CLARKE
DATE: JUNE 1991 PREVIOUS OUTLINE DATED JULY 1988

APPROVED:

DEAN




DATE

Technical Mathematics

MTH 613-4

COURSE NAME

CODE NO. -

TOTAL CREDIT HOURS: 64

PREREQUISITE(S): MTH 612 or Grade 13 Relations & Functions plus
Grade 13 Calculus

I. PHILOSOPHY/GOALS:

The course includes topics in Plane Analytic Geometry, introduction to Calculus including derivatives and integration of algebraic functions; applications 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 on the following page:

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III. TOPICS TO BE COVERED:

TOPIC	PERIODS	TOPIC DESCRIPTION	REFERENCES
1	i0	<u>Plane Analytic Geometry</u> - 1.1 Straight line, sloper graphs, length, inter- sections 1.2 Circle 1.3 Parabola 1.4 Brief review of ellipse and hyperbola	Ch. 1
2	11	The Derivative - 2..1 Functional notation 2..2 Limits 2,3 Slope of tangent to curve 2,4 Derivative - delta method 2,5 Derivative of polynomial - by rule 2.6 Product and quotient rule 2.7 Composite functions - chain rule 2.8 Implicit functions 2.9 Higher derivatives	Ch. 2
	11	<u>Applications of Derivatives</u> - 3.1 Tangents and Normals 3.2 Curvilinear motion 3.3 Related rates 3.4 Curve sketching 3.5 Maximum/minimum applications	Ch. 3
	10	<u>Integration</u> - 4.1 Differentials 4.2 Antiderivatives 4.3 Indefinite integral 4.4 Area under a curve 4.5 Definite integrals	Ch, 4

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IV. LEARNING ACTIVITIES: (cont'd)

REQUIRED RESOURCES

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

Textbook:

"Basic Technical Mathematics with Calculus", Washington, Alan J., 3rd Ed., Benjamin Cummings.

Work will be assigned from the following exercises in the textbook:

Protractor, scale, compass, eraser, sharp pencils, 1/4" grid paper.

Ex 20-2, 20-3, 20-4, 20-5, 20-6, 20-7,

22-1, 22-2, 22-3, 22-4, 22-5, 22-6, 22-7, 22-8, 22-9

Ch. 22 Review Ex.

23-1, 23-3, 23-4, 23-5, 23-6, 23-7

Ch. 23 Review Ex.

24-1, 24-2, 24-3, 24-4, 24-5

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.

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

The student's progress will be assessed by four written tests. The student's final grade is based upon a weighted 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.

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IV. EVALUATION METHODS: (cont'd)

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 produced 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 "C"

VI. REQUIRED STUDENT RESOURCES:

Basic Technical Mathematics with Calculus, Washington, Alan J 3rd Ed., Benjamin Cummings.

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.