SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

SAULT COLLEGE

COURSE OUTLINE

COURSE TITLE: Technical Mathematics

CODE NO. :   **MTH 613-4**   **SEMESTER:**   Two

PROGRAM: **Aviation Technology and Pilot Training**

AUTHOR: **The Mathematics Department**

DATE: January **PREVIOUS OUTLINE DATED:**   January
2010   2009

APPROVED:

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                        CHAIR   **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S):   MTH 612

HOURS/WEEK: 4

I.   COURSE DESCRIPTION:

The course includes topics in Plane Analytic Geometry, Introduction to Calculus including derivatives and integration of algebraic functions, and applications of differentiation and simple integration.

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II.   TOPICS TO BE COVERED: hours allotted

1. Plane Analytic Geometry of straight lines and conic sections including equations, properties, and graphing of each   16 hours

2. Derivative calculus including functions, notations, limits, slopes of secants/tangents, delta method, derivative rules, composite and implicit functions, and higher order differentiation   16 hours

3. Derivative applications including slopes of tangents, normals and curves, curvilinear motion, related rates, curve sketching, and maximum/minimum applications   16 hours

4. Integral calculus involving differentials, anti-derivatives, indefinite and definite integration, areas and volumes   16 hours

III.   LEARNING ACTIVITIES:

TOPIC NUMBER	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
1.0	**Plane Analytic Geometry**	**Chapter 21**
1.1	Straight line, slope, graphs, length, and intersections	Exercise 21.1& Ex. 21.2
1.2	Circle	Exercise 21.3 & Ex. 21.7
1.3	Parabola	Exercise 21.4 Exercise 21.7
1.4	Ellipse and Hyperbola	Exercise 21.5 to Ex. 21.8 Review Exercise and Handout
2.0	**The Derivative**	**Chapter 23**
2.1	Functional notation	Exercise 3.1
2.2	Limits	Exercise 23.1
2.3	Derivative – delta method	Exercise 23.3 & Ex. 23.4
2.4	Derivative of polynomial by rule	Exercise 23.5
2.5	Product and quotient rule	Exercise 23.6
2.6	Composite functions – chain rule	Exercise 23.7
2.7	Implicit functions	Exercise 23.8
2.8	Higher derivatives	Exercise 23.9 Review exercise as required
3.0	**Applications of Derivatives**	**Chapter 24**
3.1	Tangents and normals	Exercise 24.1
3.2	Curvilinear motion	Exercise 24.3
3.3	Related rates	Exercise 24.4 and Handout
3.4	Curve sketching	Exercise 24.5 & Ex. 24.6
3.5	Maximum/minimum applications	Exercise 24.7 Review Exercises
4.0	**Integration**	**Chapters 25 & 26**
4.1	Differentials	Exercise 24.8
4.2	Antiderivatives	Exercise 25.1
4.3	Indefinite integral	Exercise 25.2
4.4	Definite integrals	Exercise 25.4
4.5	Applications of the indefinite integral	Exercise 26.1
4.5	Area under a curve and area between two curves	Exercise 25.3 26.2
4.6	Volumes by integration	Exercise 26.3 and Handout

IV.   REQUIRED RESOURCES / TEXTS / MATERIALS:

1. <u>Basic Technical Mathematics with Calculus</u>, Washington, Allyn J. 9th (metric) Edition. Addison-Wesley, 2005
2. Calculator: *(Recommended)* SHARP Scientific Calculator EL-531W. ***Note: The use of some kinds of calculators may be restricted during tests.***

V.   EVALUATION PROCESS/GRADING SYSTEM:

ATTENDANCE

It is your responsibility to attend all classes during the semester. Research indicates there is a high correlation between attendance and student success.

If you are absent from class, it is your responsibility to find out what work was covered and assigned and to complete this work before the next class. Your absence indicates your acceptance of this responsibility.

 Unexcused absence from a test may result in a mark of zero ("0").
Absence may be excused on compassionate grounds such as verified illness or bereavement. On return from an excused absence, you should ask your instructor to schedule the writing of a make-up test. Failure to do so will be considered as an unexcused absence.

METHOD OF ASSESSMENT (GRADING METHOD)

The following semester grades will be assigned to students**:**

Grade	Definition	Grade Point Equivalent
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)

    Credit for diploma requirements has been awarded.

S   Satisfactory achievement in field /clinical placement or non-graded subject area.

U   Unsatisfactory achievement in field/clinical placement or non-graded subject area.

X   A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.

NR   Grade not reported to Registrar's office.

W   Student has withdrawn from the course without academic penalty.

Course: MTH 613		
Evaluation Device	**Topics Covered** (reference topic numbers from the course outline)	**% weight of Final Average**
Test 1	1	25%
Test 2	2	25%
Test 3	3	25%
Test 4	4	25%

VI. SPECIAL NOTES:

Course Outline Amendments:
The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Retention of Course Outlines:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Prior Learning Assessment:
Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

Disability Services:
If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:
The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in Student
Code of Conduct. A professor/instructor may assign a sanction as defined
below, or make recommendations to the Academic Chair for disposition of
the matter. The professor/instructor may (i) issue a verbal reprimand, (ii)
make an assignment of a lower grade with explanation, (iii) require
additional academic assignments and issue a lower grade upon
completion to the maximum grade "C", (iv) make an automatic assignment
of a failing grade, (v) recommend to the Chair dismissal from the course
with the assignment of a failing grade. In order to protect students from
inadvertent plagiarism, to protect the copyright of the material referenced,
and to credit the author of the material, it is the policy of the department to
employ a documentation format for referencing source material.

Student Portal:
The Sault College portal allows you to view all your student information in
one place. **mysaultcollege** gives you personalized access to online
resources seven days a week from your home or school computer. Single
log-in access allows you to see your personal and financial information,
timetable, grades, records of achievement, unofficial transcript, and
outstanding obligations. Announcements, news, the academic calendar of
events, class cancellations, your learning management system (LMS), and
much more are also accessible through the student portal. Go to
https://my.saultcollege.ca.

Electronic Devices in the Classroom:
Students who wish to use electronic devices in the classroom will seek
permission of the faculty member before proceeding to record instruction.
With the exception of issues related to accommodations of disability, the
decision to approve or refuse the request is the responsibility of the
faculty member. Recorded classroom instruction will be used only for
personal use and will not be used for any other purpose. Recorded
classroom instruction will be destroyed at the end of the course. To
ensure this, the student is required to return all copies of recorded
material to the faculty member by the last day of class in the semester.
Where the use of an electronic device has been approved, the student
agrees that materials recorded are for his/her use only, are not for
distribution, and are the sole property of the College.

Attendance:
Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.