SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	**Technical Mathematics**		
CODE NO. :	**MTH 613-4**	**SEMESTER:**	**Two**
PROGRAM:	**Aviation Technology - Flight**		
AUTHOR:	**The Mathematics Department**		
DATE:	**January 2011**	**PREVIOUS OUTLINE DATED:**	**January 2010**
APPROVED:			
	_____ **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. Basic Technical Mathematics with Calculus, Washington, Allyn J. 9th (metric) Edition, Pearson Canada.
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:

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:

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.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal, form part of this course outline.