

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



COURSE OUTLINE

COURSE TITLE: Technical Mathematics

CODE NO. : MTH 654-4 **SEMESTER:** Winter

PROGRAM: Aviation Technology - Flight

AUTHOR: The Mathematics Department

DATE: January 2011 **PREVIOUS OUTLINE DATED:** January 2010

APPROVED:

	<hr/>	CHAIR	<hr/>	DATE
TOTAL CREDITS:	4			
PREREQUISITE(S):	MTH 626-4			
HOURS/WEEK:	4			

Copyright ©2011 The Sault College of Applied Arts & Technology

Reproduction of this document by any means, in whole or in part, without prior written permission of Sault College of Applied Arts & Technology is prohibited. For additional information, please contact Steve Hause, Chair, Aviation Technology-Flight Program.

705-759-2554, Ext.2794

I. COURSE DESCRIPTION:

This course will:

1. Study methods of integration.
2. Study Maclaurin, Taylor, and Fourier series.
3. Study first and second order differential equations.

II. LEARNING OUTCOMES:

Learning Outcomes:

Upon successful completion of this course, students will demonstrate the ability to:

1. Integrate trigonometric, logarithmic, and exponential functions and apply results.
2. Generate and evaluate Maclaurin and Taylor series for various functions and apply results.
3. Solve some types of first and second order differential equations and apply results.

III. TOPICS:

Hours Allotted

- | | |
|---------------------------|----|
| 1. Methods of integration | 20 |
| 2. Infinite series | 15 |
| 3. Differential equations | 25 |

TOPIC NUMBER	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
1.0	Methods of Integration	Chapter 28
1.1	General Power formula	Exercise 28-1
1.2	Basic logarithmic form	Ex. 28-2
1.3	Exponential form	Ex. 28-3
1.4	Various trigonometric forms	Ex. 28-4 Ex. 28-5 Ex. 28-6
1.5	Integration by parts	Ex. 28-7
1.6	Integration by trigonometric substitutions	Ex. 28-8
1.7	Integration by partial fractions	Ex. 28-9, 28-10

1.8	Integration by use of tables	Ex. 28-11 Review exercises
-----	------------------------------	-------------------------------

TOPIC NUMBER	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
2.0	Expansion of functions in series	Chapter 30
2.1	Infinite series	Ex. 30 -1
2.2	Maclaurin Series	Ex. 30-2
2.3	Certain operations with series	Ex. 30-3
2.4	Taylor series	Ex. 30-5
2.5	Fourier Series	Ex. 30-6, 30-7
3.0	Differential equations	Chapter 31
3.1	Solutions of DEs	Ex. 31-1
3.2	Separation of variables	Ex. 31-2
3.3	Integrating combinations	Ex. 31-3
3.4	Linear DEs of first order	Ex. 31-4
3.5	Elementary applications	Ex. 31-5
3.6	Second order homogenous DEs	Ex. 31-6
3.7	Auxiliary equations with repeated or complex roots.	Ex. 31-7
3.8	Solutions of non-homogenous DE's	Ex. 31-8
3.9	Applications of second order DEs	Ex. 31-9
3.10	Laplace transforms	Ex. 31-10
3.11	Solving DE's by Laplace transforms	Ex. 31-11
3.12	Review exercise	

IV. REQUIRED RESOURCES / TEXTS / MATERIALS:

1. Basic Technical Calculus with Analytic Geometry, A. J. Washington, 9th Edition, Pearson Canada.
2. Calculator: (Recommended) SHARP Scientific Calculator EL-531W. ***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	<i>Grade Point Equivalent</i>
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 654		
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	3.1 – 3.5	25%
Test 4	3.6 – 3.11	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.