



## COURSE OUTLINE: MTH577 - CALCULUS II

Prepared: Mathematics Department

Approved: Bob Chapman, Chair, Health

<b>Course Code: Title</b>	MTH577: CALCULUS II FOR TECHNOLOGY				
<b>Program Number: Name</b>	4029: ELECTRICAL TY-PROCES 4043: MECH ENG. TECHNOLOGY				
<b>Department:</b>	MATHEMATICS				
<b>Semesters/Terms:</b>	20F, 21W				
<b>Course Description:</b>	This course is a continuation of MTH551 and provides the student with a more advanced study of calculus. Topics of study include methods of integration, first and second order differential equations including Laplace transforms, and series expansions.				
<b>Total Credits:</b>	4				
<b>Hours/Week:</b>	4				
<b>Total Hours:</b>	60				
<b>Prerequisites:</b>	MTH551				
<b>Corequisites:</b>	There are no co-requisites for this course.				
<b>Substitutes:</b>	OEL1003				
<b>This course is a pre-requisite for:</b>	ELR309, ELR311, ELR330				
<b>Essential Employability Skills (EES) addressed in this course:</b>	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 10 Manage the use of time and other resources to complete projects.				
<b>Course Evaluation:</b>	Passing Grade: 50%, D  A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.				
<b>Books and Required Resources:</b>	Basic Technical Mathematics with Calculus by Washington and Boue Publisher: Pearson Edition: 11 ISBN: 9780134289915  Calculator - Sharp EL-520XTB (available in the bookstore)				
<b>Course Outcomes and Learning Objectives:</b>	<table border="1"> <thead> <tr> <th>Course Outcome 1</th> <th>Learning Objectives for Course Outcome 1</th> </tr> </thead> <tbody> <tr> <td>1. Methods of Integration:</td> <td>1.1 Use the General Power formula to integrate functions including transcendental integrands.</td> </tr> </tbody> </table>	Course Outcome 1	Learning Objectives for Course Outcome 1	1. Methods of Integration:	1.1 Use the General Power formula to integrate functions including transcendental integrands.
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In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.



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	<p>1.2 Integrate functions using the Basic Logarithmic form.</p> <p>1.3 Integrate functions using the Exponential form.</p> <p>1.4 Integrate functions using various trigonometric forms.</p> <p>1.5 Integrate functions using the technique of integration by parts.</p> <p>1.6 Integrate functions using the technique of trigonometric substitutions.</p> <p>1.7 Integrate functions using the technique of partial fractions.</p> <p>1.8 Integrate functions using a table of integrals.</p>
<b>Course Outcome 2</b>	<b>Learning Objectives for Course Outcome 2</b>
2. Expansion of Functions in Series:	<p>2.1 Understand what an infinite series is and identify convergent and divergent series.</p> <p>2.2 Use the Maclaurin Series to expand various functions.</p> <p>2.3 Perform operations with known series to find new series.</p> <p>2.4 Use the Taylor Series to expand various functions.</p> <p>2.5 Use formulas for constants and coefficients to find Fourier Series expansions for functions.</p>
<b>Course Outcome 3</b>	<b>Learning Objectives for Course Outcome 3</b>
3. Differential Equations:	<p>3.1 Prove that a given equation is a solution of a given differential equation.</p> <p>3.2 Use the method of Separation of Variables to solve differential equations.</p> <p>3.3 Use the method of Integrating Combinations to solve differential equations.</p> <p>3.4 Solve linear first order differential equations.</p> <p>3.5 Solve problems in physics and technology involving first order differential equations.</p> <p>3.6 Solve second order homogeneous differential equations.</p> <p>3.7 Solve second order heterogeneous differential equations.</p> <p>3.8 Solve problems in physics and technology involving second order differential equations.</p> <p>3.9 Solve differential equations, including applications, using Laplace Transforms.</p>

**Evaluation Process and Grading System:**

Evaluation Type	Evaluation Weight
Test 1 (outcome 1.1 to 1.4 and 1.6)	25%
Test 2 (outcome 1.5, 1.7, 1.8 and 2)	25%
Test 3 (outcome 3.1 to 3.5)	25%
Test 4 (outcome 3.6 to 3.9)	25%

**Date:** August 13, 2020

**Addendum:** Please refer to the course outline addendum on the Learning Management System for further information.

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