



## COURSE OUTLINE: OEL806 - TECHNICAL MATHEMATIC

Prepared: Mathematics Department

Approved: Lori Crosson, Director, E-Learning and Continuing Education

<b>Course Code: Title</b>	OEL806: TECHNICAL MATHEMATICS				
<b>Program Number: Name</b>					
<b>Department:</b>	DISTANCE EDUCATION				
<b>Semesters/Terms:</b>	20F, 21W, 21S				
<b>Course Description:</b>	<p>This first level mathematics course for engineering technology programs begins with a review of fundamental concepts including arithmetic operations and concepts in measurement. This is followed by several algebra topics including linear equations, factoring, fractions and quadratic equations. A treatment of trigonometry of right triangles, the trigonometric functions of any angle and of oblique triangles is also included.</p> <p>The goals of this course are, first, to show that mathematics does play a most important role in the development and understanding of the various fields of technology and, secondly, to ensure that students acquire the mathematical and critical thinking skills necessary to analyze and solve engineering technology problems.</p>				
<b>Total Credits:</b>	4				
<b>Hours/Week:</b>	4				
<b>Total Hours:</b>	64				
<b>Prerequisites:</b>	There are no pre-requisites for this course.				
<b>Corequisites:</b>	There are no co-requisites for this course.				
<b>Substitutes:</b>	MTH142				
<b>This course is a pre-requisite for:</b>	OEL840				
<b>Course Evaluation:</b>	<p>Passing Grade: 50%, D</p> <p>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.</p>				
<b>Books and Required Resources:</b>	<p>Basic Technical Mathematics with Calculus by Allyn J. Washington. Addison-Wesley Publisher: Pearson, Edition: 9th or 10th Edition ISBN: 013400535X.</p>				
<b>Course Outcomes and Learning Objectives:</b>	<table><tr><th>Course Outcome 1</th><th>Learning Objectives for Course Outcome 1</th></tr><tr><td>Basic Algebraic Operations</td><td><ul style="list-style-type: none"><li>-Perform basic arithmetic operations on signed numbers.</li><li>-Take powers, roots, and reciprocals of signed numbers and algebraic quantities.</li><li>-Convert numbers between decimal and scientific notation.</li><li>-Simplify expressions by removing grouping symbols and</li></ul></td></tr></table>	Course Outcome 1	Learning Objectives for Course Outcome 1	Basic Algebraic Operations	<ul style="list-style-type: none"><li>-Perform basic arithmetic operations on signed numbers.</li><li>-Take powers, roots, and reciprocals of signed numbers and algebraic quantities.</li><li>-Convert numbers between decimal and scientific notation.</li><li>-Simplify expressions by removing grouping symbols and</li></ul>
Course Outcome 1	Learning Objectives for Course Outcome 1				
Basic Algebraic Operations	<ul style="list-style-type: none"><li>-Perform basic arithmetic operations on signed numbers.</li><li>-Take powers, roots, and reciprocals of signed numbers and algebraic quantities.</li><li>-Convert numbers between decimal and scientific notation.</li><li>-Simplify expressions by removing grouping symbols and</li></ul>				

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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	combining like terms. -Add, subtract, multiply, and divide algebraic expressions. -Solve simple linear equations, and solve literal equations for the indicated letter.
<b>Course Outcome 2</b>	<b>Learning Objectives for Course Outcome 2</b>
Units of Measurement and Approximate Numbers	-Convert units of measurement from one system to another. -Perform basic arithmetic operations on approximate numbers.
<b>Course Outcome 3</b>	<b>Learning Objectives for Course Outcome 3</b>
The Trigonometric Functions	-Convert angles between decimal degrees, radians, degrees, minutes and seconds. -Find the trigonometric functions of an angle. -Find the missing sides and angles of a right triangle. -Solve practical problems involving the right triangle.
<b>Course Outcome 4</b>	<b>Learning Objectives for Course Outcome 4</b>
Systems of Linear Equations	-Find an approximate graphical solution to a system of two equations. -Solve a system of two equations and two unknowns by the addition-subtraction methods and by the substitution method. -Solve a system of two equations in two unknowns or three equations in three unknowns using addition/subtraction, or determinants.
<b>Course Outcome 5</b>	<b>Learning Objectives for Course Outcome 5</b>
Factoring and Fractions	-Factor expressions by removing common factors. -Factor binomials that are the difference of the two squares. -Factor trinomials. -Reduce algebraic fractions. -Add, subtract, multiply and divide algebraic fractions. -Solve fractional equations.
<b>Course Outcome 6</b>	<b>Learning Objectives for Course Outcome 6</b>
Quadratic Equations	-Solve by factoring. -Solve by using the Quadratic Formula.
<b>Course Outcome 7</b>	<b>Learning Objectives for Course Outcome 7</b>
Trigonometric Functions of any Angle	-Identify the algebraic sign of a given trigonometric function for an angle in any quadrant. -Find a trigonometric function for any angle using a calculator. -Convert angles between radians, degrees and revolutions.
<b>Course Outcome 8</b>	<b>Learning Objectives for Course Outcome 8</b>
Vectors and Oblique Triangles	-Determine the resultant of two or more vectors. -Resolve a vector into its components. -Solve applied problems requiring vectors. -Solve oblique triangles using the law of sines and the law of cosines. -Solve applied problems requiring oblique triangles.

#### Evaluation Process and

Evaluation Type	Evaluation Weight
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**Grading System:**

FINAL EXAM	56%
TESTS (4)	44%

**Date:**

December 4, 2020

**Addendum:**

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

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