



COURSE OUTLINE: OEL868 - MATH WATER WASTEWAT

Prepared: Subhash Verma

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

Course Code: Title	OEL868: APPLIED MATH FOR WATER AND WASTEWATER OP																
Program Number: Name																	
Department:	DISTANCE EDUCATION																
Semesters/Terms:	20S, 20F, 21W																
Course Description:	This course is intended to provide the students with math basics as applicable to the operation of water and wastewater systems. The basic concepts in unit conversions, area, volume calculations, and density are discussed first. Based on this students are introduced to the use of math to understand chemistry math under the topics of concentration, feed solutions, liquid chemicals, molarity, normality and organic loading. The main objective of the course is to lay a sound foundation in math and chemistry concepts as required to understand and apply to the operation of water and wastewater systems. This will allow students to get ready for the math component in various levels of operator certification examinations of the Ontario Ministry of Environment.																
Total Credits:	4																
Hours/Week:	4																
Total Hours:	60																
Prerequisites:	There are no pre-requisites for this course.																
Corequisites:	There are no co-requisites for this course.																
Course Evaluation:	Passing Grade: 50%, D																
Books and Required Resources:	Applied Math for water and wastewater operations Course manual																
Course Outcomes and Learning Objectives:	<table><tr><th>Course Outcome 1</th><th>Learning Objectives for Course Outcome 1</th></tr><tr><td>Consider basic math equations</td><td>-Make units conversions</td></tr><tr><th>Course Outcome 2</th><th>Learning Objectives for Course Outcome 2</th></tr><tr><td>Examine area and Volume</td><td>-Explain the difference between SI and USC systems of measurement</td></tr><tr><th>Course Outcome 3</th><th>Learning Objectives for Course Outcome 3</th></tr><tr><td>Examine mass density and weight density</td><td>-Make area and volume calculations of various devices and pipes in water and wastewater systems</td></tr><tr><th>Course Outcome 4</th><th>Learning Objectives for Course Outcome 4</th></tr><tr><td>Examine feeding solutions</td><td>-Differentiate between mass and weight terms and calculate mass density and weight density of water and relate to pressure</td></tr></table>	Course Outcome 1	Learning Objectives for Course Outcome 1	Consider basic math equations	-Make units conversions	Course Outcome 2	Learning Objectives for Course Outcome 2	Examine area and Volume	-Explain the difference between SI and USC systems of measurement	Course Outcome 3	Learning Objectives for Course Outcome 3	Examine mass density and weight density	-Make area and volume calculations of various devices and pipes in water and wastewater systems	Course Outcome 4	Learning Objectives for Course Outcome 4	Examine feeding solutions	-Differentiate between mass and weight terms and calculate mass density and weight density of water and relate to pressure
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	Course Outcome 5	Learning Objectives for Course Outcome 5
	Examine liquid Chemicals	-Calculate the solution feed rate and amount of chemical required to prepare solutions of given strength
	Course Outcome 6	Learning Objectives for Course Outcome 6
	Examine chemical Feeding	-Find out the strength of liquid chemicals and sludges and express it in units of concentration as mass to mass and mass to volume
	Course Outcome 7	Learning Objectives for Course Outcome 7
	Examine organic loading	-Describe organic loading and calculate equivalent population conditions
	Course Outcome 8	Learning Objectives for Course Outcome 8
	Examine percent removal	-Calculate the operating efficiency of unit operations and processes
	Course Outcome 9	Learning Objectives for Course Outcome 9
	Examine molarity, Normality	-Read the graphs and charts
Evaluation Process and Grading System:	Course Outcome 10	Learning Objectives for Course Outcome 10
	Data Analysis	-Work out common statistical parameters of a given data set
Date:	Evaluation Type	Evaluation Weight
	Final test	50%
	Term test 1	25%
	Term test 2	25%
Addendum:		
Please refer to the course outline addendum on the Learning Management System for further information.		

