

Water Distribution Level 1 & 2

Course Outline

Course Description

This 4.5-day course is designed to prepare the participants to write their Environmental Operators Certification Program (EOCP) exam for Water Distribution Level 1 or 2 (required by Yukon Government Regulation).

The course provides a basic knowledge of water distribution practices and focuses on the practical aspects of system construction, operation and maintenance

Course Pre-requisites

There are no specific pre-requisites for this course. However, Grade 12 (or equivalent) math skills are an asset. Math upgrades are available –contact us.

Continuing Education Units (CEUs)

This course is accepted for 3.0 CEUs by EOCP as Core for WD, WT, SWS, BWD and Related for WWC, WWT, SWWS.

Course Duration

- 4.5 days
- 8:30 am to 4:00 pm each day, except last day from 8:30 am to 12:00 pm
- 1 hour lunch break
- morning and afternoon break (15 minutes each)

Course Topics and Learning Outcomes

Upon successful completion of the course, the students will be able to:

1: Introduction, Safety and Basic Hydraulics

- Understand and practice safe procedures in the workplace, including;
 - Safety Programs
 - First Aid
 - Site Safety
 - Excavation Safety
 - Confined Space Entry
 - Traffic Control
 - Personal Protective Equipment
 - Lock-out
 - WHMIS
 - Fire Extinguishers
 - Chlorine Handling
- Apply basic hydraulic concepts to water systems

2: Operator Mathematics and Practical Calculations (Assignment 1 Math)

- Convert units of measurement (within the Metric system and Metric to Imperial)
- Apply the principle of “order of operations” to math calculations
- Calculate percentages and apply to chemical concentrations
- Calculate area and volume
- Use algebraic formulae to solve Flow Rate, Detention Time and Chemical Concentration and Dosage problems

3: Collection and Storage, Well Operations and Maintenance and Water Quality

- Identify the stages of the water cycle
- Recognize the characteristics of surface and groundwater systems
- Recognize types of primary and secondary storage systems
- Identify the components of a well and groundwater reactions to a well
- Understand how to perform basic well maintenance
- Define common water contaminants and safe parameters
- Identify Water Quality Standards
- Carry out proper sampling procedures and water quality testing

- 4: Disinfection and Water Treatment (Assignment 2)
 - Identify the importance of (and factors influencing) disinfection
 - Recognize types of disinfection and chlorination techniques
 - Identify the components of the water treatment process

- 5: Valves, Hydrants and Meters (Exam 1)
 - Identify commonly used valves in water distribution systems and their purposes
 - Identify the main types of fire hydrants and their operation
 - Identify commonly used types of water meters and their application

- 6: Plan Reading, Pipe Materials, Water Main Construction and Cross Connection Control
 - Recognize basic types of engineering drawings and their purposes
 - Understand mainline construction and service installations
 - Describe phases of construction project
 - Identify desirable pipe material characteristics and uses
 - Recognize cross connections and how to protect against contamination

- 7: System Maintenance and Pumps (Assignment 3)
 - Identify various leak detection techniques
 - Be able to perform maintenance on water mains, services and valves
 - Recognize various types of pumps, their components and operations. understand pump hydraulic theory

- 8: Exam Tips and Sample Questions
 - Practice techniques for writing multiple-choice exams
 - Answer sample multiple-choice questions

Delivery Method/Format

Instructional Method	Percentage of Class Time
Hands-on/Q & A	20%
Examples/Case Study	20%
Presentation/Lecture	10%
Slides	35%
Demonstration (field trip if applicable)	5%
Video/DVD	5%
Tutoring	5%

Material/Handouts (supplied)

- Student Binder: Yukon University. Water Distribution Level 1 & 2; a core – EOCB Exam Preparation– course. Whitehorse, Yukon.
- Reference Manual: American Water Works Association, 2016. Water Distribution Grades 1&2.
- EOCB Course Completion and Evaluation Form.
 - every student needs to complete and return this form for any CEU allocation
- Calculators are provided but students are welcome to use their own.
 - please return

Course Requirements

Attendance and participation in class are required. It is the student's responsibility to attend all classes.

CEUs will be allocated based on attendance and course completion; Yukon University records will show a pass or fail result. If the participant doesn't attend the class, Yukon University records will show a "no show" result and no CEUs will be allocated.

Evaluation

There will be a quantifiable evaluation at the end of this course with a passing mark of 70%. If anyone fails this evaluation, arrangements can be made for a re-assessment. Please note that this evaluation is for self-assessment purpose only.

The final evaluation for this course is NOT an EOCB certification exam. To challenge a certification exam, register separately with EOCB at least 3 weeks in advance: crm.eocb.ca or 1-866-552-3627.

Appropriate Language

In all areas of the University environment, students are responsible for showing respect for others. Swearing, or language that is discriminatory or derogatory in relation to race, sex, ethnic background, religious beliefs, age, and physical condition is not appropriate.

Electronic Devices

In order to be successful in classes and minimize distractions for others, cell phones, iPods, and other electronic devices must be turned off while students are in class. In an emergency situation, the instructor may give a student permission to use a cell phone or pager.

Academic and Student Conduct

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/Admissions & Registrations web page.

Plagiarism

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person's writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the University.

Academic Accommodation

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon University Academic Regulations (available on the Yukon University website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, they should contact the Learning Assistance Centre (LAC) at LearningAssistanceCentre@yukonu.ca.

Class Outline

Agenda	Time (hours)
Introduction	0.50
Safety	3.50
Basic Hydraulics	2.00
Operator Mathematics and Practical Calcs	5.00
Collection and Storage	1.00
Review Assignment 1 (math)	0.50
Well Operation and Maintenance	1.00
Water Quality	1.50
Disinfection and Water Treatment	1.50
Midterm Exam	1.50
Review Midterm Exam	0.50
Review Assignment 2	0.50
Valves, Hydrants and Meters	1.00
Intro to Plan Reading	0.50
Pipe Materials	1.00
Watermain Construction	1.50
Cross Connection Control	1.00
Assignment 3	0.50
System Maintenance	1.50
Pumps	1.50
Exam tips and Sample Questions	0.50
Final Exam	2.00