



Yukon Water & Wastewater Operator Program

Water Analysis, Water Quality Monitoring and Recordkeeping

Course Outline

INSTRUCTOR: Chris Potvin, Ph.D., P.Eng.
DATE: March 27 – 28, 2019 (Wednesday – Thursday)
TIME: 8:00 am – 3:30 pm

Course Description

This 2 day (12 hour) course is designed to assist water operators in understanding and interpreting public drinking water guidelines and regulations, having good water sampling techniques, being aware of the reasons for water quality monitoring, and in having adequate recordkeeping skills.

The main objective of the course is to provide knowledge to operators about their responsibility to maintain safe and reliable drinking water systems through water sampling and analysis, water quality monitoring and recordkeeping practices.

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 registered with EOCP and offers 1.2 CEUs (core for SWS, WT, WD and related for WWT, WWC, SWWS certifications).

Course Duration

- 2 days
- 8:00 am to 3:30 pm each day
- 1 hour lunch break
- morning and afternoon break (15 minutes each)



Course Topics and Learning Outcomes

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

- Be aware of EOCP facility classification and operator certification requirements;
- Be familiar with the YG Drinking Water Regulation – Part 1: Large Public Drinking Water Systems and Part 2: Bulk Delivery of Drinking Water, as it pertains to water sampling and testing;
- Understand the roles and responsibilities of YG Environmental Health Officers as they pertain to Parts 1 and 2 of the Drinking Water Regulation;
- Understand the roles and responsibilities of a water operator in monitoring the quality of drinking water;
- Understand and be able to interpret the Guidelines for Canadian Drinking Water Quality (GCDWQ) and water analysis results;
- Understand how to collect representative samples for analysis;
- Be aware of the raw water quality differences between ground and surface water;
- Be familiar with water sampling and testing for chlorine residuals (free and total), turbidity, iron, pH, manganese, alkalinity, and hardness;
- Be familiar with using primary and secondary standards, standard solutions for verification checks, and calibration reagent for instrument verification;
- Understand the Colilert system for the bacteriological testing of drinking water for E-coli and total coliforms and be able to interpret the results;
- Understand lab safety information as it pertains to workplace site safety, WHMIS, and Yukon Workers' Compensation Health and Safety Board;
- Understand recordkeeping necessary for water testing, disinfection, bacteriological results, annual chemical and physical results, and reporting requirements to YG Environmental Health Services.

Material/Handouts (supplied)

- Student Binder: Yukon College, 2019. Water Analysis, Water Quality Monitoring and Recordkeeping; an Elective –Technical Development– course. Whitehorse, Yukon.
- Student Manual: Yukon College, 2019. Water Analysis: Procedures Manual. Whitehorse, Yukon.
- EOCP 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 College records will show a pass or fail result. If the participant doesn't attend the class, Yukon College 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%. Please note that this evaluation is for self-assessment purpose only.

Appropriate Language

In all areas of the college 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 College.

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 College Academic Regulations (available on the Yukon College website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC) at lassist@yukoncollege.yk.ca.

Class Agenda

Day One:

Introduction and Expectations

Module 1: Water Sampling

- Well sampling
- Surface-water sampling
- Depth sampling
- Cistern sampling
- Distribution system sampling
- Automatic samplers (grab and composite samples)

Module 2: Laboratory Safety

Module 3: Water Quality Monitoring and Recordkeeping

Day Two:

Module 3: Water Quality Monitoring and Recordkeeping (Continued)

Public Health's Presentation

- Legislation & Recordkeeping for Public Drinking Water Systems Operators

Module 4: Water Analysis

- Test Strips: Arsenic, Hardness, Alkalinity, pH
- Colorimetry: Chlorine Residual, Iron, Manganese, Lead, Nitrate, Color, Chloride, pH
- Electrodes: pH, Total Dissolved Solids (TDS), Electro conductivity (EC)
- Titration: Total Hardness
- Bacteriological Analysis: Coliforms, *E. coli*

Review Calibration, Procedures, and Verification Checks

Hands-On Training: Water Sampling, Testing, and Interpretation