



Course Outline

Course Title	CWQA Water Treatment Fundamentals
Course Number	WXM1
Course Hours	variable

Staff Approval List

Peter Cartwright, Jason Jackson, Claude Gauthier, Ric Harry	Faculty
Anne Baliva	Coordinator/ Administrator
Kevin Wong	Executive Director

Prerequisites

Course Title	WXM0 CWQA Water Basics
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Course Description

The following document is a draft outline of a suggested standard for fundamental theory level of training intended for personnel selling, stocking, designing, installing or maintaining water treatment systems.

Note: The majority of the curriculum will be online via the Modular Education Program with field activities and at the end, a module in class to demonstrate the proficiency with the content, including:

The students will learn the basic principles of:

Water Analysis Fundamentals:

Selecting Tests for Analysis, Implications of Water Tests, and Conduct and Interpret Water Tests

Water Treatment System Operations

Ion Exchange Chemistry, Softener Designs and Options, Your Company's Softening Systems, Ion Exchange Water Softener Capacity, Calculate Softener Capacity, RO System and Performance, RO System Capacity, Calculate % Rejection for RO, Filtration Mechanics and Systems, Choosing a Filter Treatment, and Sizing A Filter

Hydraulics Fundamentals:

Drains and Discharge, Hydraulic Principles for Distribution Systems, Sizing a POE System, and Customer POE System Sizing - Tank-Based Systems

Disinfection Methods Fundamentals

Disinfection Problems, Standard Disinfectants and Methods, Water Contamination Problem, Disinfecting Water, UV Disinfection Systems, Chemical Disinfection Systems, Regulations for Disinfection, and Final Barrier Water Treatment

Ethics and Legal Considerations Fundamentals:

Customer Etiquette, Customer Service Interviews, Legal Issues, Ethical Decisions, Cash on the Barrelhead, Prolonged Permit Period, Poltergeist in the Machine, Unmasking the Fairy Godmother, Warranty vs. Guarantee, and Product Certification

Ridealongs

It is recommended that the student perform a number of ridealongs or monitored observations for softening, disinfection, filtration, Fe/Mn treatment, chemical treatment, disinfection and reverse osmosis

systems. Field work and observations are critical in understanding how the equipment and applications perform in the field in real world field conditions.

Course Learning Outlines

1	Water Analysis Fundamentals
2	Water Treatment System Operations
3	Hydraulics Fundamentals
4	Disinfection Methods Fundamentals
5	Ethics and Legal Considerations Fundamentals
6	Field Work- Ridealongs

Additional Learning Outcome Comments

Upon successful completion of the course the learner will be able to:
Demonstrate the ability to recognize the water problems and water chemistry concerns
Demonstrate the ability to diagnose, analyze and evaluate problem water sources and recommend relevant solutions
Identify common water treatment equipment and their applications and utilization as part of a treatment train
Explain the application of water treatment equipment with respect to problem water chemistry.

Learning Resources

All additional resources within course lectures, modules and/or assignments must adhere to the Canadian Copyright Act.

The student may be required to have an approved test kit, and safety equipment for the handling of chemicals and contaminated water. Care and safety protocols should be adhered to with handling samples and chemicals.

For the Instructor: Please refer to the Water Treatment Fundamentals Standards for content, and breakdown.

Assessment Requirements

Note: does not need to be all

Assessment Task	% or P/F
Applied Learning	50+ hours online learning with knowledge base reading and MEP activities
Assignments	In the MEP
In-Class activities	5-8 hours after the MEP content is completed for Basics and Fundamentals
Labs	In the MEP
Presentations	N/A
Quizzes	In the MEP
Tests	3 hours via the Certified Water Technician's Exam

Prior Learning and Assessment and Recognition (PLAR)

PLAR uses tools to help learners reflect on, identify, articulate, and demonstrate past learning which has been acquired through previous training, study, work and other life experiences and which is not recognized through formal transfer of credit mechanisms.

PLAR options include authentic assessment activities designed by faculty that may include challenge exams, portfolio presentations, interviews, and written assignments. Learners may also be encouraged and supported to design an individual documentation package that would meet the learning requirements

of the course. Any student who wishes to have any prior learning acquired through life and work experience assessed, so as to translate it into course credit, may initiate the process by applying through the CWQA.

A copy of CWQA's PLAR policy is attached.

Student Success: Policies and Procedures

Mutually, faculty and learners will support and adhere to CWQA Academic Regulations, and Student Rights and Responsibilities. The following policies and guidelines have been developed to support the learning process.

Please click on the link for information about:

- Student Rights and Responsibilities
- Academic Regulations
- Guidelines for Professional Practice: Students and Instructors

Alternate accessible formats of learning resources and materials will be provided, on request. (AODA statement)

Program Standards:

The Authority Having Jurisdiction such as the Ontario Ministry of Training, Colleges and Universities oversees the development and the review of standards for regulated programs of instruction. CWQA adheres to these guidelines until such time as this program is mandated and recognized by O.MTCU. Each training delivery organization is required to ensure that its programs and program delivery are consistent with these standards, and must assist students to achieve these essential outcomes.

This course contributes to Program Standards as defined by the Alberta Safety Council and the Ontario Ministry of Training, Colleges and Universities (MTCU). Program standards apply to all similar programs of instruction offered by colleges across the province. Each program standard for a postsecondary program includes the following elements:

- Vocational standards (the vocationally specific learning outcomes which apply to the program of instruction in question);
- Essential employability skills (the essential employability skills learning outcomes which apply to all programs of instruction); and
- General education requirement (the requirement for general education in postsecondary programs of instruction that contribute to the development of citizens who are conscious of the diversity, complexity and richness of the human experience; and, the society in which they live and work).
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Collectively, these elements outline the essential skills and knowledge that a student must reliably demonstrate in order to complete the CWQA MEP program. For further information on the standards for your program, follow the MTCU link (www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/)

Essential Employability Skills

#	Description	Use (Y/N)
1	Communicate clearly	Y
2	Respond to communication	Y

3	Use mathematical operations	Y
4	Solve problems systematically	Y
5	Anticipate and solve problems	Y
6	Document information	Y
7	Analyze information	Y
8	Respect diverse opinions	Y
9	Interact with groups or teams	Y
10	Manage time and resources	Y
11	Take responsibility for self	Y