

Drinking Water Operator Certification and Training Information Guide

Visit us on the internet and check your drinking water CEC's at:
www.michigan.gov/deqoperatortraining

2011 Edition

Presented By:

The
Operator Training and Certification Unit
Department of Environmental Quality
in conjunction with the
Michigan Section, American Water Works Association

The Operator Training and Certification Program Staff

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Provides clerical support for drinking water and wastewater programs.

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Drinking Water Staff

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Coordination and instruction at various training events.

Prepares drinking water exams, study guides and worksheets.

Answers questions on drinking water certification; renewal, exams, status.

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Coordinates course approvals for CEC's. Coordinates Level 5 Exams.

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Answers questions on municipal wastewater certification and exams.

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Assists municipal and industrial wastewater training and certification program.

Answers questions on wastewater training and certification; course registration, certification exams.

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Provides technical training and technical assistance for wastewater treatment facilities.

Answers questions on industrial wastewater certification and exams.

How to Use this Booklet

This booklet contains course and registration information for many of the drinking water operator training programs annually offered by the Operator Training and Certification Unit (OTCU) and/or the Michigan Section, American Water Works Association (MI-AWWA). *This booklet is available in electronic format only and available to all certified drinking water operators and community public water supplies.*

What courses are being offered?

To find out what training programs are scheduled, consult the **Course Calendar** (pgs. 4-5). We have provided the calendar in chronological order. If the course you are looking for is not listed, either we do not offer the course or it is not scheduled to be offered in the near future. Some courses may be scheduled after the printing of this booklet. The most current training calendar can also be found on our website at: <http://www.michigan.gov/deqoperatortraining>

How to register for training

Once you have found a course you would like to register for, turn to the **Registration Form** (pg. 6). You will need a separate form for each course you plan to attend.

Determine the appropriate course information (date, location, registration fee, etc.) from the Course Calendar. Complete the registration form (or forms if you are registering for more than one course), and mail it with your check or money order to reach the MI-AWWA by the registration deadline. **Registration forms will be processed on a first-come, first-served basis; but payment with the form is necessary to give your registration priority.** Please note that some courses are very popular, and they might be full even if we have received your registration form and payment prior to the registration deadline. **It is never too early to register for a course!** Should a course you are registering for be full or canceled, you will be notified. Your registration fee may then be returned in full or you may register for another course.

Comments are welcome!

We hope you will find this booklet and this way to register for training courses useful, convenient, and easy. For more information on Operator Training and Certification, forms available for registrations, exam applications, and course approval applications, please visit our web site. **Check your drinking water CEC's on our website using the website below (See page 24 for more information regarding certification renewal).**

<http://www.michigan.gov/deqoperatortraining>

Continuing Education Credit

Upon successful completion of training courses, students may be awarded Continuing Education Credits (CEC's). For seminars and the like, full attendance is required for any course credit. For other courses, full credit requires attendance. The course descriptions on the following pages discuss how many CEC's may be awarded for each course.

Courses are offered at various locations, including hotels and conference centers. Short courses are typically offered at Higgins Lake and/or Gull Lake. These two conference centers provide classrooms, overnight (double occupancy) and meal accommodations, and an excellent opportunity for learning. "Higgins Lake" is the Ralph A. MacMullan Conference Center located on the north shore of Higgins Lake, south of Grayling. "Gull Lake" is the W.K. Kellogg Biological Station Conference Center located on Gull Lake, about 15 minutes northeast of Kalamazoo.

If you have any questions about continuing education credit, successful course completion, repeat credit, credit for course instructors, in-service training, college courses or any other credit, please see **Continuing Education Credit** (pg. 23). If you need an explanation of certification renewal status, please see **Certification Renewal Status** (pg. 24).

Drinking Water Exam Applications

Exam applications have been revised for all three exam categories. Exam applicants are required to use current exam applications to be considered for future exams. Exam applications do change from time to time. To ensure your exam eligibility is accurately evaluated, download the latest version of exam applications and study guides at:

<http://www.michigan.gov/deqoperatortraining>

Click on "Exam Applications and Study Guides" in the center of the page under the Drinking Water heading.

Drinking Water Exam Locations

Drinking water certification exams are offered regionally (see below), throughout the State of Michigan. When you apply to write an exam, you will need to indicate the "region" where you would like to write your exam. The Operator Training & Certification Unit (OTCU) will attempt to accommodate you as best we can, however, since some exam sites have limited seating, re-assignments may be necessary. You will be notified of your exam location.

"Central MI" means the Lansing area

"East MI" means the Flint/Port Huron area

"West MI" means the Grand Rapids area

"Northern Lower MI" means the Grayling/Harrison area

"Southeast MI" means the Detroit area

"Southwest MI" means the Kalamazoo area

"Upper Peninsula" means the Escanaba/Marquette area

2011 Certification and Training Calendar (Chronological Order)
Drinking Water Operator Training Courses and Activities
Operator Training and Certification Unit
and the Michigan Section, AWWA

<u>Activity Name</u>	<u>Info on Page</u>	<u>Registration Fee</u>	<u>Registration Deadline</u>
Applied Hydraulics January 2011 Several statewide locations	19	Varies with location	12/11/10
Joint Expo 2011 February 8-9 Lansing Center, Lansing	14	No Charge	Not Required
Operators' Day 2011 February 8-9 Lansing Center, Lansing	14	\$70.00/per day	To register, visit: www.mi-wea.org
Type II Level 5 Certification Examination February 17	<u>EXAMS</u> D-5, F-5, S-5	No Charge	Postmarked by January 25
Borchardt Conference February 23-24 Ann Arbor	19	T.B.A	To register, visit: www.mi-wea.org
Water Treatment Short Course I March 1-3 Gull Lake	16	\$350.00	4 weeks prior to course
MSU Short Course in Water Chemistry March 8-10 Michigan State University	13	\$325.00	4 weeks prior to course
Cross Connection Seminar – Basic March 15 Lansing	9	\$80.00	2 weeks prior to course
Basic Math & Hydraulics Short Course March 22-24 Gull Lake	8	\$350.00	4 weeks prior to course
Limited Treatment Short Course March 28-30 Higgins Lake	11	\$350.00	4 weeks prior to course
Water Treatment Short Course II March 28-30 Higgins Lake	17	\$350.00	4 weeks prior to course
Regional Meeting – Spring April 19 Ann Arbor, Kensington Court April 20 Kalamazoo, Fetzer Center April 26 Mt. Pleasant, Comfort Inn April 27 Gaylord, Otsego Club	21	\$70.00	2 weeks prior to meeting
Drinking Water Advisory Board Meeting April 28 Lansing		N/A	N/A
U.P. Water Works Institute May 3-4 Ramada Inn, Marquette	21	T.B.A.	T.B.A
Community Drinking Water Certification Exams May 5 Central MI, East MI, West MI, Northern Lower MI, Southeast MI, Southwest MI, Upper Peninsula	<u>EXAMS OFFERED</u> F-1, F-2, F-3, F-4, D-1, D-2, D-3, D-4, S-3, S-4	No Charge	Postmarked by March 15
MSU Short Course in Water Bacteriology May 10-12 Michigan State University	12	\$325.00	4 weeks prior to course
Wastewater Certification Exams May 26 Municipal		No Charge	March 28 (new applicants) April 11
Water Security Summit June 7 Eagle Eye, Bath		\$80.00	2 weeks prior to course
Type II Level 5 Certification Examination June 9	<u>EXAMS</u> D-5, F-5, S-5	No Charge	Postmarked by May 13

T.B.A.-To Be Announced; N/A – Not Applicable

2011 Certification and Training Calendar (Chronological Order)
Drinking Water Operator Training Courses and Activities
Operator Training and Certification Unit
and the Michigan Section, AWWA

Activity Name	Info on Page	Registration Fee	Registration Deadline
Basic Math & Hydraulics Short Course August 23-25 Gull Lake	8	\$350.00	4 weeks prior to course
Basic Electricity August 23-25 Gull Lake	7	\$475.00	4 weeks prior to course
Fall Distribution Operation & Maintenance September 2011 Several statewide locations	20	Varies with location	To register, contact: OTCU @ 517-241-7199
Cross Connection Seminar – Advanced September 8 Lansing	9	\$80.00	2 weeks prior to course
MI Section, AWWA Annual Conference September 13-16 Mission Point, Mackinac Island		T.B.A.	To register, visit: www.mi-water.org
Distribution System Short Course September 26-28 Higgins Lake	10	\$350.00	4 weeks prior to course
Basic Math & Hydraulics Short Course September 26-28 Higgins Lake	8	\$350.00	4 weeks prior to course
Distribution System Short Course October 11-13 Gull Lake	10	\$350.00	4 weeks prior to course
Limited Treatment Short Course October 11-13 Gull Lake	11	\$350.00	4 weeks prior to course
Regional Meetings-Fall October 4 Ann Arbor, Kensington Court October 5 Kalamazoo, Fetzer Center October 18 Gaylord, Otsego Club October 19 Mt. Pleasant, Comfort Inn	21	\$70.00	2 weeks prior to meeting
Drinking Water Advisory Board Meeting October 21 Lansing		N/A	N/A
RTP Distribution Seminar October 27 Lansing		\$80.00	2 weeks prior to course
U.P. Distribution Seminar November 1-2 Island Resort, Harris	21	T.B.A.	T.B.A.
Wastewater Certification Exams November 3 Industrial		No Charge	October 4
Community Drinking Water Certification Exams November 9 Central MI, East MI, West MI, Northern Lower MI, Southeast MI, Southwest MI, Upper Peninsula	<u>EXAMS OFFERED</u> S-1, S-2, S-3, S-4, F-3, F-4, D-3, D-4	No Charge	Postmarked by September 20
Type II Level 5 Certification Examination December 14	<u>EXAMS</u> D-5, F-5, S-5	No Charge	Postmarked by November 10
Applied Mathematics January 2012 Several statewide locations	19	Varies with Location	To register, contact: OTCU @ 517-241-7199
Basic Chemistry January 2013 Several statewide locations	19	Varies with Location	T.B.A.

Reminder: Please **do not** use the **Registration Form** for the Michigan Section Annual Conference; the Fall Distribution O & M Course; or the Applied Courses (Applied Mathematics, Basic Chemistry, Applied Hydraulics).

Electricity Short Courses

Sponsored by:
Michigan Section, AWWA
In conjunction with
Operator Training and Certification Unit

Course Information

The purpose of these courses is to enhance fundamental knowledge of basic electricity, electrical components, electrical and instrumentation measurement, Ohm's Law, and electrical and instrumentation troubleshooting. The Advanced Course will be of interest and useful to the more advanced student. It is strongly recommended that students take or have taken the Basic Electricity Course prior to enrolling in the Advanced Electricity Course.

Class size will be limited to approximately 30 individuals to ensure that all questions, discussions, and hands-on training are adequately provided for. For both courses, each student should bring an appropriate test meter to measure volts, amps, and ohms.

Continuing Education Credits

Certified drinking water and municipal wastewater operators satisfactorily completing this course may be awarded 1.8 continuing education credits (CEC's) in the "Technical" category.

Basic Course Topics

- Methods of producing electricity
- Describing basic electrical theory
- Understanding AC and DC principles
- Describing and using electrical test meters
- Identifying components, symbols, and schematics

Advanced Course Topics

- Alternating Current
- Plant Emergency Systems
- Understanding and studying single phase circuits
- Understanding and studying three phase circuits
- Transformers: Uses and connections
- Recognition of higher voltages and the dangers
- Motors, starters, and blue print reading
- Power factor: What is it? How do we correct for it?
- Understanding instrumentation control loops

Class Hours

Day One: 8:30 am - 5:30 pm

Day Two: 8:30 am - 5:30 pm

Day Three: 8:30 am - 12:00 pm

Registration

The registration fee for this course includes all meals from lunch on the day of arrival through lunch on the day of departure, mid-morning and afternoon coffee service, two nights lodging in a double room (roommates will be assigned), reference materials, workbooks, and the like.

Basic Math and Hydraulics

Short Course

Sponsored by:

Operator Training and Certification Unit

In conjunction with

Michigan Section, AWWA

Course Information

This course is being offered to allow water utility personnel an opportunity to acquire basic information in the subjects of math and hydraulics.

Continuing Education Credits

Certified drinking water and municipal wastewater operators satisfactorily completing this course may be awarded 1.8 continuing education credits (CEC's) in the "Technical" category.

Course Topics

- Use of a calculator
- Operational math
- Calculation of areas and volumes
- Velocity and rates
- Basic hydraulics
- Weight, density, specific gravity
- Pressure calculations
- Friction and head loss
- Hydraulic gradient or slope
- Continuity equation
- Chlorination calculations

Class Hours

Day One: 9:30 am - 5:30 pm

Day Two: 8:00 am - 5:30 pm

Day Three: 8:00 am - 12:00 noon

Registration

The registration fee for this course includes all meals from lunch on the day of arrival through lunch on the day of departure, mid-morning and afternoon coffee service, two nights lodging in a double room (roommates will be assigned), reference materials, workbooks, and the like. One and one-half hour evening sessions for catch-up, discussion, and a question/answer period are planned. These sessions are optional.

Cross Connection Control Seminars

Sponsored by:
Operator Training and Certification Unit
In conjunction with
Michigan Section, AWWA

Seminar Information

The purpose of these seminars is to teach principles of cross connection control as they relate to public water supply systems. The need for continued training in the field of cross connection control in Michigan is readily apparent given that major incidents of backflow have occurred in water utilities in recent years.

Cross connections on public water supply distribution systems continue to pose a distinct threat to the potability of the water supply. All water utilities must continue to strive toward eliminating and preventing cross connections within the public water supply system. The goal of the seminar is to assist water utilities in this endeavor. Certified drinking water operators can receive 0.5 CEC's in the "Technical" category for each class.

Seminar Contents – Basic

This one-day seminar begins at 8:30 AM with registration, coffee, rolls, and includes lunch. The topics for the day will include each of the following and adjourn at 3:30 p.m.

- Introduction
- Rules and Regulations Review
- Discussion: Cross connections, what are they? Where to look? How to eliminate them?
- Instructional videos
- Case histories
- Question and answer session

Seminar Contents – Advanced *

This one-day seminar begins at 8:30 AM with registration, coffee, rolls, and includes lunch. The topics for the day will include each of the following and adjourn at 3:30 p.m.

- Introduction
- Rules Refresher
- Guest Speakers (talking on a variety of cross connection issues)
- Vendor Displays
- Slide Shows
- Question and answer session

* The Advance Cross Connection course can be repeated within your renewal cycle for full credit due to the agenda changing each year.

Distribution System Short Course

Sponsored by:
Operator Training and Certification Unit
In conjunction with
Michigan Section, AWWA

Course Information

This course is being offered to allow water utility personnel an opportunity to acquire basic information in subjects important to distribution systems.

Continuing Education Credits

Certified drinking water operators satisfactorily completing this course may be awarded 1.8 continuing education credits (CEC's) in the "Technical" category.

Course Topics

- Water mains
- Bacti sampling and analysis
- Pipeline appurtenances
- Safety
- Distribution system rules
- Tapping, service lines and meters
- Cross connections
- System operation
- Maintenance and special problems
- Winter maintenance
- Pumps, motors and well houses
- Chlorination

Class Hours

Day One: 9:30 am - 5:30 pm
Day Two: 8:00 am - 5:30 pm
Day Three: 8:00 am - 12:00 noon

Registration

The registration fee for this course includes all meals from lunch on the day of arrival through lunch on the day of departure, mid-morning and afternoon coffee service, two nights lodging in a double room (roommates will be assigned), reference materials, workbooks, and the like. One and one-half hour evening sessions for catch-up, discussion, and a question/answer period are planned. These sessions are optional.

Limited Treatment Short Course

Sponsored by:
Operator Training and Certification Unit
In conjunction with
Michigan Section, AWWA

Course Information

This course is being offered to allow water utility personnel an opportunity to acquire basic information in the subjects important to limited treatment systems.

Continuing Education Credits

Certified drinking water operators satisfactorily completing this course may be awarded 1.8 continuing education credits (CEC's) in the "Technical" category.

Course Topics

- Basic math (review)
- Rules
- Safety
- Phosphate/corrosion control
- Iron removal
- Ion exchange softening
- Operation
- Miscellaneous treatment
- Wells
- Hydraulics and pumps

Class Hours

Day One: 9:30 am - 5:30 pm

Day Two: 8:00 am - 5:30 pm

Day Three: 8:00 am - 12:00 noon

Registration

The registration fee for this course includes all meals from lunch on the day of arrival through lunch on the day of departure, mid-morning and afternoon coffee service, two nights lodging in a double room (roommates will be assigned), reference materials, workbooks, and the like. One and one-half hour evening sessions for catch-up, discussion, and a question/answer period are planned. These sessions are optional.

Michigan State University Short Course

Water Bacteriology

Sponsored by:
Michigan Section, AWWA
In conjunction with
Operator Training and Certification Unit

Course Information

Operators who have duties associated with complete water treatment plants and/or water laboratories are urged to attend this course. The course is designed to give background information regarding each procedure and to give practical experience with the demonstrated techniques. The course will be valuable to employees new in the field and will serve as a refresher to those who have been doing work for some time.

Continuing Education Credit

Certified drinking water and municipal wastewater operators satisfactorily completing this course may be awarded 2.2 continuing education credits (CEC's) in the "Technical" category.

Housing

Several hotels serve the MSU Campus area. Listed below are telephone numbers for a few of these. Please call the hotels directly to inquire about room rates.

- Kellogg Hotel 55 S. Harrison Rd. 517-432-4000
- Marriott Hotel 300 M.A.C. Avenue 517-337-4440
- Quality Inn 3121 E. Grand River 517-351-1440
- Residence Inn 1600 E. Grand River 517-332-7711

Course Schedule

Day One: 8:00 am – 5:00 pm

Introduction & Basic Bacteriology, MPN method, The Coliform Group, "Philosophy" of Using the Coliform Test, Heterotrophic Plate Counts, Streptococcus Index, Media Preparation, Sterilization Methods, Sampling Procedures.

Day Two: 8:00 am – 5:00 pm

Membrane Filter Method, Stressed Organisms, Presence-absence Test, ONPG-MUG; Development of Media, Chlorination.

Day Three: 8:00 am – 5:00 pm

Fecal Coliform Test, Fecal Streptococcus Test, (Enterococcus) Test, E. Coli, Quality Control Principles and Procedures, Giardia and Cryptosporidium, emerging Pathogens, MPN Calculations, Reporting Results.

Sessions run daily from 8:00 am to 5:00 pm. Each lecture session has an accompanying lab session.

Michigan State University Short Course

Water Chemistry

Sponsored by:
Michigan Section, AWWA
In conjunction with
Operator Training and Certification Unit

Course Information

Operators who have duties associated with limited or complete water treatment plants and/or water laboratories are urged to attend this course. This course is designed to give background information regarding each procedure and to give practical experience with the demonstrated techniques. The course will be valuable to employees new in the field and will serve as a refresher to those who have been doing the work for some time.

Continuing Education Credits

Certified drinking water and municipal wastewater operators satisfactorily completing this course may be awarded 2.2 continuing education credits (CEC's) in the "Technical" category.

Housing

Several hotels serve the MSU Campus area. Listed below are telephone numbers for a few of these. Please call hotels directly to inquire about room rates.

- Kellogg Hotel 55 S. Harrison Rd. 517-432-4000
- Marriott Hotel 300 M.A.C. Avenue 517-337-4440
- Quality Inn 3121 E. Grand River 517-351-1440
- Residence Inn 1600 E. Grand River 517-332-7711

Course Schedule

Day One: General Terminology, Laboratory Safety, Solutions/Dilutions, Spectrophotometry and Chlorine.

Day Two: pH, Fluoride, Turbidimetry, and Alkalinity.

Day Three: Hardness, Sampling, and QA/QC.

Sessions run daily from 8:00 am to 5:00 pm. Each lecture session has an accompanying lab session.

Operators' Day and Joint Expo

Sponsored by:

Michigan Section, AWWA

Michigan Water Environment Association

In conjunction with

Operator Training and Certification Unit

Operators' Day

Each morning, a three-hour technical session featuring topics unique to the interests of water and wastewater works personnel will be conducted. Attendees may register for either or both days. Participation at Operators' Day allows communities to send employees to a training session as well as attend Joint Expo. Participants will be given a ticket for the exhibit area lunch buffet. Operators' Day programs end before noon so there will be ample time for attendees to view the exhibits. There is a registration fee for each day's training session to help defray the costs of lunch and the program.

The program agenda for **Operators' Day** changes annually and is mailed to members of the MI-AWWA and MWEA approximately 6 weeks prior to **Joint Expo**.

Joint Expo

Joint Expo is an exposition for utility personnel by equipment suppliers, manufacturers, and consulting engineers who want an effective method to exhibit their products and services to water and wastewater professionals. Joint Expo provides the opportunity to research problems experienced on a day-to-day basis with manufacturers and industry professionals and to explore solutions to those problems. There is no charge to attend Joint Expo.

Joint Expo is a day to collect product information, see and evaluate new equipment, collect business cards from new contacts, see old friends, learn, share, network, shop, compare, and evaluate where your facility or your business is compared to where you will need to be in the future. Joint Expo offers a buffet lunch (nominal charge), and complimentary soft beverages will be available in the exhibit area, and space for over 300 booths. Exhibitors with large equipment can be accommodated in multiple booths.

Continuing Education Credits

Certified drinking water and municipal wastewater operators may receive up to 0.2 CEC's in the "Other" category annually for attending Joint Expo and up to 0.3 CEC's in the "Other" category for attending each of the Operators' Day three-hour technical sessions.

Plankton Short Course (Not offered in 2011) at Beaver Island

Sponsored by:
Michigan Section, AWWA
In conjunction with
Operator Training and Certification Unit

Course Information

This course is being offered to allow water utility personnel the chance to acquire basic information about phytoplankton identification important to water treatment. The Plankton Course is a unique training opportunity. Enrollment in the course is limited to 18 students. *This course is generally offered in late summer, and the frequency of being offered is determined by demand. If you would like to attend this course, contact 517-627-0913 to be put on a waiting list.*

Registration

The registration fee for the course is set when the course is offered and generally includes all meals and lodging, travel costs upon arrival at Charlevoix ferry dock, parking, ferry ticket, reference materials, workbooks, and the like. The main mode of transportation to the island (parking and ferry ticket included in the registration fee) is the ferry boat (Beaver Island Boat Company; 888-446-4095; 231-547-2311; www.bibco.com).

Participants have the option of bringing their families with them to the island at an additional cost (projected cost vary each year the course is offered; no registration fee is charged). Housing is limited to one of two options: dormitory (on site) or in rustic cabins in campground ¼ mile walk from station. Cabins have electricity, but NO water or bathroom. Separate male and female bathrooms with showers are located in the campground. If you are interested in bringing your family, please contact our office at 517-241-7199.

While NOT included in the registration fee, participants may choose to fly (Island Airways: 800-524-6895 or Fresh Air Aviation; 888-359-7448). Both airlines provide daily flights; reservations are required and are the responsibility of the course participant.

Continuing Education Credits

Certified drinking water operators satisfactorily completing this course may receive 2.4 continuing education credits in the “Technical” category. Complete information, including a map to the ferry/airport in Charlevoix, arrival and departure times for the ferry/airplane and other information will be sent to confirmed participants approximately 2 weeks prior to the start of the course.

Typical Class Agenda

Day One	(AM):	Arrive at Charlevoix dock by 1:30 pm. Ferry departs for the island at 2:30 pm.
	(PM):	5:00 PM arrival, Orientation session—Historical speaker
Day Two	(AM):	Session will deal with methods of collection, analysis, and taxonomy of plankton. Audio-tutorial portions will be introduced for use during the evening when the group is not in formal session
	(PM):	Diatoms
Day Three	(AM):	Diatoms continued; Blue-green algae (cyanobacteria)
	(PM):	Chrysophytes
Day Four	(AM):	Green algae
	(PM):	Xanthophytes and wrap-up
Day Five	(AM):	Depart by 10:00 AM. Ferry leaves at 11:30 AM.

Water Treatment Short Course I

Sponsored by:
Operator Training and Certification Unit
In conjunction with
Michigan Section, AWWA

Course Information

This course is being offered to allow water utility personnel an opportunity to acquire basic information in subjects important in the operation of a water filtration plant. It is recommended that students taking this course have a good general understanding of mathematics and basic chemistry.

Continuing Education Credits

Certified drinking water operators satisfactorily completing this course may be awarded 1.8 continuing education credits (CEC's) in the "Technical" category.

Course Topics

- Basic math and hydraulics (review)
- System operation
- Chlorination
- Fluoridation
- pH, alkalinity, hardness
- Coagulation and flocculation
- Sedimentation and filtration
- Bacteriology
- Cross connections
- Safety
- Rules and regulations

Class Hours

Day One: 9:30 am - 5:30 pm

Day Two: 8:00 am - 5:30 pm

Day Three: 8:00 am - 12:00 noon

Registration

The registration fee for this course includes all meals from lunch on the day of arrival through lunch on the day of departure, mid-morning and afternoon coffee service, two nights lodging in a double room (roommates will be assigned), reference materials, workbooks, and the like. One and one-half hour evening sessions for catch-up, discussion, and a question/answer period are planned. These sessions are optional.

Water Treatment Short Course II

Sponsored by:
Operator Training and Certification Unit
In conjunction with
Michigan Section, AWWA

Course Information

This course is being offered to allow water utility personnel an opportunity to acquire advanced information in subjects important in the operation of a water filtration plant. It is recommended that students taking this course have a good general understanding of mathematics and chemistry, or have previously completed Water Treatment Short Course I.

Continuing Education Credits

Certified drinking water operators satisfactorily completing this course may be awarded 1.8 continuing education credits (CEC's) in the "Technical" category.

Course Topics

- System operation
- Management
- Customer relations
- Alternative disinfectants
- Chemistry and coagulation
- Lime/soda ash softening
- Bacteriology and lab QA/QC
- Water stability

Class Hours

Day One: 9:30 am - 5:30 pm

Day Two: 8:00 am - 5:30 pm

Day Three: 8:00 am - 12:00 noon

Registration

The registration fee for this course includes all meals from lunch on the day of arrival through lunch on the day of departure, mid-morning and afternoon coffee service, two nights lodging in a double room (roommates will be assigned), reference materials, workbooks, and the like. One and one-half hour evening sessions for catch-up, discussion, and a question/answer period are planned. These sessions are optional.

Home Study Courses

Two home study courses are offered through Operator Training and Certification Unit and the Michigan Section, AWWA. Upon reading the chapters, quizzes are completed and mailed in for grading. To receive continuing education credit for these courses, students must score an average of 70% or more on the chapter quizzes. Students meeting this requirement will receive the amount of CECs noted below. Courses are available throughout the year. To register for a home study course, please use the **book order form** located on the OTCU website at <http://www.michigan.gov/deqoperatortraining>. The book order form is located under the “Information” heading and the link is titled “Drinking Water and Wastewater Training Manuals & Materials”.

1. **Basic Math Home Study** - This is a course for water and wastewater operators and others interested in refreshing their knowledge of basic math concepts. Course takes approximately 30-40 hours to complete. Topics include: solving for the unknown value; fractions, decimals, and percents; averages; ratios and proportions; conversions; linear, area, and volume measurements; scales and graphs; powers, roots, and scientific notation; rounding and estimating; dimensional analysis; and more. Course fee is \$140.00. Certified drinking water operators completing this course may receive 2.4 CEC’s in the “Technical” category.
2. **Applied Math Home Study** - This course discusses the same material presented in the Applied Mathematics lecture course. Course takes approximately 30-40 hours to complete. Course fee is \$85.00. Certified drinking water operators completing this course may receive 2.4 CEC’s in the “Technical” category.

OTCU no longer offers CSUS Home Study Courses through this office. You may enroll directly with CSUS and receive approved continuing education credit (CECs) towards certified operator renewal. You can contact CSUS via phone (916-278-6142), email (wateroffice@csus.edu) or the internet (<http://www.owp.csus.edu>).

The number of CECs awarded by OTCU is shown below:

Courses Approved for Drinking Water Credit

Small Water System O & M	2.4 CECs “Technical”
Water Distribution System O & M	2.4 CECs “Technical”
Water Treatment Plant Operation, Volume I	4.0 CECs “Technical”
Water Treatment Plant Operation, Volume II	4.0 CECs “Technical”
Utility Management	2.0 CECs “Managerial”

Courses Approved for Wastewater Credit

Operation of Wastewater Treatment Plants, Volume I	2.0 Tech. CECs/1.0 Managerial CECs
Operation of Wastewater Treatment Plants, Volume II	2.0 Tech. CECs/1.0 Managerial CECs
Advanced Waste Treatment	2.0 Tech. CECs/1.0 Managerial CECs
O & M of Wastewater Collection Systems, Volume I	3.0 Tech. CECs
O & M of Wastewater Collection Systems, Volume II	3.0 Tech. CECs
Utility Management	1.5 Managerial CECs

Please note that when you receive your Certificate of Completion from CSUS, the number of **CEUs** awarded by CSUS will be different from the number of **CECs** approved by OTCU. OTCU will only recognize the number of CECs, as noted above. **To receive credit, provide OTCU with a copy of your CSUS Certificate of Completion when you apply to renew your drinking water/wastewater certification.**

Additional Training Courses and Opportunities

Applied Courses

These courses are offered once every three years, beginning in January, at various locations statewide. The instructors are typically individuals active in water or wastewater works. Classes usually meet one evening a week for 2-1/2 hours for 12 weeks. The classes are offered on a repeating cycle in the order indicated below.

1. **Applied Mathematics-** Course includes: calculators, decimals, fractions and percentages, basic algebra, units and conversions, calculation of areas and volumes, calculation of rates, calculation of weight relationships, and calculation of efficiencies.
2. **Basic Chemistry-** Course includes: language of chemistry, atoms and elements, chemical bonding and stoichiometry, solutions, acids and bases, chlorination, alkalinity, coagulation & flocculation, water softening and other related topics.
3. **Applied Hydraulics-** Course includes hydraulic concepts, pressure, continuity equation, the Bernoulli equation, pipe flow with friction loss, compound pipes, minor losses in fluid flow, flow in open channels, flow measurements, pump types and characteristics, and pumping.

It is recommended that individuals have a good mathematics background prior to taking the Applied Hydraulics and Basic Chemistry courses. Taking Applied Mathematics or Math Correspondence or equivalent would be satisfactory. The program locations for **Applied Courses** change annually. Announcements are mailed to MI-AWWA and MWEA members during the month of November, prior to the next scheduled course offering. If you are not a member of either of these associations and would like to receive registration information, fill out and return the **Request Form** at the end of this booklet. Registration fee (typically \$170-190) depends on the location and number of participants. *The registration fee for this course is to be paid directly to the course instructor.*

Certified drinking water and municipal wastewater operators may be awarded 3.0 continuing education credits for the Applied Mathematics in the “Technical” category, 3.0 continuing education credits for the Basic Chemistry in the “Technical” category, and 3.0 continuing education credits for the Applied Hydraulics in the “Technical” category.

Borchardt Conference

The **Borchardt Conference** is held in February every three years at the Rackham Building, University of Michigan, Ann Arbor. This Conference is named after the late Jack A. Borchardt, Professor of Engineering at U of M. Conference sponsors include the University of Michigan, College of Engineering, Michigan Section, AWWA; Michigan Water Environment Association, in conjunction with the Operator Training and Certification Unit. The program planning committee prides itself in preparing an agenda mixed with drinking water and municipal wastewater topics, presented by nationally renowned speakers discussing advancements in these industries. The program agenda for the **Borchardt Conference** changes each time the conference is offered. The conference brochure is mailed to MI-AWWA members, MWEA members, and Michigan water and wastewater utilities approximately 8 weeks prior to the conference.

Certified drinking water and municipal wastewater operators may be awarded 0.5 continuing education credits for each day of the conference in the “Technical” category.

Fall Distribution Operation & Maintenance Course

This annual fall course for water distribution system personnel uses the textbook, "Water Distribution System Operation & Maintenance" and includes information on:

- Storage facilities
- Distribution system facilities
- Water quality considerations
- Distribution system operation and maintenance
- Disinfection
- Safety

Generally, the course will include 30-40 classroom hours and will run from early September to early November at several locations. Classes usually meet two evenings per week for 2-1/2 hours for 8 weeks. The teaching staff will be people with experience in water distribution systems.

The program locations for the **Fall Distribution System O & M** change annually. Announcements are mailed to drinking water utilities in July. If you are not a representative of a drinking water utility and would like to receive information, fill out and return the **Request Form** at the end of this booklet. Registration fee (typically \$190) depends on the location and number of participants. *Do not mail registration fees to the Operator Training and Certification Unit. **Registration fees for this course are to be paid directly to the course instructor.***

Certified drinking water operators satisfactorily completing this course may be awarded 4.0 continuing education credits (CEC's) in the "Technical" category.

Ground Water Conference

The **Ground Water Conference** is held in February or March, every three years at the Kellogg Center, Michigan State University, East Lansing. Conference sponsors are the Michigan Section, AWWA in conjunction with Operator Training and Certification Unit. The program planning is done by the MI-AWWA Groundwater Committee. As the conference title implies, the agenda pertains to some aspect of ground water. Engineering consultants for municipal or industrial water supplies, municipal, local, state, or other governmental employees working in the field of ground water; water system managers, operators, and personnel, and others interested in ground water will want to attend the **Ground Water Conference**. The program agenda changes and is mailed to MI-AWWA members and Michigan ground water utilities approximately 8 weeks prior to the conference.

Certified drinking water operators satisfactorily completing this course may be awarded 0.5 continuing education credits (CEC's) each day in the "Technical" category. The full conference is a 2 day event.

Regional Meetings

Spring and Fall Regional Meetings are offered annually at several statewide locations. The Regional Meetings are excellent opportunities for individuals to get up-to-date information on happenings in the drinking water industry.

Spring and Fall Regional Meetings are one day in length at four locations in the Lower Peninsula of Michigan. Spring regional meetings focus on water treatment topics while the fall regional meetings will focus on distribution topics.

The program agendas for the **Regional Meetings** change annually and are mailed to Michigan Section, AWWA members approximately 6 weeks prior to the first meeting of the season.

Certified operators who attend may be awarded 0.5 continuing education credits in the “Other or Technical” category annually for a **Spring Meeting** and 0.5 continuing education credits annually for a **Fall Meeting** in the “Other or Technical” category.

U.P. Meetings

The Michigan Section, AWWA, in conjunction with the Upper Peninsula office of the Department of Environmental Quality, sponsor two annual training opportunities. Program topics for the spring session will appeal most to drinking water treatment plant personnel. Distribution systems are the focus of the presentations offered at the fall session.

The program agendas for the **U.P. Meetings** change annually and are mailed to Upper Peninsula drinking water utilities approximately 4 weeks prior to the meetings. If you are not a representative of an Upper Peninsula drinking water utility and would like to receive agenda information about the next program, fill out and return the **Request Form** in this booklet.

Certified operators who attend this seminar may be awarded 0.9 continuing education credits in the “Technical” category.

Type II Level 5 Certification & Training Information

<http://www.michigan.gov/deqnoncommunitywatersupply>

The Type II Level 5 water supplies are regulated by the Non-community Drinking Water Unit. The Non-community Drinking Water Unit also contracts with local health departments to maintain a Type II non-community programs in each county. Non-community Program Staff support this local effort through training, technical support, and program evaluation.

The following information can be obtained by visiting the Non-community program website noted above:

- **Staff Contacts:** Each county has a staff person dedicated to oversee compliance and also work with the Local Health Departments.
- **Sampling Fact Sheets:** The sampling fact sheets are provided for the purpose of technical assistance. Topics covered on the fact sheets include information on what to sample for, how to take samples, interpreting sample results, dealing with problems that may occur, and creating a contingency plan in case of an emergency. In order to get the most benefit from these documents, it is recommended that the non-community water supplies use them in conjunction with assistance from their local health department representative, especially when dealing with problems.
- **Operator Certification:** Under the Laws and Rules heading is a link for Operator Certification. There are several resources available, including a Level 5 Operator Guide Book. The Guide Book is intended to provide basic information for persons preparing to become operators of small public water systems, primarily Level 5 non-transient non-community water supplies and as a reference guide for existing Level 5 certified operators.

The Safe Drinking Water Act; 1976 PA 399, as amended requires all community and non-transient non-community public water systems and certain transient non-community systems (those that treat for water quality purposes, or add chemicals to the water) to have a certified operator in responsible charge of the water system.

CONTINUING EDUCATION CREDIT
Certified Drinking Water Operators

Highest certification level held	Minimum number of continuing education training hours required to renew	Minimum number of continuing education training hours categorized as "technical" or "managerial"
1 or 2	24	18
3	24	12
4	12	6
5	9	no minimum

Training courses qualifying for continuing education credit must be advisory board-approved. Individuals may download a complete list of approved courses from the OTCU website that lists continuing education credit for courses not shown on this document at <http://www.michigan.gov/deqoperatortraining>.

Successful Course Completion - One or two day meetings and seminars require full day attendance for successful completion. Upon arrival at the meeting or seminar (within 30 minutes of the start of the meeting), individuals desiring continuing education credit must obtain a continuing education credit form. This form must be validated by a course official immediately following the conclusion of the meeting. The individual retains a copy of this form and a second copy is left with the course official. This second, validated form will be sent to the Operator Training & Certification Unit and recorded. If an individual leaves a meeting early, the form will not be validated and continuing education credit will not be given. Credit for one and two-day meetings of this type are normally assigned on the basis of contact hours with 1.0 CEC for 10 contact hours. Partial credit will not be given for one-day meetings. For courses of a longer duration, such as the 3-day courses or 12-week courses, successful completion for full credit generally requires individuals to meeting the attendance requirement.

Repeat Credit - Full credit may be awarded for repeat attendance at meetings and seminars with a changing course content or agenda, such as Regional Meetings and the Michigan Section, AWWA and Michigan Rural Water Association annual conferences. For courses that basically repeat the course content, continuing education credit may be awarded to the individual for each successful repeat that occurs outside or after his or her current renewal cycle. No credit will be awarded for repeating such courses during the current certificate renewal period.

Credit for Course Instructors - Continuing education credit for course instructors may be awarded for certain courses of long duration (20 contact hours or greater). Such credit will be awarded based on the number of contact hours available to students taking the course, except that instructors may not be awarded more than one-half the number of continuing education hours required for their own level of certification. This maximum value applies to all such courses conducted by an instructor within the instructor's current renewal period.

In-Service Training & College Courses - Advisory board-approved water utility in-service training and individual college courses may be awarded continuing education credit. Water utility in-service training programs must be approved by the advisory board of examiners. CECs will be awarded for any college course when the student receives credit from the college or university provided the course is a semester in duration and relates to the duties, responsibility, operation, maintenance or supervision of a drinking water system. The following course categories merit credit: Math, Chemistry, Physics, Computer, Electronics, Public Administration/Management, Mechanics/Technical, General Business, Engineering, Technical Writing/Communication, and Microbiology. It is recommended that students electing to take such courses contact Matt Tomlinson at 517-241-8913 prior to enrolling in the course.

Other Credit - Continuing education credit equal to 1 hour (0.1 CEC) maximum may be awarded annually for an active individual, an active affiliate or an active organization representative membership in certain organizations, such as the American Water Works Association (AWWA) and Michigan Rural Water Association (MRWA). This credit value is based upon full year membership as of December 31 of each year. Accordingly, individuals holding membership each month of the 3-year renewal period may be awarded the maximum available credit of 3 hours (0.3 CECs). This credit may also be awarded in ensuing renewal periods. Also, a maximum of 6 hours (0.6 CECs) for exhibits, such as Joint Expo or MRWA annual exhibits will be allowed in any 3-year renewal cycle.

CERTIFICATION RENEWAL STATUS

Certified Drinking Water Operators

Individuals writing and passing a certification examination are issued certificates on the basis of a 3-year renewal cycle. This applies regardless of the number of certificates already held. The expiration date of the certification is extended so that it coincides with the **expiration date** for the exam most recently passed.

Individuals renewing a certificate are issued certificates on a 3-year renewal cycle provided they have met the continuing education renewal requirement for the highest level of certification held and submitted the completed renewal application. A certificate will expire on one of the quarterly expiration dates, as shown below, regardless of the calendar year.

Persons with an expired certificate are eligible for employment at a waterworks system; however, they cannot serve as the “operator in charge” or “back-up operator” of a distribution system, a treatment system or a shift at a water treatment plant.

A certificate that has expired may be reinstated within 1-year from the expiration date of the certificate only when an individual has completed the necessary continuing education requirements as prorated from the certificate’s expiration date. **If a certificate is not reinstated within 1-year, the individual will no longer hold any drinking water certification and will be required to re-test for the desired certification.**

Quarterly <u>Expiration Dates</u> regardless of calendar year	January 15	April 15	July 15	October 15
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The following is a guide to help calculate the prorated CEC’s for the expired D, DR, F, FR and/or S, SR certifications held.

Certification Level Held	Renewal CEC’s needed	1 to 90 days expired	91 to 180 days expired	181 to 270 days expired	271 to 365 days expired
1, 2, or 3	2.4	2.6	2.8	3.0	3.2
4	1.2	1.3	1.4	1.5	1.6
5	0.9	0.9	1.0	1.1	1.2

For example, if an individual wrote and passed a fall 2007 exam, the issue date would be the day of the exam, 11/8/2007. Three years out would be in November 2010, but the closest future quarterly expiration date is January 15, 2011. If the individual did not meet the renewal CEC’s needed, the schedule above would apply. The days denoted in the table above are an approximation since the OTCU works with quarterly expiration dates only. **There is no flexibility in this policy. It is the certified operator’s responsibility to maintain a training history and be able to verify any training attended, and to submit a renewal application no sooner than 8 weeks prior to certification expiration.**

A renewal applicant, who does not meet the continuing education requirements for the higher certification levels (1, 2 or 3) but meets the continuing education requirements for the level 4, may choose to renew at the 4 level and give up the higher certification level. The request to give up the higher level certification level and be renewed as a 4 level must be in writing.

Certified operators can check their CEC’s and certification status online at:

<http://www.michigan.gov/deqoperatortraining>

Certified operators due to expire can generate a renewal application online 8 weeks or less prior to expiration by clicking on the link “Check Your Drinking Water CEC’s Online and Approved Courses” to open the Operator Training & Certification Information System (OTCIS) page. Use the navigation tools on the left side of the OTCIS page to search out operator information by last name or operator ID.

CONTINUING EDUCATION CREDITS ALLOWED FOR VARIOUS COURSES OF STUDY

Approved Drinking Water Training Courses sponsored by the Operator Training & Certification Program:

	<u>MAX. POINTS GIVEN</u>	
Advanced Electricity	1.8	“Technical” category
Applied Hydraulics	3.0	“Technical” category
Applied Mathematics	3.0	“Technical” category
Advanced Cross Connection Control Seminar	0.5	“Technical” category
Basic Chemistry	3.0	“Technical” category
Basic Cross Connection Control Seminar	0.5	“Technical” category
Basic Electricity Short Course	1.8	“Technical” category
Basic Math & Hydraulics Short Course	1.8	“Technical” category
Fall Distribution System O & M	4.0	“Technical” category
Limited Treatment Short Course	1.8	“Technical” category
Math Short Course	1.8	“Technical” category
M.S.U. Ground Water Seminar	1.0	“Technical” category
M.S.U. Water Bacteriology Course	2.2	“Technical” category
M.S.U. Water Chemistry Course	2.2	“Technical” category
Water Distribution Short Course	1.8	“Technical” category
Water Treatment Short Course I	1.8	“Technical” category
Water Treatment Short Course II	1.8	“Technical” category

**For a complete listing of all providers and approved courses,
visit our website at:**

<http://www.michigan.gov/deqoperatortraining>

(click on “Listing of Approved Courses for CECs” located under the Information heading in the center of the page, then click on Approved Courses located in the lower left corner)

Water related courses sponsored by *CEU User* members and *Certified Providers* of the International Association for Continuing Education and Training (IACET), Michigan Municipal League (MML) or the Accrediting Council for Continuing Education & Training (ACCET) may be eligible for credit towards renewal. **To receive credit for IACET, MML or ACCET drinking water related courses, provide a copy of the course completed certificate and course agenda showing time durations. CECs awarded are based on actual contact hours.**

If you are unable to obtain training opportunities from any organization listed on our website, please notify Operator Training & Certification Unit at 517-241-7199, or email tomlinsonm@michigan.gov.

“HOT” Programs

The Hands On Training (HOT), which is a Subcommittee of the Education Committee has approved a list of hands-on training or “HOT” programs or courses that can provide practical experience to water system operators. Below is a list of current “HOT” courses now in place. A hot training program typically has the following characteristics:

- the training is at least 50 percent “hands on” or practical
- the training program is a minimum of 3 hours in length

Contact the appropriate contact person for the course you are interested in.

For further details on the program in general, or to propose a new course, contact:

Paul Brun Del Re at 517-241-8914 or e-mail: brundelrep@michigan.gov

TITLE	OTCU COURSE CODE:	CEC'S	CONTACT	CONTACT TELEPHONE
WATER METER TYPES AND APPLICATIONS	784	.3 Tech	John Traynor Hydro-Meter Service	248-343-6400
CHEMICAL FEED PUMPS, RATES & CALCULATIONS	743	.3 Tech	Todd Luks Elhorn Engineering	517-676-3786
CROSS CONNECTIONS	744	.3 Tech	Stephen McLaren Hydro-Designs	248-250-5029
HYDRANT VALVE OPERATION & MAINTENANCE	746	.3 Tech	Dave Plooster East Jordan Iron Works	616-538-2040
LEAK DETECTION/LINE LOCATING	747	.3 Tech	Stephen McLaren Hydro-Designs	248-250-5029
LOCKOUT/TAGOUT	884	.3 Other	Stephen McLaren Hydro-Designs	248-250-5029
CROSS CONNECTION BACKFLOW PREVENTION	1047	.5 Tech	Jeff Castro YCUA	734-484-4600 X-305

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