

WATER & ENVIRONMENTAL TECHNOLOGY (WET)

WET-010 Wastewater Operations I

3 credits, Fall

For professional upgrade only. Does not meet the requirements for the college certificate or the associates of science degree. Introduction to the fundamentals of wastewater operations. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles.

WET-011 Waterworks Operations I

3 credits, Fall

For professional upgrade only. Does not meet the requirements for the certificate or degree. Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks microbiology, and introduction to water disinfection.

WET-020 Wastewater Operations II

3 credits, Winter

For professional upgrade only. Does not meet the requirements for the certificate or degree. Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems and clarification process. Includes biological sludge treatment.

Prerequisites: WET-010

WET-021 Waterworks Operations II

3 credits, Winter

For professional upgrade only. Does not meet the requirements for the certificate or degree. Basic hydrology, ground water and surface water sources, well construction and operation, introduction to water chemistry, waterworks hydraulics, and fundamentals of pumps and pumping.

WET-030 Wastewater Operations III

3 credits, Spring

For professional upgrade only. Does meet the requirements for the certificate or degree. Design, operation, process control and maintenance of treatment facilities. Current treatment processes discussed in detail with particular attention given to biological sludge handling process. No lab requirement for this course.

Prerequisites: WET-020

WET-031 Water Treatment

3 credits, Spring

For professional upgrade only. Does not meet the requirements for the certificate or degree. Design, operation and process control of water treatment plants. Includes water chemistry, related math, coagulation, sedimentation, filtration and disinfection procedures. Review for Oregon Operator certification exams. No lab requirement for this course. Lab includes field trips to local water treatment facilities.

WET-108 Cross-Connection Control Program Specialist

3 credits, Fall/Winter/Spring/Summer

Specialized training for those who want to be involved in administering cross-connection control programs. Elements of a cross-connection control program, basic hydraulics, state specific regulations, identifying possible cross-connections and site surveys in order to determine proper type of backflow protection, if needed.

WET-109 Backflow Assembly Operation and Testing

4 credits, Fall/Winter/Spring/Summer

Lecture course with lab component that focuses on backflow assembly hydraulics, operations, installation, and testing.

WET-110 Wastewater Operations I

3 credits, Fall

Introduction to the fundamentals of wastewater character and operations. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles.

Corequisites: MTH-082A

WET-111 Waterworks Operations I

3 credits, Fall

Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks microbiology, and introduction to water disinfection.

Corequisites: MTH-082B

WET-112 Computer Applications for Water and Wastewater Operations

4 credits, Fall

Focuses on direct application of Microsoft Word, PowerPoint, and Excel for producing compliance reports, professional presentations, and data analysis. Emphasis will be put on the use of Excel for statistical analysis of water and wastewater plant data for state and federal compliance. Supervisory control and Data Acquisition (SCADA) will also be covered. Wastewater simulators will be explored and used to design and manipulate unit processes.

Corequisites: WET-110 and WET-111

WET-120 Wastewater Operations II

3 credits, Winter

Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems with the associated clarification process will be presented.

Prerequisites: WET-110

Corequisites: MTH-082C

WET-121 Waterworks Operations II

3 credits, Winter

An introduction to water distribution, with a focus on water regulations, operator math, water chemistry, and specific water distribution processes. Also examines distribution system design, water mains, hydrants and valves, water pumps, water system supply security, and public relations. Everything you need to know to pass the water distribution grade 1 state certification.

Prerequisites: WET-111

Corequisites: MTH-082D

WET-122 Water Distribution and Wastewater Collection Systems

3 credits, Winter

Elementary engineering aspects of water distribution and wastewater collection systems. System components, construction materials, pump station design, maintenance, operations, and other related topics.

Prerequisites: WET-110

Corequisites: WET-120

WET-123 Environmental Chemistry I

3 credits, Winter

Theory and applied laboratory techniques for testing water and wastewater. Students will test wastewater for NPDES required tests.

WET-125 High Purity Water Production I

3 credits, Fall

Fundamentals of high purity water chemistry, reverse osmosis treatment, ion exchange treatment, electrode ionization treatment, UV, ozonation, degasification and microfiltration as applied to the production of high purity water for the semiconductor, pharmaceutical and electric power generating industries.

Corequisites: MTH-082E

WET-130 Wastewater Operations III

4 credits, Spring

Design, operation, process control and maintenance of treatment facilities. Current treatment processes discussed in detail with particular attention given to biological sludge treatment, and handling processes. Lab includes field trips to local wastewater facilities.

Prerequisites: WET-120

Corequisites: WET-130L

WET-130L Wastewater Operations III Lab

0 credits, Spring

The course is devoted to comprehension of the wastewater treatment process via weekly exploration of a wastewater treatment plant. We will tour a treatment plant and then go over the treatment process in lecture. We will emphasize emerging wastewater technologies, (nitrification/denitrification), sludge and bio-solids management, volatile solids reduction through the digestion (aerobic and anaerobic) processes, sludge/solids processing, solids handling, and ultimate waste solids disposal. Fundamental principles of emerging wastewater treatment process, solids handling, including disinfection and dechlorination of wastewater will be emphasized.

Prerequisites: WET-110 and WET-120

Corequisites: WET-130

WET-131 Water Treatment

4 credits, Spring

Design, operation and process control of water treatment plants. Includes water chemistry, related math, coagulation, flocculation, sedimentation, filtration and disinfection procedures. Review for Oregon Operator grade 1 certification exams. Lab includes field trips to local water treatment facilities.

Prerequisites: WET-121

Corequisites: WET-131L

WET-131L Water Treatment Lab

0 credits, Spring

Lab Course for WET-131. Must be taken concurrently with WET-131.

Prerequisites: WET-121

Corequisites: WET-131

WET-132 Collection & Distribution Lab

1 credits, Spring

Field exposure to water distribution systems and wastewater collection systems. Weekly field visits include inspection of cross-connection inspection, distribution valving, reservoirs, water metering/repair, pumping station operations, smoke testing, and CCTV.

WET-134 Environmental Chemistry II

3 credits, Spring

Water quality testing, monitoring and reporting. The course includes the theory and application of common water quality tests for surface water, groundwater, and storm water monitoring systems. The course also covers all water quality tests for ensuring correct water treatment processes.

Prerequisites: WET-123

WET-135 High Purity Water Production II

4 credits, Winter

A lab course focusing on the operation of equipment and unit processes in the production of high purity water. Emphasis on process equipment sizing and design, process control and troubleshooting.

Prerequisites: WET-125 and MTH-082E

WET-180 Water & Environmental Projects I

1-5 credits, Spring

Practical work experience in a municipal industrial treatment, distribution, or collection system. Placement in consulting firms, federal and state regulatory agencies, BLM, BPA, and other regulated governmental organizations. Variable Credit: 1-5 credits.

Corequisites: CWE-281

WET-241 Aquatic Microbiology

4 credits, Fall

A lab course with topics in applied microbiology. Methods to detect coliform group in water and wastewater. Identification of filamentous bacteria in activated sludge, and identification of indicator protozoa in activated sludge. A bacteriological stream survey project is included.

Prerequisites: BI-204

WET-242 Hydraulics for Water & Wastewater

3 credits, Fall

Introduction to closed conduit and open channel flow. Includes hydrostatics and dynamics, head-loss, pump characteristics, Bernoulli's and the energy equations, and basic characteristics of water.

Prerequisites: WET-122

WET-245 Instrumentation & Control

4 credits, Fall

A lab course introducing methods used to monitor and control treatment processes in wastewater, water and high purity water facilities. Advanced water analysis to include typical monitoring of high purity water treatment. Fundamentals of control loops, control systems and data management.

WET-280 Water & Environmental Projects II

5 credits, Fall

Practical work experience in a municipal industrial treatment, distribution, or collection system. Placement in consulting firms, federal and state regulatory agencies, BLM, BPA, and other regulated governmental organizations. Practical experience in a municipal, public or private wastewater treatment facility of specific activated sludge design.

Process loading criteria, data acquisition & trend charting, and relevant sanitary process strategies will be addressed.

Corequisites: CWE-281