

WATER RESOURCE TECHNOLOGY (WRT)

WRT 210 (3 credit hours)

Water Distribution

Introduce the concepts of delivering treated water to residential, commercial, and industrial consumers. Identify essential infrastructure assets such as pipes, hydrants, valves, meters, towers, and tanks that compose the water distribution system. Analyze hydraulic conveyance dynamics, pressure requirements, and factors contributing to water loss. Inspect system components and operational procedures for maintenance and optimization. Describe the duties of distribution system operators and supporting roles critical to successful operations. Evaluate the economic impacts of operating, rehabilitating, and replacing system assets, including their financial implications for utility management. Pre or Corequisite(s): WRT 211. Lecture: 3 credits (45 contact hours).

Attributes: Technical

Components: LEC: Lecture

WRT 211 (1 credit hours)

Water Distribution Laboratory

Introduce the core concepts of delivering treated water from the plant to homes and businesses. Identify essential infrastructure components, including pipes, hydrants, valves, meters, towers, and tanks. Analyze principles of hydraulic conveyance, pressure regulation, and factors contributing to water loss. Inspect distribution systems to ensure proper operation, maintenance, and performance optimization. Describe the roles and responsibilities of distribution operators and other personnel involved in system success. Evaluate the economic considerations of operation, rehabilitation, replacement, and the financial impacts on utility management. Pre or Corequisite(s): WRT 210. Laboratory: 1 credits (30 contact hours).

Attributes: Technical

Components: LAB: Laboratory

WRT 220 (3 credit hours)

Wastewater Collection

Introduce fundamental concepts pertaining to wastewater collection systems. Identify key components of the sewer system, including pipes, manholes, valves, lift stations, tanks, and other critical infrastructure. Analyze the functions of each part and their role in hydraulic conveyance and pressure regulation. Inspect principles of system maintenance and optimization across varied conditions. Examine operational practices, compliance standards, and performance benchmarks of treatment plants and supporting structures. Describe the responsibilities of wastewater collection system operators and related personnel. Evaluate the economic implications of system operation, upgrades, rehabilitation, replacement, and fiscal planning. Pre or Corequisite(s): WRT 221. Lecture: 3 credits (45 contact hours).

Attributes: Technical

Components: LEC: Lecture

WRT 221 (1 credit hours)

Wastewater Collection Laboratory

Introduce students to hands-on fieldwork aligned with the responsibilities of wastewater collection system operators. Simulate job-specific tasks by guiding students through structured, written procedures. Utilize lab equipment during practical experiments and technical projects to reinforce learning. Collaborate with local utilities and laboratories to complete real-world operational assignments. Observe system operations through job shadowing and field site visits to deepen contextual understanding. Prepare students for workforce readiness by integrating applied skills with direct industry experience. Pre or Corequisite(s): WRT 220. Laboratory: 1 credits (30 contact hours).

Attributes: Technical

Components: LAB: Laboratory

WRT 270 (3 credit hours)

Treatment and Disposal Technologies

Study the principles and practices involved in the treatment, storage, processing, and disposal of waste materials. Explore various waste management methods such as landfills, landfarms, composting, resource recovery, incineration, waste-to-energy systems, solidification, stabilization, vitrification, air-sparging, pump-and-treat systems, and bioremediation. Implement knowledge and technical skills acquired in the Water Resource Technology program to solve real-world waste management challenges. Collaborate with peers to select, develop, and execute a sampling plan, site investigation report, and corrective action or closure strategy based on an instructor-provided scenario. Submit the required state operating registration or permit to demonstrate regulatory competence and team-based problem-solving. Lecture: 3 credits (45 contact hours).

Attributes: Technical

Components: LEC: Lecture

WRT 280 (3 credit hours)

Water Treatment Technology

Introduce the foundational concepts involved in treating groundwater and surface water sources. Examine key areas including surface water protection, plant intake structures, aquifer safeguarding, treatment procedures, and disinfection methods. Analyze operational, maintenance, compliance, and optimization strategies applied to treatment plants and supporting structures. Describe the duties and responsibilities of water treatment operators and supporting personnel in achieving system success. Evaluate the economic implications of operational decisions, upgrades, rehabilitation, replacement, and associated financial responsibilities within the water treatment system. Pre or Corequisite(s): WRT 281. Lecture: 3 credits (45 contact hours).

Attributes: Technical

Components: LEC: Lecture

WRT 281 (1 credit hours)

Water Treatment Technology Laboratory

Introduce students to field work aligned with water treatment operator responsibilities. Simulate operational tasks by executing written instructions in a controlled lab environment. Utilize required equipment to conduct experiments and complete treatment-focused projects. Collaborate with local utilities and laboratories to perform applied activities and gain industry exposure. Observe treatment processes and professional workflows through job shadowing and on-site experiences. Prepare students for workforce entry by integrating practical knowledge, technical skills, and field experience. Pre or Corequisite(s): WRT 280. Laboratory: 1 credits (30 contact hours).

Attributes: Technical

Components: LAB: Laboratory

WRT 290 (3 credit hours)

Wastewater Treatment Technology

Introduce foundational concepts and principles involved in wastewater treatment. Examine the biological, chemical, microbiological, regulatory, and operational components that govern treatment processes.

Discuss the environmental and public health implications of untreated wastewater discharge and the benefits of proper treatment. Analyze regulatory requirements, procedural submittals, and practices that safeguard natural ecosystems. Evaluate operational strategies for plant performance, treatment effectiveness, compliance, and infrastructure maintenance. Describe the roles and responsibilities of wastewater treatment operators in maintaining system efficiency and regulatory compliance. Assess the financial and economic impacts of operational decisions, upgrades, rehabilitation, and asset replacement. Pre or Corequisite(s): WRT 291. Lecture: 3 credits (45 contact hours).

Attributes: Technical

Components: LEC: Lecture

WRT 291 (1 credit hours)

Wastewater Treatment Technology Laboratory

Introduce students to essential field tasks performed by wastewater treatment operators. Simulate operational procedures through step-by-step execution of written instructions. Employ laboratory equipment in hands-on experiments and treatment-related projects. Collaborate with local utilities and laboratories to complete designated tasks and activities. Observe real-time treatment plant operations through job shadowing and field visits. Prepare students for workforce entry by integrating technical knowledge with practical experience. Pre or Corequisite(s): WRT 290. Laboratory: 1 credits (30 contact hours).

Attributes: Technical

Components: LAB: Laboratory

WRT 297 (1-3 credit hours)

Special Topics in Water Resource Technology: Topic

Addresses recent trends in selected areas of Water Resource in a seminar format. Emphasizes discussion and critical thinking. Note: May be repeated with different topics to a maximum of twelve credit hours. Prerequisite(s): Consent of instructor. Lecture: 1 credits (15 contact hours).

Attributes: Technical

Components: LEC: Lecture

WRT 298 (3 credit hours)

Water Resource Technology Practicum

Provides supervised on-the-job work experience related to the student's educational objectives. Note: Students participating in the Practicum will not be eligible for compensation. Prerequisite(s): Consent of instructor. Practicum: 3 credits 45 contact hours).

Attributes: Technical

Components: PCM: Practicum

WRT 299 (3 credit hours)

Cooperative Education Program

Provides supervised on-the-job work experience related to the student's educational objectives. Note: Students participating in the Co-op Education program may be eligible for compensation. Prerequisite(s): Consent of instructor. Co-Op: 3 credits (45 contact hours).

Attributes: Technical

Components: COP: Co-op