

WATER/WASTEWATER TECHNOLOGY (527)

527-100 - Introduction to Wastewater Treatment

Provides an overview of the different processes used in wastewater treatment plants, as well as the collection system and sludge disposal procedures. Covers calculations used to determine plant loadings, detention times and percent removal efficiencies. Environmental regulations, preventive maintenance practices and basic safety precautions are covered. Credit for Prior Learning Available
3 Credit hours
54 Lecture hours

527-103 - Conventional Wastewater Treatment

Covers the basic biology, chemistry and operational controls of wastewater treatment processes: pre- and primary treatment of wastewater, activated sludge, trickling filters and RBCs (Rotating Biological Contactors). The structure and function of major equipment is explained. Various lab tests and the calculations associated with them are presented. (Prerequisite: Completion of or concurrent enrollment in 527-100 Introduction to Wastewater Treatment) Credit for Prior Learning Available
3 Credit hours
54 Lecture hours

527-105 - Advanced Wastewater Treatment Processes

Develops competence in management of wastewater treatment processes including disinfection, nutrient removal, tertiary filtration, and sludge handling. Uses the Internet to locate resources useful in managing wastewater treatment processes. (Prerequisite: Completion of or concurrent enrollment in 527-100 Introduction to Wastewater Treatment) Credit for Prior Learning Available
4 Credit hours
72 Lecture hours

527-111 - Water Chemistry

Explores basic chemical concepts and principles such as elements, compounds, states of matter and reactions that are applicable to evaluating and regulating water quality and applies them to water and wastewater treatment. Students also examine laboratory techniques, equipment, quality assurance and recordkeeping and reporting. (Prerequisites: Completion of or concurrent enrollment in 527-100 Introduction to Wastewater Treatment; 804-107 College Mathematics) Credit for Prior Learning Available
4 Credit hours
72 Lecture hours

527-120 - Hydraulics of Water and Wastewater

Provides information and procedures necessary to predict and manipulate the hydraulics of water transmission and collection. The primary work assignments involve the reading and use of hydraulic principles and then applying them in a real-life case analysis as a laboratory project. (Prerequisites: Completion of or concurrent enrollment in 527-100 Introduction to Wastewater Treatment; 804-107 College Mathematics) Credit for Prior Learning Available
3 Credit hours
54 Lecture hours

527-125 - Industrial Wastes

Focuses on the control of wastewater resulting from the processing of a variety of industrial materials. Methods of waste initiation; impact; minimization; and the treatment of waste process streams of metal, pulp and paper, and food and beverage industry operations are emphasized and analyzed. (Prerequisites: 527-100 Introduction to Wastewater Treatment; 527-103 Conventional Wastewater Treatment) Credit for Prior Learning Available
3 Credit hours
54 Lecture hours

527-129 - Utility Management

Provides students, utility and industry personnel with concepts and insight into management practices. Fundamentals of managing people in the workplace, budgeting and financial management, legal issues, communication, utility functions, and public relations will be explored. Examining an actual management team and utility will be a part of the student's learning experience during the progression through the course competencies. Credit for Prior Learning Available
3 Credit hours
54 Lecture hours

527-130 - Groundwater Supply and Distribution

Provides environmental and treatment information necessary to operate a potable groundwater well system. Basic distribution system design and component use will also be detailed. Students examine a groundwater treatment plant and make operational assessments based on established industry criteria. Credit for Prior Learning Available
3 Credit hours
54 Lecture hours

527-131 - Surface Water Supply and Treatment

Determines operational procedures necessary to produce a safe and aesthetically appropriate water supply for human consumption. Students recommend designs for water treatment plants based on established industry criteria. Basic preventive maintenance and safety programs customized to students designed facilities are also developed. (Prerequisite: Completion of or concurrent enrollment in 527-130 Groundwater Supply and Distribution) Credit for Prior Learning Available
3 Credit hours
54 Lecture hours

527-136 - Equipment Maintenance and Instrumentation

Develops skills in the identification and application of tools, correcting facility and system mechanical problems, and understanding the complete concept of preventative and predictive maintenance. Students will research preventative and predictive maintenance systems. Also, skills will be developed using instrumentation for process control. Supervisory Control and Data Acquisition (SCADA), including control diagrams, designs and applications will be studied. (Prerequisites: 527-100 Introduction to Wastewater Treatment; 527-111 Water Chemistry) Credit for Prior Learning Available
4 Credit hours
72 Lecture hours

527-150 - Advanced Water Treatment

Advanced processes and treatments studied during this course include iron, manganese and radium removal, zeolite softening, VOC removal, disinfection precursor and disinfection-by-product reduction, alternative disinfectants, demineralization, lime softening, and new and emerging technologies. (Prerequisites: 527-111 Water Chemistry; 527-130 Groundwater Supply and Distribution; 527-131 Surface Water Supply and Treatment) Credit for Prior Learning Available
3 Credit hours
54 Lecture hours

527-171 - Water Quality Internship

Provides an on-the-job learning experience. With direction of an employer and supervision of a Moraine Park instructor, the intern performs duties of a water/wastewater operator in a water/wastewater facility. The intern spends 216 hours working in a municipal, industrial or environmental setting. This course is typically offered in the summer. Must have Dean and Instructor approval if need necessitates internship other than prior to Term 4 or after Term 4. (Prerequisites: 527-100 Introduction to Wastewater Treatment; 527-103 Conventional Wastewater Treatment; 527-130 Groundwater Supply and Distribution) Credit for Prior Learning Available

3 Credit hours

216 Other hours

527-173 - Water Quality Research

Designed as an alternative learning experience for students who are unable to secure an internship. Provides students the opportunity to work in collaboration with the course instructor to design and develop a project that utilizes concepts learned in program courses. Projects may include research, service learning, and other options that will expand the student's skill and knowledge in program competencies, goals and concepts. (Prerequisites: 527-100 Introduction to Wastewater Treatment; 527-103 Conventional Wastewater Treatment; 527-130 Groundwater Supply and Distribution; Instructor/Dean approval) Credit for Prior Learning Available

3 Credit hours

54 Lecture hours