

WATER AND WASTEWATER TECHNOLOGY

(FOR TUTORING - SEE "COUNSELING")

Math and Science Division

PROGRAM DESCRIPTION

A study of the principles of water and wastewater disposal and purification including municipal and industrial wastewater collection and treatment. The program will satisfy most of the requirements for certification of water and wastewater treatment personnel.

CERTIFICATE OF ACHIEVEMENT AND ASSOCIATE IN SCIENCE DEGREE

A Certificate of Achievement can be obtained upon completion of the 25 or 29 unit major. The Associate in Science Degree can be obtained upon completion of 60 units, including the major, the general education requirements, and electives. All courses for this major must be completed with a grade of C or better or a P if the course is taken on a pass-no pass basis.

REQUIRED CORE COURSES

	Units
WATR 100-Wastewater Treatment I	4
WATR 101-Basic Chemistry for Water/Wastewater OR	
WATR 102-Sanitary Chemistry	4
WATR 104-Water Treatment I	3
WATR 106-Instrumentation and Control	3
WATR 107-Math of Water/Wastewater	4
Specialty Courses-Select 4 or 5 Units	
WATR 105-Wastewater treatment II	3
WATR 108-Water Treatment II	2
WATR 120-Water Distribution	2
WATR 121-Collection Systems Maintenance	2

Select from the following options:

OPTION 1

BIOT 160-Basic Concepts/Methods in Biotechnology 4

OPTION 2

BIO 014-Principles of Microbiology 4

CHEM 010-Intermediate Chemistry (4 units)

OR

CHEM 051-Chemistry for Health Sciences (5 units)

OR

CHEM 001-General Chemistry (5 units) 4 or 5

OPTION 3

WATR 103-Biological Principles of Water and Wastewater 3

Total

25-32

WATR 100

4 Units

Wastew Treatmt I

Course Advisories: *SCC minimum English and math standards.* Study of municipal and industrial wastewater collection and wastewater treatment methods, protection of ground water and receiving waters, and effects of pollutants on receiving waters. **Four hours lecture.**

WATR 101

4 Units

Chem Water Wastewtr

Course Advisories: *SCC minimum English and Math Standards.* Through lecture and demonstrations, the student will develop the ability to analyze and determine if proper levels of purification, content of acidity, alkalinity, hardness, and other water quality criteria have been achieved for water or wastewater treatment. **Four hours lecture.**

WATR 102

4 Units

Sanitary Chemistry

Prerequisite: *CHEM 160.* **Course Advisories:** *SCC minimum English and Math standards.* Study of the theory and demonstration of laboratory techniques for control tests of water purification. Emphasis is placed on process control including pH, chlorine residual, coliform, turbidity, BOD, solids, and interpretation of lab test results. Mandatory field trips will be taken to water treatment plants and water quality laboratories. **Four hours lecture.**

WATR 103 3 Units**BIO Prin Water Wast**

Course Advisories: *SCC minimum English and Math standards.* This course examines the biological and ecological properties of the bacteria, protozoa, fungi, algae, viruses, and animals whose control is important to the provision of safe drinking water supplies and environmentally safe wastewater. The course emphasizes the microbiology of drinking water, wastewater, and activated sludge, and examines the microbial sampling, analysis, and treatment strategies important in this industry. *Three hours lecture.*

WATR 104 3 Units**Water Treatment I**

Course Advisories: *SCC minimum English and math standards.* This course examines the elementary engineering aspects of the design, operation, process control, and facilities of a plant designed to treat and purify drinking water. *Three hours lecture.*

WATR 105 3 Units**Wastewater Treatment II**

Prerequisite: *WATER 100.* **Course Advisories:** *SCC minimum English and math standards.* Study of the elementary engineering aspects of design, operation process control, and maintenance of wastewater treatment plants and facilities. *Three hours lecture.*

WATR 106 3 Units**Instrumentation and Control**

Course Advisories: *SCC minimum English and Math standards.* Study of pneumatic, mechanical and electronic control systems and components. Includes a basic description and explanation of the operation of instruments and controls for water and wastewater plants. Typical performance characteristics, accuracy, and applications of instruments are studied. *Three hours lecture.*

WATR 107 4 Units**Math/Wtr WW Treatmt**

Course Advisories: *SCC minimum English and math standards.* A study of calculations - hydraulics, chemicals, solids - used in the design, operation, process control, and maintenance of treatment plants and facilities. *Four hours lecture.*

WATR 108 2 Units**Water Treat II**

Prerequisite: *WATR 104.* **Course Advisories:** *SCC minimum English and Math standards.* This course covers advanced topics in the control of ions and disinfecting chemicals in drinking water. In addition it covers the issues of safety, regulation, administration, and maintenance of a water treatment plant. This course will often be taught at an off-campus site. *Two hours lecture.*

WATR 112 2 Units**Wastewater III**

Prerequisite: *WATR 105.* **Course Advisories:** *SCC minimum English and Math standards.* This course will cover advanced topics appropriate to a wastewater treatment facility including activated sludge, residual solids management, solids removal from secondary effluents, phosphorus and nitrogen removal, enhanced biological (nutrient) control, wastewater reclamation and recycling, and odor control. This course is often taught off-site. *Two hours lecture.*

WATR 120 2 Units**Distribution Systems Maintenance**

Course Advisories: *SCC minimum English and Math standards.* Study of the operation and maintenance of water distribution systems covering the design, construction and the functioning of these systems. *Two hours lecture.*

WATR 121 2 Units**Collection Systems Maintenance**

Course Advisories: *SCC minimum English and Math standards.* Study of the operation and maintenance of wastewater collection systems covering the design, construction and functioning of these systems. *Two hours lecture.*

Special Topics

These courses, numbered 148, are courses of specialized interest centered on changing knowledge and important issues in the field. Announcements of Special Topics courses appear in the Schedule of Classes.