WS 11 - WATER TREATMENT

Class hours: 3 hours lecture weekly

Water supply treatment covering historical development of water quality control practices; water sources; public health aspects of water supply; water chemistry, water treatment arithmetic; chemical treatment, filtration; softening; corrosion, disinfection; taste and odors in water; water bacteriology; pump operation and maintenance; valves and meters.

Field trips may be required.

WS 12 - WASTEWATER TREATMENT

Class hours: 3 hours lecture weekly

A course in wastewater treatment covering public health, water quality control, operation and maintenance of treatment facilities: methods of wastewater treatment and disposal; plant performance capabilities and operations; preliminary, primary and secondary treatment.

Field trips may be required.

WS 13 - WASTEWATER COLLECTION (See Exhibit C)

Class hours: 3 hours lecture weekly

This is a course designed for wastewater collection systems maintenance personnel. Material to be covered includes sewer construction, cleaning methods, safety, elementary hydraulics, pipeline and manhole repair, equipment maintenance, public relations, communications and record keeping.

Field trips may be required.

WS 14 - WATER DISTRIBUTION

Class hours: 3 hours lecture weekly

A course designed for water distribution systems operators. Material to be covered includes water production, types of reservoirs, water lines, pumps and appurtenances. The actual method of installation and repair of such facilities will be covered, as well as some of the administrative functions behind the distribution system.

Field trips may be required.

WS 16 - WATER QUALITY PROTECTION AND CROSS-CONNECTION CONTROL

Class hours: 3 hours lecture weekly

Introduction to cross-connection control; cross connection control hazards, backflow prevention devices and their installation, testing and maintenance, plumbing ordinances.
WS 17 - WATER AND WASTEWATER HYDRAULICS (See Exhibit C)  3 UNITS

Prerequisite: WS 11 or WS 12
Class hours: 3 hours lecture weekly

A study of the hydraulics necessary in the operation of water or wastewater plants and systems. Open channel and closed channel flow, metering devices, valve design and functions and the hydraulics of common systems will be considered. The course will be keyed to the hydraulic problems most often encountered in operational experience.

WS 18 - MOTORS AND PUMPS MAINTENANCE AND OPERATION  3 UNITS

Class hours: 3 hours lecture weekly

This course is designed to give a working knowledge of the problems encountered in motors and pumps operation and maintenance. The course will provide the maintenance mechanic with insight into reasons for selection as well as causes of failure and breakdown of motors and pumps. The need for a thorough maintenance program will be explained. All types of pumps and pump curves will be covered.

WS 20 - ADVANCED WATER TREATMENT  3 UNITS

Class hours: 3 hours lecture weekly

A course in practical water quality control and treatment with emphasis on the public health aspects of water supply; sources of contamination, sanitary defects in surface water supplies and distribution systems; water quality control methods, chemical treatment, sedimentation, filtration and softening; operation and maintenance of water treatment facilities and appurtenances; operation records and computations.

Field trips may be required.

WS 21 - WATER CHEMISTRY AND BACTERIOLOGY  4 UNITS

Prerequisite: WS 11 or equivalent
Class hours: 3 hours lecture, 3 hours laboratory weekly

This course covers the elements of water chemistry and water bacteriology as they apply to water treatment processes, water conditioning and the protection of water quality. The course includes laboratory demonstrations in the techniques of physical, chemical and bacteriological examination of water.

WS 22 - ADVANCED INSTRUMENTATION AND CONTROLS (See Exhibit C)  3 UNITS

Class hours: 3 hours lecture weekly

To teach students with basic electrical background advanced knowledge of water and wastewater systems controls. Includes instrumentation pneumatic, electrical and electronic controls, telemetering, supervisory controls and automated systems operations.

Field trips may be required.

(cont'...)
WS 24 - ADVANCED WASTEWATER TREATMENT AND DISPOSAL (See Exhibit C) 3 UNITS

Class hours: 3 hours lecture weekly

Topics of plant performance and operations, loading, testing; trickling filters, digesters, oxidation ponds, sludge treatment and disposal; chlorination.

Field trips may be required.

WS 25 - WATER AND WASTEWATER MANAGEMENT 3 UNITS

Class hours: 3 hours lecture weekly

The supervisor's responsibilities such as organizing, directing, coordinating, human relations, psychological aspects, attitudes, grievances, training, rating, promotion, safety. Administrative aspects of public utilities.
SANTA BARBARA CITY COLLEGE

PROPOSED

Water Science Certificate Program

24 units

NOTE: Students must complete six (10 units) from one of the four Water Science options in addition to one course (3 units) from the Water Science elective list plus one course (3 units) from the support elective coursework list.

Water Science Options

Wastewater Collection

Required Coursework:

WS 12 - Basic Wastewater Treatment
WS 13* - Wastewater Collection
WS 16 - Water Quality Protection & Cross Connection Control
WS 17 - Water & Wastewater Hydraulics
Bio. 14 - Introductory Microbiology
Math 6 - Technical Algebra

Water Distribution

Required Coursework:

WS 11 - Basic Water Treatment
WS 14 - Water Distribution
WS 16 - Water Quality Protection & Cross Connection Control
WS 17 - Water & Wastewater Hydraulics
Bio. 14 - Introductory Microbiology
Math 6 - Technical Algebra

Wastewater Treatment

Required Coursework:

WS 12 - Basic Wastewater Treatment
WS 13* - Wastewater Collection
WS 21 - Water Chemistry & Bacteriology
WS 23 - Advanced Wastewater Treatment
Bio. 14 - Introductory Microbiology
Math 6 - Technical Algebra

Water Treatment

Required Coursework:

WS 11 - Basic Water Treatment
WS 14 - Water Distribution
WS 16 - Water Quality Protection & Cross Connection Control
WS 21 - Water Chemistry & Bacteriology
Bio. 14 - Introductory Microbiology
Math 6 - Technical Algebra

(over...)
Water Science Elective Courses

WS 12 - Basic Wastewater Treatment
WS 13* - Wastewater Collection
WS 15 - Water Systems Instrumentation & Controls
WS 16 - Water Quality Protection & Cross Connection Control
WS 17 - Water & Wastewater Hydraulics
WS 18 - Pump & Motor Operation & Maintenance
WS 23 - Advanced Wastewater Treatment
WS 25 - Water & Wastewater Management Supervision

Support Elective Course List

Draft. 2 - Mechanical Drawing
Draft. 10 - Blueprint Reading
Engr. 9 - Surveying and Mapping
Eng. 18 - Technical Report Writing
Earth Sci. 3 - Physical Geology
Physics 1 - Introductory Physics
Weld. 1 - Oxyacetylene Welding, Cutting & Brazing

ME/bk

11/4/85
Revised 12/3/85
Revised 2/4/86
*Not in Course Master File

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