

**WTE 105 Water Treatment Plant Operation I (3)**

3 hours lecture

**Recommended preparation:** WTE/WWT 45**Note:** May be taken 4 times

Practical water quality control and treatment with emphasis given to sources of and quality characteristics of natural water, chemistry, public health protection, sanitary practices, and hydraulic principles. Particular attention will be given to basic water treatment plant process and operation. Will be helpful to those preparing for the Grade I and Grade II examination.

**WTE 110 Waterworks Mathematics (3)**

3 hours lecture

**Recommended preparation:** WTE/WWT 45**Note:** Cross listed as WWT 110

Provides instruction in entry level to intermediate level mathematical calculations used in the operation and evaluation of conventional water and wastewater treatment processes. The course content has been developed to meet training requirements for entry to intermediate level certification (Grade I - III) for water treatment plant operators. Also, it will cover wastewater collection, treatment and disposal. Material will parallel some of the problems found on State Certification examination.

**WTE 120 Instrumentation and Controls (3)**

3 hours lecture

**Prerequisite:** WTE/WWT 110**Note:** Cross listed as WWT 120; may be taken 4 times

Introduction to basic electrical theory. Applications and uses of water and wastewater control systems including switches, relays, alarms, motors, instrumentation and telemetering.

**WTE 125 Supervision (3)**

3 hours lecture

**Note:** Cross listed as WWT 125/PWM 125

Managerial aspects of public utilities including organization, decision making, coordination, communication, and public relations. Personnel management including recruiting, training, evaluation, discipline, promotion, morale, and grievances. Safety programs and encouraging safe conditions, actions and attitudes.

**WTE 135 Backflow Prevention (3)**

2½ hours lecture-1½ hours laboratory

**Note:** Cross listed as WWT 135; may be taken 4 times

Concentrated training in recognition and abatement of cross connections in water supply and plumbing systems. Hands on backflow prevention device testing procedures for certification.

**WTE 138 Cross Connection Specialist (3)**

3 hours lecture

**Recommended preparation:** WTE/WWT 135**Note:** Cross listed as WWT 138

The study of the various levels of administrative and technical procedures necessary to operate a cross connection control program. Students will obtain the knowledge to become certified as a "Cross Connection Control Specialist" under the provisions set forth by American Water Works Association.

**WTE 150 Water Quality Monitoring (3)**

2½ hours lecture-1½ hours laboratory

**Recommended preparation:** WWT/WTE 110

Regulatory requirements, proper sampling procedures, basic laboratory methods in order to monitor water quality for regulatory compliance or treatment plant operations.

**WTE 197 Water Technology Education Topics (.5-4)**

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

**Note:** May be taken 4 times

Topics in Water Technology Education. See Class Schedule for specific topic offered. Course title will designate subject covered.

**WTE 205 Waterworks Distribution II (3)**

3 hours lecture

**Recommended preparation:** WTE 100 and WTE/WWT 110

Intermediate and advanced instruction in the field of water production, types of reservoirs, water lines, pumps, valves, and related appurtenances. Studies design, proper operation, and facilities repair of a public water system. Provides instruction in methods of record keeping and administrative responsibilities related to water systems. This course prepares students for the California Department of Health Services, Water Distribution Operator certification exams at levels D-3, D-4, and D-5 and the "American Water Works Association" certification exams for Grades II, III, and IV.

**WTE 210 Water Treatment Plant Operation II (3)**

3 hours lecture

**Prerequisite:** WTE 105 and WTE/WWT 110

Advanced water quality control and treatment with emphasis given to state regulations, EPA regulations, advanced mathematics and chemistry. Particular attention will be given to in depth examination of treatment plant processes and the enforcement of the Surface Water Treatment Rule, Total Coliform Rule, Interim Enhanced Surface Water Treatment Rule, Long Term 1 Enhanced Surface Water Treatment Rule, Long Term 2 Enhanced Surface Water Treatment Rule, and Disinfection/Disinfection by Product Rule. This course will be helpful to those preparing for Grade III and IV examinations.

**WTE 215 Motors and Pumps, Operation and Maintenance (3)**

3 hours lecture

**Recommended preparation:** WTE/WWT 110**Note:** Cross listed as WWT 215; may be taken 4 times

Identification of problems encountered, causes of problems, corrective solutions, and repairs in the operation of pumps and motors. Implementation of maintenance programs including scheduling and recordkeeping.

**WTE 225 San Diego Regional Internship (4)**

12 hours laboratory

**Note:** Cross listed as WWT 225; Credit/No Credit grading only; may be taken 2 times

This class will provide students with the opportunity to gain work experience in San Diego County water and wastewater agencies through a formal internship. The one-year internship will provide experience in four primary areas: system operations, system maintenance, wastewater treatment and water treatment. Students must apply to the program and be accepted by a regional interview committee comprised of representatives from San Diego County water and wastewater agencies, Cuyamaca and Palomar Colleges and the San Diego County Water Authority.

**Web**

See CSIS - Web Technology

**Welding (WELD)**

Contact the Trade and Industry Department for further information.

(760) 744-1150, ext. 2545

Office: T-1

**Associate in Arts Degrees -**

AA Degree requirements are listed in Section 6 (green pages).

• Welding Technology

**Certificates of Achievement -**

Certificate of Achievement requirements are listed in Section 6 (green pages).

• Welding Technology

**Certificates of Proficiency -**

Certificate of Proficiency requirements are listed in Section 6 (green pages).

• Entry-Level Gas Metal Arc/Flux Cored Arc Welding  
 • Entry-Level Gas Tungsten Arc Welding  
 • Entry-Level Shielded Metal Arc Welding

## PROGRAMS OF STUDY

**Entry-Level Gas Metal Arc/  
Flux Cored Arc Welding**

Provides the skills necessary for entry-level employment as a gas metal arc welder/flux cored arc welder.

**CERTIFICATE OF PROFICIENCY**

Program Requirements		Units
IT 100	Technical Mathematics	3
WELD 100	Welding I	3
WELD 120	Gas Metal Arc and Flux Cored Arc Welding	3
WELD 135	Print Reading for Welders	3
WELD 160	Metal Layout for Fabrication	3
<b>TOTAL UNITS</b>		<b>15</b>

**Entry-Level Gas Tungsten Arc Welding**

Provides the skills necessary for entry-level employment as a gas tungsten arc welder.

**CERTIFICATE OF PROFICIENCY**

Program Requirements		Units
IT 100	Technical Mathematics	3
WELD 100	Welding I	3
WELD 115	Gas Tungsten Arc Welding	3
WELD 135	Print Reading for Welders	3
WELD 160	Metal Layout for Fabrication	3
<b>TOTAL UNITS</b>		<b>15</b>

**Entry-Level Shielded Metal Arc Welding**

Provides the skills necessary for entry-level employment as a shielded metal arc welder.

**CERTIFICATE OF PROFICIENCY**

Program Requirements		Units
IT 100	Technical Mathematics	3
WELD 100	Welding I	3
WELD 135	Print Reading for Welders	3
WELD 160	Metal Layout for Fabrication	3
<b>TOTAL UNITS</b>		<b>12</b>

**Welding Technology**

Provides training for a career in the field of welding. Following the study of basic welding processes, the student may elect to concentrate in one or more of the basic welding processes and to prepare for the industrial certification test.

**A.A. DEGREE MAJOR OR  
CERTIFICATE OF ACHIEVEMENT**

Program Requirements		Units
WELD 100	Welding I	3
WELD 110	Shielded Metal Arc Welding	3
WELD 115	Gas Tungsten Arc Welding	3
WELD 120	Gas Metal Arc and Flux Cored Arc Welding	3
WELD 135	Print Reading for Welders	3
WELD 160	Metal Layout for Fabrication	3
IT 100	Technical Mathematics	3
CE 100	Cooperative Education	1,2,3,4

**Electives (Select 3 units)**

WELD 105	Metal Cutting, Brazing, Soldering	3
WELD 150	Welding Inspection	3

WELD 197	Welding Technology Topics	3
<b>TOTAL UNITS</b>		<b>25 - 28</b>

**COURSE OFFERINGS**

Courses numbered under 50 are non-degree courses.  
Courses numbered under 100 are not intended for transfer credit.

<b>WELD 10L</b>	<b>Shielded Metal Arc Welding Laboratory</b>	<b>(3)</b>
<i>6 hours lecture/laboratory</i>		
<b>Note:</b> May be taken 4 times		
Operation of arc welding machines with various electrodes in all positions of welding.		
<b>WELD 15L</b>	<b>Gas Tungsten Arc Welding Laboratory</b>	<b>(3)</b>
<i>6 hours lecture/laboratory</i>		
<b>Note:</b> May be taken 4 times		
Operation of Gas Tungsten Arc Welding machines on carbon steel, stainless steel, and aluminum.		
<b>WELD 20L</b>	<b>Semiautomatic Arc Welding Laboratory</b>	<b>(3)</b>
<i>6 hours lecture/laboratory</i>		
<b>Note:</b> May be taken 4 times		
Operation of Gas Metal Arc and Flux Cored Arc Welding machines on carbon steel.		
<b>WELD 100</b>	<b>Welding I</b>	<b>(3)</b>
<i>2 hours lecture-4 hours laboratory</i>		
<b>Note:</b> May be taken 2 times		
<b>Transfer acceptability:</b> CSU		
Introduction to safe practices, setup, and operation of Shielded Metal Arc Welding, Gas Tungsten Arc Welding, Flux Core Arc Welding, and Gas Metal Arc Welding.		
<b>WELD 105</b>	<b>Metal Cutting, Brazing, Soldering</b>	<b>(3)</b>
<i>2 hours lecture-4 hours laboratory</i>		
<b>Note:</b> May be taken 4 times		
<b>Transfer acceptability:</b> CSU		
Cutting metals with oxyfuel, plasma, carbon air arc gouging, and mechanical methods. Joining of metals and fixtures using the brazing and soldering process.		
<b>WELD 110</b>	<b>Shielded Metal Arc Welding</b>	<b>(3)</b>
<i>2 hours lecture-4 hours laboratory</i>		
<b>Prerequisite:</b> WELD 100		
<b>Note:</b> May be taken 4 times		
<b>Transfer acceptability:</b> CSU		
Welding steel plate in all positions using the Shielded Metal Arc Welding process.		
<b>WELD 115</b>	<b>Gas Tungsten Arc Welding</b>	<b>(3)</b>
<i>6 hours lecture/laboratory</i>		
<b>Prerequisite:</b> WELD 100		
<b>Note:</b> May be taken 4 times		
<b>Transfer acceptability:</b> CSU		
Safe setup, operation, and maintenance of Gas Tungsten Arc Welding equipment. Welding stainless steel, carbon steel, and aluminum in the flat and horizontal positions.		
<b>WELD 116</b>	<b>Advanced Gas Tungsten Arc Welding</b>	<b>(3)</b>
<i>6 hours lecture/laboratory</i>		
<b>Prerequisite:</b> WELD 115		
<b>Note:</b> May be taken 4 times		
<b>Transfer acceptability:</b> CSU		
Safe setup, operation and maintenance of Gas Tungsten Arc Welding equipment. Welding stainless steel, carbon steel, aluminum, and other exotic metals in all positions according to building codes, military specifications, and aerospace standards.		
<b>WELD 120</b>	<b>Gas Metal Arc and Flux Cored Arc Welding</b>	<b>(3)</b>
<i>2 hours lecture-4 hours laboratory</i>		
<b>Prerequisite:</b> WELD 100		

**Note:** May be taken 4 times

**Transfer acceptability:** CSU

Gas Metal Arc Welding steel and aluminum sheet metal, and plate with short arc and spray arc technique. Flux Cored Arc Welding steel plate in flat, horizontal, and vertical positions.

**WELD 135 Print Reading for Welders (3)**

3 hours lecture

Line interpretation, sketching, bill of materials, structural shapes, welding symbols, joint types, weld types, and metric conversions.

**WELD 140 Qualification of Welders (3)**

2 hours lecture-4 hours laboratory

**Prerequisite:** WELD 101

**Note:** May be taken 4 times

This course is designed to train the students to be familiar with the provisions of the various welding standards and codes. Supervised training is provided so that students will be able to qualify for certification on any code or standard.

**WELD 150 Welding Inspection (3)**

2 hours lecture-4 hours laboratory

**Note:** May be taken 4 times

**Transfer acceptability:** CSU

This course is designed to improve understanding of the role, duties, and technical requirements of welding inspectors. The course will cover fundamentals of welding, welding symbols, documents used in welding, codes, specification, standards, weld joint geometry, destructive testing methods, nondestructive testing methods, discontinuities, and visual inspection of welds. This class provides knowledge useful for passing the American Welding Society's Certified Welding Inspector's exam.

**WELD 160 Metal Layout for Fabrication (3)**

6 hours lecture/laboratory

**Note:** May be taken 4 times

This course provides students with knowledge of basic layout, fitup, fabrication, safe operation of shop equipment. Parallel line, radial line, and triangulation layout will be taught. Students will work from drawings or sketches to prepare, form, or cut multiple parts for assembly.

**WELD 196 Special Problems in Welding (1,2,3)**

3, 6, or 9 hours laboratory

**Prerequisite:** Completion of, or concurrent enrollment in, WELD 100

**Note:** May be taken 4 times

This course is designed to aid the student in the enrichment of the area of concentration in welding and is of a research nature. Content to be determined by the need of the student under signed contract with the instructor.

**WELD 197 Welding Technology Topics (.5-3)**

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

**Note:** May be taken 4 times

**Transfer acceptability:** CSU

Topics in Welding Technology. See Class Schedule for specific topic offered. Course title will designate subject covered.

## Women's Studies

Contact the Behavioral Sciences Department for further information.

(760) 744-1150. ext. 2330

Office: W-1

### Associate in Arts Degrees -

AA Degree requirements are listed in Section 6 (green pages).

• Women's Studies

## PROGRAM OF STUDY

### Women's Studies

This major offers the student an opportunity to study women and their contributions from a female perspective. It also provides intensive, interdisciplinary lower-division preparation necessary for pursuing advanced coursework in Women's Studies. Transfer students should consult the four-year college or university catalog for specific requirements.

#### A.A. DEGREE MAJOR

Program Requirements		Units
SOC 115	Introduction to Women's Studies	3
<b>Electives (Select a minimum of 15 units)</b>		
AIS 165	Native Women in the Americas	3
COMM 105	Race, Gender and Media Effects	3
ENG 280	Women and Literature	3
HIST 130	Women in United States History	3
PSYC/SOC 125	Human Sexuality	3
PSYC 130	Psychology of Women	3
PSYC/SOC 145	Psychology and Sociology of Aging	3
<b>TOTAL UNITS</b>		<b>18</b>

Recommended Electives: ENG 100 and 202 with emphasis in Women's Studies issues.

## Zoology (ZOO)

Contact the Life Sciences Department for further information.

(760) 744-1150. ext. 2275

Office: NS-207A

#### COURSE OFFERINGS

**ZOO 100 General Zoology (4)**

3 hours lecture-3 hours laboratory

**Note:** Not open to students with prior credit in ZOO 101 or 101L

**Transfer acceptability:** CSU; UC – No credit if taken after ZOO 101/101L; CAN BIOL 4

Principles of animal life and body organization. Structural and functional adaptations of major groups of the animal kingdom from protozoans through mammals. This is a general education course intended for non-science majors.

**ZOO 101 Animal Kingdom (3)**

3 hours lecture

**Note:** Not open to students with prior credit in ZOO 100

**Transfer acceptability:** CSU; UC – No credit if taken after ZOO 100

Structural and functional adaptations of major groups of the animal kingdom from protozoans through mammals. ZOO 101L laboratory optional.

**ZOO 101L Animal Kingdom Laboratory (1)**

3 hours laboratory

**Prerequisite:** Completion of, or concurrent enrollment in, ZOO 101

**Note:** Not open to students with prior credit in ZOO 100

**Transfer acceptability:** CSU; UC – No credit for ZOO 101/101L if taken after 100

Investigations upon living and preserved specimens representative of the major groups of the animal kingdom. This is a general education course intended for non-science majors.

**ZOO 115 Natural History of Animal Life (4)**

3 hours lecture-3 hours laboratory

**Note:** Not open to students with prior credit in ZOO 116 or 116L

**Transfer acceptability:** CSU; UC – ZOO 115, 116/116L combined: maximum credit, 4 units

Consideration of the natural history, adaptations, ecology, behavior, and distribution of animals with reference to major groups of both vertebrates and invertebrates. Weekend field trips are required.