

WTE 52 Waterworks Distribution (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 50

Water utility system operations and maintenance. An introduction to the principles of pressure pipe systems and the hydraulics involved in their operation. Design, installation, operation, and maintenance of basic elements of water systems including pipes, pumps, valves, meters, and related hydraulic units. Operations and maintenance safety considerations emphasized. This course prepares students for the State of California - Water Distribution Operator Grade I, Grade II, and Grade III exams.

WTE 54 Water Treatment Plant Operation I (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 50

Provides an introduction to water treatment plant operations in accordance with the Safe Drinking Water Act (SDWA). Special emphasis is given to implementation of the Surface Water Treatment Rule through USEPA approved filtration technology. Subject matter includes major provisions of the SDWA and its amendments; basic water chemistry; source water assessment; conventional treatment processes; treated water stability; waterborne diseases; public health protection; disinfection; and an introduction to math skills equivalent to those required of State of California Grade II water treatment plant operators. This class is helpful to those preparing for the Grade I and Grade II state examination.

WTE 56 Instrumentation and Controls (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 50**Note:** Cross listed as WWT 56

Introduction to basic electrical theory, applications, common uses, and real world examples of control systems and instrumentation used in water distribution, water and wastewater treatment plants; including switches, relays, alarms, motors, instrumentation, valve actuators, computers, and communication.

WTE 58 Backflow Prevention (3)

2½ hours lecture - 1½ hours laboratory

Note: Cross listed as WWT 58

Provides intensive training focused on the field testing procedure for backflow prevention devices and training in the recognition and abatement of cross connections in water and plumbing systems. Students will acquire the knowledge, skills, and abilities required to test as a certified backflow tester.

WTE 60 Supervision (3)

3 hours lecture

Note: Cross listed as PWM/WWT 60

Supervisory aspects of public agencies including organization, decision making, coordination, communication, and public relations. Personnel supervision including coaching, training, evaluation, discipline, team building, morale, and grievances. Safety programs and encouraging safe conditions, actions and attitudes.

WTE 62 Cross Connection Specialist (3)

3 hours lecture

Recommended preparation: WTE/WWT 58**Note:** Cross listed as WWT 62

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 the American Water Works Association.

WTE 64 Water Quality Monitoring (3)

2½ hours lecture - 1½ hours laboratory

Recommended preparation: WTE /WWT 50

Prepares students to properly monitor public drinking water quality through study of: Federal and State regulations, laboratory analyses, types of contaminants, sample collection techniques and interpretation of monitoring data.

WTE 66 Motors and Pumps, Operation and Maintenance (3)

3 hours lecture

Recommended preparation: WTE/WWT 50**Note:** Cross listed as WWT 66

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 72 Waterworks Distribution II (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE 52

Intermediate and advanced instruction in the field of water distribution, 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 74 Water Treatment Plant Operation II (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE 54

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 97 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 and/or laboratory may be scheduled by the department. Refer to Class Schedule.

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

Web

See CSIT - Web Technology

Welding (WELD)

Contact the Trade and Industry Department for further information.

(760) 744-1150, ext. 2545

Office: T-102A

Associate in Science Degrees -

AS 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/WELD 108	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
TOTAL UNITS		15

Entry-Level Gas Tungsten Arc Welding

Introduction to GTAW, GMAW, and SMAW welding process with concentration on GTAW. Basic math, print reading, and layout skills and knowledge will be taught to prepare students for entry-level employment as a GTAW welder.

CERTIFICATE OF PROFICIENCY

Program Requirements		Units
IT/WELD 108	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
TOTAL UNITS		15

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/WELD 108	Technical Mathematics	3
WELD 100	Welding I	3
WELD 110	Shielded Metal Arc Welding	3
WELD 135	Print Reading for Welders	3
WELD 160	Metal Layout for Fabrication	3
TOTAL UNITS		15

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.S. DEGREE MAJOR OR
CERTIFICATE OF ACHIEVEMENT**

Program Requirements		Units
WELD 100	Welding I	3
WELD 105	Metal Cutting, Brazing, Soldering	3
WELD/ IT 108	Technical Mathematics	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 140	Qualification of Welders	3
WELD 145	Pipe Welding	3
WELD 150	Welding Inspection	3
WELD 160	Metal Layout for Fabrication	3
TOTAL UNITS		33

COURSE OFFERINGS

WELD 100 Welding I (3)

1½ hours lecture - 4½ hours laboratory

Transfer acceptability: 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.

WELD 105 Metal Cutting, Brazing, Soldering (3)

1½ hours lecture - 4½ hours laboratory

Transfer acceptability: CSU

Cutting metals with oxyfuel, plasma, carbon, and air arc gouging. Joining metals using oxyfuel welding, brazing, and soldering.

WELD 108 Technical Mathematics (3)

3 hours lecture

Note: Cross listed as IT 108

Transfer acceptability: CSU

Methods and experience in defining and solving mathematical problems in industrial technology. Special emphasis will be given to the application of these basic processes to the solution of the unique mathematical problems encountered in the areas of architecture, automotive, drafting, machine, welding, and woodworking technology.

WELD 110 Shielded Metal Arc Welding (3)

1½ hours lecture - 4½ hours laboratory

Transfer acceptability: CSU

Welding steel plate in all positions using the Shielded Metal Arc Welding process.

WELD 115 Gas Tungsten Arc Welding (3)

1½ hours lecture - 4½ hours laboratory

Transfer acceptability: 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.

WELD 116 Advanced Gas Tungsten Arc Welding (3)

1½ hours lecture - 4½ hours laboratory

Prerequisite: A minimum grade of 'C' in WELD 115

Transfer acceptability: 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.

WELD 117 Geometric Dimensioning and Tolerancing (2)

1 hour lecture - 3 hours laboratory

Note: Cross listed as DT/ENGR 117

Transfer acceptability: CSU

An introduction to geometric dimensioning and tolerancing ASME Y14.5-2009. Students will learn to identify, use appropriate geometric symbols and techniques of geometric dimension, and produce industrial quality drawings. Students will also learn to measure and verify geometric dimensions and tolerances of manufactured items.

WELD 120 Gas Metal Arc and Flux Cored Arc Welding (3)

1½ hours lecture - 4½ hours laboratory

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

Transfer acceptability: CSU

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

- WELD 136 Welding Symbols** (3)
3 hours lecture
Transfer acceptability: CSU
Complete description and identification of welding symbols used in the welding and fabrication industry.
- WELD 140 Qualification of Welders** (3)
1½ hours lecture - 4½ hours laboratory
Transfer acceptability: CSU
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 145 Pipe Welding** (3)
1½ hours lecture - 4½ hours laboratory
Transfer acceptability: CSU
Provides a thorough technical understanding of pipe welding nomenclature, weld quality, and pipe fit-up and welding procedures. Provides training to develop welding skills necessary to make high quality welds on steel pipe in the 5G, 2G and 6G positions.
- WELD 150 Welding Inspection** (3)
3 hours lecture
Transfer acceptability: CSU
Designed to improve understanding of the role, duties, and technical requirements of welding inspectors. The course will cover topics in 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. Provides knowledge useful for passing the American Welding Society's Certified Welding Inspector's exam.
- WELD 151 CAD/CAM Machining** (3)
1½ hours lecture - 4½ hours laboratory
Note: Cross listed as DT/ENGR 151
Transfer acceptability: CSU
Hands-on operation of importing three-dimensional solid and parametric three-dimensional models into CAD/CAM operations.
- WELD 160 Metal Layout for Fabrication** (3)
2 hours lecture - 3 hours laboratory
Transfer acceptability: CSU
Provides students with knowledge of basic layout, fitup, fabrication, and 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 165 Visual Inspection Level I** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Teaches visual inspection of welds, the equipment used during visual inspection, proper inspection procedure, and common discontinuities in the surface of a weld.
- WELD 166 Visual Inspection Level II** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Teaches level II visual inspection of welds, the equipment used during visual inspection, proper inspection procedure, and common discontinuities in the surface of a weld.
- WELD 167 Visual Inspection Level III** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Advanced studies in visual equipment, methods, and evaluation.
- WELD 170 Liquid Penetrant Testing Level I** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Provides training in the principle of liquid penetrant testing. Topics include discussion and demonstration of processing, testing methods, and equipment for Level I.
- WELD 171 Liquid Penetrant Testing Level II** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Provides training in the selection of the appropriate testing method and evaluations of indications.
- WELD 172 Liquid Penetrant Testing Level III** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Advanced training in liquid penetrant testing. Topics will include how penetrant works; the differences between liquid testing methods; the equipment used; and interpretation/evaluation of discontinuities.
- WELD 175 Magnetic Particle Testing Level I** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Principles of magnets and magnetic fields and laws of magnetism and their effects on discontinuities. Methods of Magnetic Particle Inspection and types of discontinuities will be taught.
- WELD 176 Magnetic Particle Testing Level II** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Provides theory lectures and practical training on magnetic particle testing, performing calibrations, measuring samples, and performing non-destructive testing using magnetic particle theory. Encourages group discussions around practical problems and provides field expertise on how to resolve them. Meets or exceeds requirements for ASNT Magnetic Particle Testing Level II.
- WELD 177 Magnetic Particle Testing Level III** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Provides basic knowledge into how to effectively perform magnetic particle inspection. Emphasis is placed on the properties of electricity and magnetism, understanding longitudinal and circular magnetism, use of central conductor, coil and direct magnetization equipment, and the use of yokes and prods. In addition to covering the theoretical aspects of this method, provides demonstrations and practical hands-on laboratory time on both portable and stationary equipment. Meets or exceeds ASNT Magnetic Particle testing Level III.
- WELD 180 Ultrasonic Testing Level I** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Provides knowledge and skills in the setup, calibration, and inspection of materials using ultrasonic testing equipment. Fundamental concepts and terminology of ultrasonics and mathematical relationships that exist between them. Meets or exceeds the content recommended by the American Society for Nondestructive Testing for Level I.
- WELD 181 Ultrasonic Testing Level II** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Provides knowledge and skills in the setup, calibration, and inspection of materials using ultrasonic testing equipment. Fundamental concepts and terminology of ultrasonics and mathematical relationships that exist between them. Meets or exceeds the content recommended by the American Society for Nondestructive Testing for Level II.
- WELD 182 Ultrasonic Testing Level III** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Advanced topics and training in ultrasonic testing of materials.
- WELD 183 Ultrasonic Phased Array Inspection Level I** (1, 2)
½ or 1 hour lecture - 2 or 3 hours laboratory
Transfer acceptability: CSU
Provides training in advanced ultrasonic inspection of welds using straight-beam, angle-beam, and phased array ultrasonic testing.

WELD 184 Ultrasonic Phased Array Inspection Level II (1-2)*½ or 1 hour lecture - 2 or 3 hours laboratory***Transfer acceptability:** CSU

Provides training in advanced ultrasonic inspection of welds using straight-beam, angle-beam, and phased array ultrasonic testing.

WELD 185 Ultrasonic Phased Array Inspection Level III (1-2)*½ or 1 hour lecture - 2 or 3 hours laboratory***Transfer acceptability:** CSU

Provides training in advanced ultrasonic inspection of welds using straight-beam, angle-beam, and phased array ultrasonic testing.

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 and/or laboratory may be scheduled by the department. Refer to Class Schedule.***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. 2329

Office: MD-241

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
Electives (Select a minimum of 15 units)		
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
SOC 135	Gender and Society	3
PSYC/SOC 145	Psychology and Sociology of Aging	3
TOTAL UNITS		18

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

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 General Zoology (Lecture) (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 General Zoology (Laboratory) (1)*3 hours laboratory***Prerequisite:** A minimum grade of 'C' in ZOO 101, 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 120 Animal Behavior (3)*3 hours lecture***Transfer acceptability:** CSU; UC

Biological basis of behavior including behavior genetics, operation of evolutionary processes on species typical behaviors, behavioral ontogeny, functional organization of nervous systems, animal senses, motivation including hormonal effects on drive, and biorhythms; behavioral ecology including social behavior and social living, reproductive behaviors, homing and migration, antipredatory defenses, feeding strategies, and communication.

ZOO 135 Biology of Marine Mammals (3)*3 hours lecture***Note:** Cross listed as BIOL 135**Transfer acceptability:** CSU; UC

The fundamentals of marine mammal biology are explored. Topics include comparative anatomy, evolution, cladistics, mammalian physiology, ecology and zoogeography, behavior and conservation as they apply to the study of marine mammals.

ZOO 145 Introduction to Anatomy and Physiology (3)*3 hours lecture***Note:** Not open to students with prior credit in ZOO 200 or 203**Transfer acceptability:** CSU; UC – ZOO 145/145L and BIOL 106 or BIOL 105 combined: maximum credit, 4 units; UC – No credit for ZOO 145/145L if taken after ZOO 203, or 200

Introduction to the structure and function of human body systems in health and disease. Not recommended for those intending to take BIOL 105, 106, ZOO 200 or 203.