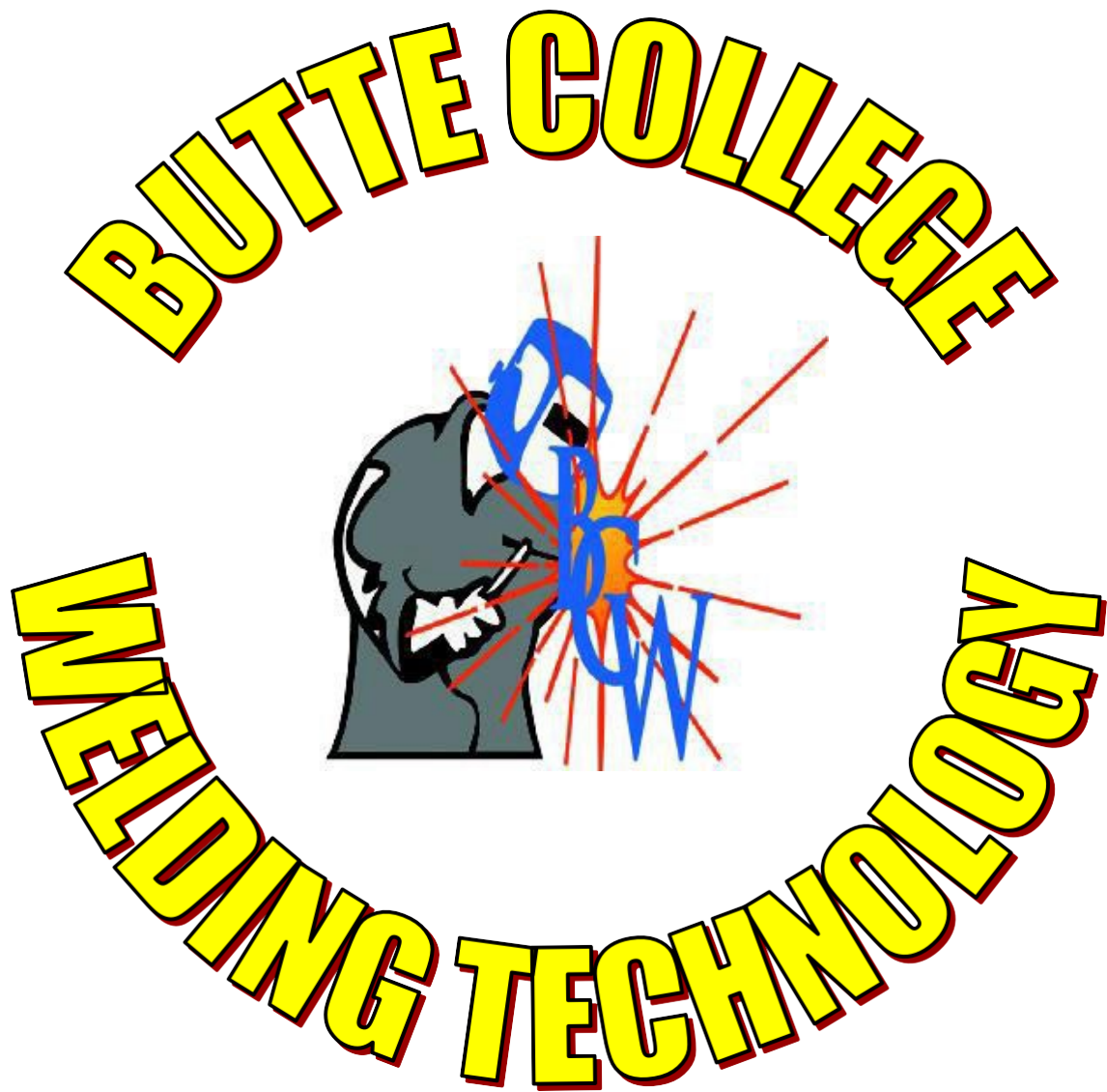




***Build yourself a career in
welding technology!***



American Welding Society

Educational Institution Member



WELDING TECHNOLOGY

CURRICULUM AND COURSE DESCRIPTIONS

Welding Technology Prerequisites

LEVEL 1 (or Equivalent)

		UNITS
WLD	20	Beginning Welding
		4
WLD	21	Intermediate Welding
		4
WLD	152	Shop Practices For Intermediate Welders
		1
		Can be a combination of WLD 150 and 152

COURSE PREREQUISITES MUST BE COMPLETED IN ORDER TO BE ACCEPTED FOR THE PROGRAM. SEE PAGE 5 FOR DETAILS.

***** WLD 21 has required projects equivalent to those within the Level 1 certificate. If ALL of these required projects are not successfully completed with a passing grade within WLD 21, then the projects must be completed successfully within one year of the completion of WLD 21. The completion of these projects can take place through the enrollment in additional units of WLD 150 or WLD 152.

Certificate of Achievement in Welding Technology

Students have the opportunity to enter the Welding Program either in the Fall or Spring Semester

FALL or SPRING SEMESTER

		UNITS
WLD	22	Oxyacetylene Welding and Flame Cutting
		2
WLD	24	Shielded Metal Arc Welding (stick electrode)
		8
WLD	25	Fabrication Practicums
		2
WLD	26	Symbol Reading, Blue Print Interpretation and Computations
		3
WLD	40	Welding Equipment Maintenance/Service
		2
WLD	154	Shop Practices for Welders I
		<u>1</u>
		18

WINTER SESSION or SUMMER SEMESTER (1st two weeks of summer)

WLD	50	Pipe Fitting and Cutting	<u>2</u>
			2

SPRING or FALL SEMESTER

WLD	28	Mig and Tig Arc Welding	3
WLD	30	Heavy Plate Welding	3
WLD	32	Integrated Welding Applications	3
WLD	34	Pipe and Tube Welding	4
WLD	36	Welder Qualifications	3
WLD	42	Introduction to Welding Inspection	2
WLD	56	Welding Industry Employment Preparation	3
WLD	156	Shop Practices for Welders II	<u>1</u>
			22

Upon completion of the above courses, the student will be prepared to take the welder qualification tests.

SUMMER SEMESTER or WINTER SESSION

WLD	160	Welding Certification Practices	<u>1</u>
			1

Students who receive a “B” average in all of the above courses will be eligible to enroll in the PG&E partnership program.

PG&E POWERPATHWAY GAS PIPELINE WELDING PROGRAM (Only offered in the summer session.)

WLD	55	Power Generation & Petroleum Chemical Pipe & Tube Welding	5
WLD	158	Shop Practices for Pipe and Tube Welders	1
WLD	162	Pipe and Tube Welding Certification Practices	<u>1</u>
			7

Certificates that may be earned:

Certificate in Welding Technology Level I **9 Units**

Required courses for the certificate:

Courses within this career pathway will help students prepare for a future in the welding industry as a novice welder and will also better prepare students success in the Welding Technology Program.

WLD	20	Beginning Welding		4
WLD	21	Intermediate Welding	(P)	4
WLD	152	Shop Practices for Intermediate Welders	(P)	1

Certificate in Welding Technology Level II **14 Units**

Required courses for the certificate:

Courses within this career pathway will help students prepare for a future in the welding industry as an intermediate welder and will also better prepare students success in the Welding Technology Program.

WLD	22	Oxyacetylene Welding and Flame Cutting	(P/C)	2
WLD	24	Shielded Metal Arc Welding (Stick Electrode)	(P/C)	8
WLD	26	Symbol Reading, Blue Print Interpretation and Computations	(P/C)	3
WLD	154	Shop Practices for Welders I	(P/C)	1

Certificate of Achievement in Welding Technology **“C or better in all program courses”**

Required courses for the certificate:

Courses within this career pathway will help students prepare for a future in the welding industry as an advanced welder and will also better prepare students success in the PowerPathway Gas Pipeline Welding Certificate.

WLD	28	Mig and Tig Arc Welding	(P/C)	3
WLD	30	Heavy Plate Welding	(P/C)	3
WLD	32	Integrated Welding Applications	(P/C)	3
WLD	34	Pipe and Tube Welding	(P/C)	4
WLD	36	Welder Qualification	(P/C)	3
WLD	156	Shop Practices for Welders II	(P/C)	1

Certificate in Power Pathway Gas Pipeline Welding **7 Units**

Required courses for the certificate:

Courses within this pathway help prepare students for careers within the petrochemical/chemical gas pipeline industry.

WLD	55	Power Generation and Petroleum Chemical Pipe and Tube Welding	(P/C)	5
WLD	158	Shop Practices for Pipe and Tube Welders	(P/C)	1
WLD	162	Pipe and Tube Welding Certification Practices	(P)	1

P = Prerequisite C = Co-requisite

Associates of Sciences Degree

For more information regarding major and AS requirements, consult the Butte College Catalog and a counselor.

Required courses for the major:

WLD	99	Welding Work Experience (2 Units) Not required for Certificate of Achievement
BUS	25	Intro to Entrepreneurship (3 units)
AB	54	Supervision and Management in Agriculture (3 units)
BCIS	18	Introduction to Business Technology (3 units)
or	CSCI 2	Business and Computer Information Systems (3 units)

Major Requirement: Complete one of the established majors. Please refer to the Butte College catalog index for a listing of all majors. **Each course in the major must be completed with a "C" grade or better.**

General Education Requirements: Complete a minimum of twenty (20) semester units of general education from the approved list according to the following pattern:

- A. Natural Science - Area A: One three-unit course minimum.
- B. Social and Behavioral Sciences - Area B: One three-unit course minimum.
- C. Humanities - Area C: One three-unit course minimum.
- D. English Composition - Area D: One three-unit course minimum.
- E. Communication and Analytical Thinking - Area E: One three-unit course minimum.
- F. Self-Integration and Kinesiology - Area F: One Self-Integration course and two Kinesiology (KIN) activity courses (4-5 units). The Self-Integration portion of Area F is waived for students completing RT Program, Paramedic, LVN, RN and ADN degrees; however, 20 total GE units are required for graduation.

NOTE: The DD214 may be used to satisfy Area F

WELDING PROGRAM

A Butte Community College Vocational Program Guide and Summary

THE PROGRAM:

The Welding Technology Program is a vocational core of courses designed to produce qualified personnel for certified welding jobs. Program performance standards for certification will be in accordance to those established by the American Welding Society and/or American Society of Mechanical Engineers. Courses are held in a completely modern and well-equipped welding lab.

For certified welders, employment opportunities are virtually unlimited. High-paying jobs are open in both heavy and light industry throughout California as well as the nation and the world. As far as can be seen in the future, the job market for certified welders will continue to grow.

THE CURRICULUM:

The curriculum includes the following major areas of instruction:

- Oxyacetylene Welding and Flame Cutting
- Shielded Metal Arc Welding (stick)
- Symbol Reading, Blue Print Interpretation and Computations
- Flux Core Welding
- Heavy Plate Welding
- Pipe and Tube Welding
- Integrated Welding Applications
- Welding Equipment Maintenance and Service
- Welding Inspection
- Welder Qualification
- Mig /Tig Welding
- Pipe Fitting and Cutting
- Welding Industry Employment Preparation

EDUCATIONAL OUTCOME:

1. Certificate/Qualifications/Degree capable of being earned:

Certificate

Certificate in Welding Technology Level I (two-semester track)
Certificate in Welding Technology Level II (three-semester track)
Certificate of Achievement (one-year track)
Certificate in Power Pathway Gas Pipeline Welding

Degree

Associate of Science Degree in Welding Technology leading to a four-year Bachelor's Degree in Welding Manufacturing and/or Welding Engineering and/or Industrial Arts.

Qualifications

This program qualifies the student to take the welder certification tests in all Processes.

2. Desired Outcomes For Individuals Who Complete The Program:

This program is designed to produce an entry-level technician in the 6-G pipe position (qualifies for all positions in plate and pipe). The student will be able to weld with SMAW, FCAW, GMAW, GTAW, OAW, OFC, PAC and AAC in all positions with a variety of metals and alloys. The student will be able to certify to at least one of the following codes: API, AWS, and ASME, according to individual skills.

This program is designed to give the student the necessary skills to be successful in the modern welding industry, the student will develop job-oriented work habits, job seeking skills, resume skills and a knowledge of what the employer is expecting.

PRE-PROGRAM PREPARATION NEEDED:

Applying for the Welding Technology Program

The Welding Technology Program is a two-semester program and accepts 46 students beginning in the Fall and 23 students in the Spring Semester. Because the program is impacted, interested students must complete a Welding Technology application to be placed on the program list. There are prerequisites to the program that must be completed before you can be accepted. Prerequisites are listed in this program guide, *Things for You to Know and Things You Need to Do* and the *Welding Technology application* which are both available under the Applying for Welding Program link at <http://www.butte.edu/welding/>.

Follow the steps below to get on the program list.

1. All applicants must have a **Butte College ID number**. If you do not have one, go to <http://www.butte.edu/newandreturning/> and follow the steps.
2. Read **Things for You to Know and Things You Need to Do** (see link above).
3. Once you have a Butte College ID number, complete and return the **Welding Technology application** (see link above). Applicants may apply before prerequisites are completed.
4. All applicants must have a **45-minute face-to-face meeting (This will be completed in your WLD-20 and WLD-21 courses if completing at Butte College)** with Welding Department Chair or Designee. If articulating, call 530.895.2501 or stop by WM 107 to schedule an appointment. Appointments are held only during Fall and Spring Semesters.
5. Complete Butte College **Orientation**. <http://www.butte.edu/orientation/> or 530.895.2416

For more information on applying visit our link at <http://www.butte.edu/welding/>, contact Melanie Flaherty at 530.895.2501, or email flahertyme@butte.edu.

More Details

The curriculum within the Welding Technology Program contains a significant amount of trade math. Decimals, fractions, addition, subtraction, multiplication and division are used daily (without the use of calculators). The ability to communicate effectively (both orally and written) and read technical publications is essential for success. If it's been a significant amount of time since Math, or English courses have been taken, or a student struggles with these subjects it's suggested that potential students may want to take some refresher courses prior to entering the program.

1. Orientation must be cleared with the Butte College Orientation Office.
Student Orientation will consist of a campus tour, meeting with a counselor, and setting up your MyBC account. Not all students new to Butte College need to participate in the Orientation/ START program. To determine if you are exempt, see the exempt list below. Details are at the Orientation web link or you may contact the Orientation Office.

You are exempt from Orientation if you:

- Hold an Associate degree or a higher degree
- Have completed 24+ units at another college(s) and are in good academic standing with a G.P.A. of 2.0 or more. (Assessment requirement still must be met)

These exemptions still require clearance by Orientation Office.

2. Course prerequisites must be completed prior to acceptance into the welding program

Course prerequisites are WLD 20 (Beginning Welding) **AND** WLD 21 (Intermediate Welding) with a Level 1 Certificate. Prerequisites may be met in the following ways:

- High School 2+2 Articulated Welding Classes and Level 1 Welding Certification. **High school must have an**

approved 2+2 Articulation agreement with Butte College. Some approved high schools offer only WLD 20; some are approved for both WLD 20 and WLD 21. Not all high school welding classes are 2+2 articulated with Butte College.

- Butte College WLD 20 (offered Fall, Spring and Summer semesters).
- Butte College WLD 21 (Intermediate Welding) and Level 1 Welding Certification (earned after successful completion of WLD 21 and WLD 150/152). (WLD 21 is offered Fall, Spring and Summer Semesters.)

To enroll in WLD 20 and WLD 21 through Butte College, orientation must be cleared prior to registering.

- *Equivalent welding courses taken at another college (transcripts and course descriptions must be provided for verification). ***YOU MUST HAVE THIS OPTION CLEARED WITH THE WELDING DEPARTMENT CHAIR IN ORDER TO FULFILL COURSE PREREQUISITES.**
- *Welding certifications (copies must be provided showing certification and expiration dates) or work experience. ***YOU MUST HAVE THIS OPTION CLEARED WITH THE WELDING DEPARTMENT CHAIR IN ORDER TO FULFILL COURSE PREREQUISITES.**

Fall Test Dates: TBA; Spring Test Dates: TBA

3. Also recommended: Students who are still enrolled in high school and who are considering a career in the welding industry are encouraged to take courses in **English, Mathematics, Reading** and related fields to welding (any agriculture or industrial arts classes).
4. Other Types of Preparation: Formal or informal employment experience having to do with hand-eye coordination will greatly enhance the student's educational experience.

FOR MORE INFORMATION, CONTACT:

Welding Department:

Instructors:

(530) 895-2911 – Chris Armitage (Department Chair)
(530) 895-2837 – Joseph Gebbia
(530) 895-2837 – Dakoda McFall
(530) 879-6162 – Miles Peacock
(530) 879-6140 – Russell Thomas
(530) 879-6138 – Seth Vader
(530) 895-2586 – Logan Ziegenmeyer

Administrative Assistant to the Dean: (530) 895-2501 – Melanie Flaherty

Counseling Department: (530) 895-2378
Admissions: (530) 895-2361
Orientation: (530) 895-2416
Financial Aid: (530) 895-2311

Mailing Address: Butte College
Welding Technology Program
3536 Butte Campus Dr.
Oroville, CA 95965

ADDITIONAL PROGRAM INFORMATION

1. The prerequisite courses are a total minimum of 340 hours (34 hours lecture and 208 hours laboratory, not including homework or assigned reading).
2. The program is a minimum of 1,590 hours (289 hours lecture and 1,301 hours Laboratory, not including homework or assigned reading) for a one-year Certificate of Achievement.
3. PG&E PowerPathway Gas Pipeline Welding Program (Offered during summer session) – The program is a minimum of 323 hours (17 hours lecture and 306 hours Laboratory, not including homework or assigned reading.)
4. The program may be completed in one year.
5. The cost of the Welding Program is approximately \$5,800 to \$6,500. This includes registration fees, books, and tools (approximately \$3,500 to \$4,500). Registration fees may be less if you qualify for the Ca College Promise Grant (CCPG) or the Butte College Promise Scholarship (BCPS). (Subject to change)
6. Our classroom and shop facilities will handle up to 92 students (46 in each lab).
7. The program is fully accredited for loans and grants.
8. The program certifies 96% of its finishing students.
9. The program is second to none in the quality of instruction.
10. The shop facility is equipped with the highest quality and variety of equipment.
11. Employers are constantly seeking our graduates with us as references.
12. **Excessive absences will lead to failure.** More than 24 hours of absences per semester and you may be dropped from the program.
13. If a student fails one or more classes during a semester, they will be required to re-apply for the program.

WELDING TECHNOLOGY COURSE DESCRIPTIONS

PREREQUISITE COURSES

WLD 20 - BEGINNING WELDING

4 UNITS

Prerequisite(s): NONE

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

153 hours Lab

This course includes oxyacetylene welding (OAW), oxyacetylene cutting (OFC-A) and shielded metal arc welding (SMAW) processes, in the flat and horizontal positions on various joint details. It will also include safety procedures, electrode identification, joint fit-up and alignment, base metal preparation, weld quality, beads and fillet welds, with focus on theory and practice. All welds will meet the American Welding Society (AWS) qualification standards. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 21 - INTERMEDIATE WELDING

4 UNITS

Prerequisite(s): WLD 20 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

153 hours Lab

In this course students will perform welds in positions other than flat and horizontal. The content will enhance the ability of the students to perform welds out of position. The course includes welding safety, shielded metal arc welding (SMAW), gas metal arc welding (GMAW), plasma arc cutting (PAC), air carbon arc cutting and gouging (CAC-A) welding and cutting processes. These

welds will be performed in the flat, horizontal, vertical, and overhead positions. It will also include base metal, shielded metal arc welding electrodes, joint fit-up and alignment, groove welds with backing, and open V-groove welds. All welds will meet the American Welding Society (AWS) qualification standards. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 152 - Shop Practices for Intermediate Welders

0.5 - 1 Unit(s)

Prerequisite(s): WLD 20

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: NT 25.5 - 51 hours Lab

This is a supervised lab experience for intermediate welding students. Students will practice skills in shielded metal arc welding (SMAW), gas metal arc welding (GMAW), oxy-fuel cutting (OFC), plasma arc cutting (PAC), and air carbon arc cutting and gouging (CAC-A). Welding and cutting processes will be in the flat, horizontal, vertical, and overhead positions on groove welds with backing and open V-groove welds. All welds will meet the American Welding Society (AWS) qualification standards. Students may enroll in this course up to 1 unit(s) to complete the entire curriculum of the course. Pass/No Pass Only. Open Entry/Open Exit.

PROGRAM COURSES – FIRST SEMESTER

WLD 22 – OXYACETYLENE WELDING AND FLAME CUTTING

2 UNITS

Prerequisite(s): WLD 21 and Level I Welding Qualification or Equivalent Co-

requisite(s): WLD 24, WLD 25, WLD 26, WLD 40, WLD 250 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

51 hours Lab

This course includes the techniques used for oxyacetylene welding (OAW) in all positions (flat, vertical, horizontal and overhead) and uses a variety of freehand and automatic burning equipment on different metals. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 24 – SHIELDED METAL ARC WELDING (Stick Electrode)

8 UNITS

Prerequisite(s): WLD 21 and Level I Welding Qualification or Equivalent Co-

requisite(s): WLD 22, WLD 25, WLD 26, WLD 40, WLD 250 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

34 hours Lecture

306 hours Lab

This course includes pre-employment training for welding technicians. Emphasis on developing manipulative proficiency in the use of shielded metal arc welding (SMAW), gas metal arc welding (GMAW), and flux core arc welding (FCAW), in the flat, horizontal, vertical, and overhead positions. These welding processes will be applied to light and heavy gauge plate steel for light construction. Part of the Level Two welder qualification for American Welding Society (AWS). Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 25 – FABRICATION PRACTICUMS

2 UNITS

Prerequisite(s): WLD 21 and Level I Welding Qualification or Equivalent Co-

requisite(s): WLD 22, WLD 24, WLD 26, WLD 40, WLD 250 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

51 hours Lab

This course will instruct students on theory and proper operation and applications of equipment, tools, fasteners and processes used in welding and fabrication industries. Emphasis is placed in hands-on applications. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 26 – SYMBOL READING, BLUE PRINT INTERPRETATION & COMPUTATIONS 3 UNITS

Prerequisite(s): WLD 21 and Level I Welding Qualification or Equivalent Co-

requisite(s): WLD 22, WLD 24, WLD 25, WLD 40, WLD 250 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

102 hours Lab

This course includes an introduction to blueprint reading and welding symbols interpretation as applied to measurement and computations of metal and pipe layouts. Included within the course are layout and marking tool techniques used in the welding industry. Techniques of fabrication, structured materials listing and assembly methods will be emphasized. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 40 - WELDING EQUIPMENT MAINTENANCE AND SERVICE 2 UNITS

Prerequisite(s): WLD 21 and Level I Welding Qualification or Equivalent Co-

requisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 250 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

51 hours Lab

This course is a study of the theory, application and practices for welding equipment. This will include the maintenance and service skills for the equipment used in the welding industry. Since skills/ proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 154 – SHOP PRACTICES FOR WELDERS I 1 - 2 UNITS

Prerequisite(s): NONE

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: NT

25.5 - 408 hours Lab

This is a supervised lab experience for those wishing to expand their welding skills, and gain welding time, and use a wide variety of equipment in the following processes: oxy-fuel welding (OFW), shielded metal arc welding (SMAW), gas metal arc welding (GMAW), gas tungsten arc welding (GTAW), flux core arc welding (FCAW), oxy-fuel cutting (OFC), air carbon arc cutting (CAC-A) and plasma arc cutting (PAC). Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated to a maximum of 8 units. Pass/No Pass Only. Open Entry/Open Exit.

PROGRAM COURSES – SECOND SEMESTER (During Winter or Summer Session)**WLD 50 - PIPE FITTING AND CUTTING 2 UNITS**

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 250 and

Level II Welding Qualification or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

51 hours Lab

This course assists students in pipe fitting, measurements, patterns, marking and layout tools used in the pipe welding industry. Techniques of fitting and cutting various pipe joint designs will be practiced. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

PROGRAM COURSES – SPRING OR FALL SEMESTER

WLD 28 - MIG AND TIG ARC WELDING

3 UNITS

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 50, WLD 250 and Level II Welding Qualification or Equivalent

Co-requisite(s): WLD 30, WLD 32, WLD 34, WLD 36, WLD 42, WLD 56, WLD 250 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

102 hours Lab

This course includes the gas metal arc welding (GMAW)/metal inert gas (MIG), gas tungsten arc welding (GTAW)/tungsten inert gas (TIG) and flux cored arc welding (FCAW) processes, in the flat, vertical, horizontal, and overhead positions. It will also include safety procedures, electrode identification, joint fit-up and alignment, base metal preparation, weld quality, and beads, with a focus on theory and practice. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 30 - HEAVY PLATE WELDING

3 UNITS

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 50, WLD 250 and Level II Welding Qualification or Equivalent

Co-requisite(s): WLD 28, WLD 32, WLD 34, WLD 36, WLD 42, WLD 56, WLD 250 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

102 hours Lab

This course includes the shielded metal arc welding (SMAW) processes and the flux cored arc welding (FCAW) Process, in the flat, horizontal, vertical and overhead positions on heavy plate (3/4" to 3" thick). It will also include safety procedures, electrode identification, joint fit-up and alignment, base metal preparation, weld quality, and beads, with focus on theory and practice. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 32 - INTEGRATED WELDING APPLICATIONS

3 UNITS

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 50, WLD 250 and Level II Welding Qualification or Equivalent

Co-requisite(s): WLD 28, WLD 30, WLD 34, WLD 36, WLD 42, WLD 56, WLD 250 or Equivalent

Recommended Prep: NONE

Transfer Status: CSU

17 hours Lecture

102 hours Lab

In this course students will perform layout, fitting, welding, inspection of structural weldments, piping, tank, and low pressure vessel simulation. Shielded metal arc welding (SMAW), gas tungsten arc welding (GTAW), and flux cored arc welding (FCAW) processes are emphasized. Shop fabrication and field erection are simulated. Limited access welding is encountered. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 34 - PIPE AND TUBE WELDING

4 UNITS

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 50, WLD 250 and Level II Welding Qualification or Equivalent

Co-requisite(s): WLD 28, WLD 30, WLD 32, WLD 36, WLD 42, WLD 56, WLD 250 or Equivalent

Recommended Prep: NONE

Transfer Status: CSU

17 hours Lecture

153 hours Lab

This course covers shielded metal arc welding (SMAW), gas tungsten arc welding (GTAW), gas metal arc welding (GMAW), and flux core arc welding (FCAW) processes on several pipe systems. A variety of materials and configurations on sub critical pipe welding (pressure and power systems, cross-country transmission, pipeline welding and water transmission pipe welding) will be used. Special attention and performance standards for the qualifications will be used from the following codes: American Petroleum Institute (API), American Welding Society (AWS) and American Society of Mechanical Engineers (ASME). Since

skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 36 - WELDER QUALIFICATION

3 UNITS

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 50, WLD 250 and Level II Welding Qualification or Equivalent

Co-requisite(s): WLD 28, WLD 30, WLD 32, WLD 34, WLD 42, WLD 56, WLD 250 or Equivalent

Recommended Prep: NONE

Transfer Status: CSU

17 hours Lecture

102 hours Lab

This course prepares students for qualifications in several codes to meet the required standards for entry-level employment. Training in shielded metal arc welding (SMAW), gas tungsten arc welding (GTAW), gas metal arc welding (GMAW), and flux core arc welding (FCAW) to meet the American Welding Society (AWS), American Petroleum Institute (API), and American Society of Mechanical Engineers (ASME) code standards. Skills and proficiencies of all positions qualification test on plate and pipe are emphasized. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 42 - INTRODUCTION TO WELDING INSPECTION

2 UNITS

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 50, WLD 250 and Level II Welding Qualification or Equivalent

Co-requisite(s): WLD 28, WLD 30, WLD 32, WLD 34, WLD 36, WLD 56, WLD 250 or Equivalent

Recommended Prep: NONE

Transfer Status: CSU

34 hours Lecture

This course instructs on the qualifications and knowledge requirements of a Certified Welding Inspector (CWI). Methods of testing, various procedures, and techniques of inspection. Familiarize students with the basic concepts of destructive and nondestructive evaluation processes. Emphasis of record keeping methods used by the American Welding Society (AWS), American Society of Mechanical Engineers (ASME), American Petroleum Institute (API), and American National Standards Institute (ANSI).

WLD 56 - WELDING INDUSTRY EMPLOYMENT PREPARATION

3 UNITS

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 50, WLD 250 and Level II Welding Qualification or Equivalent

Co-requisite(s): WLD 28, WLD 30, WLD 32, WLD 34, WLD 36, WLD 42, WLD 250 or Equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

51 hours Lecture

This course teaches job seeking skills demanded of welders in the industry today. Topics include a comparison of prospective employers within the welding industry, preparation for taking employment required skills tests, portfolio development, job-specific interview techniques and work place ethics and professionalism.

WLD 156 - SHOP PRACTICES FOR WELDERS II

1 - 2 UNITS

Prerequisite(s): NONE

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: NT

25.5 - 408 hours Lab

This is a supervised lab experience for those wishing to expand their welding skills, and gain welding time, and use a wide variety of equipment in the following processes: oxy-fuel welding (OFW), shielded metal arc welding (SMAW), gas metal arc welding (GMAW), gas tungsten arc welding (GTAW), flux core arc welding (FCAW), oxy-fuel cutting (OFC), air carbon arc cutting (CAC-A) and plasma arc cutting (PAC). Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated to a maximum of 8 units. Pass/No Pass Only. Open Entry/Open Exit.

PROGRAM COURSES – First two weeks of summer or winter semester

WLD 160 - WELDING CERTIFICATION PRACTICES

1 - 2 UNITS

Prerequisite(s): Welding certification or equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: NT

25.5 - 408 hours Lab

Welding practice to meet the required standard for qualification papers in welding codes using the AWS, API, and ASME

specifications. Practice and training in the procedures using shielded metal arc welding (SMAW), gas metal arc welding (GMAW), flux core arc welding (FCAW) and gas tungsten arc welding (GTAW), in all positions on plate and pipe, in preparation for weld performance test with a certified welding inspector (CWI) or contractor. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated to a maximum of 8 units. Pass/No Pass Only. Open Entry/Open Exit.

WLD 99 - WORK EXPERIENCE-WLD (offered year-round)**0.5 - 8 UNITS**

Prerequisite(s): Permission of Cooperative Work Experience

Education advisor/instructor and employment supervisor

Recommended Prep: NONE

Transfer Status: CSU

30 - 600 hours Work Experience

Career Work Experience (CWE) is a course that gives students the opportunity to earn both a grade and units for what they learn on the job related to their vocational major while gaining practical work experience. Students may earn one semester unit of college credit in this course for each sixty hours of unpaid work experience (30-480 hours unpaid) or seventy-five hours of paid work experience (37.5-600 hours paid). Students may earn a maximum of sixteen units for all types of Work Experience (Career and General, with not more than six in General). Since skills/proficiencies are enhanced by

PG&E POWERPATHWAY GAS PIPELINE WELDING CLASSES (only offered during summer)

WLD 55 - POWER GENERATION AND PETROLEUM CHEMICAL PIPE & TUBE WELDING 5 UNITS

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 28, WLD 30, WLD 32,

WLD 34, WLD 36, WLD 40, WLD 42 and WLD 50 and WLD 56

Welding Qualification or Equivalent

Co-requisite(s): WLD 250 and WLD 251 or Equivalent

Recommended Prep: Reading Level IV; English Level III; Math Level III

Transfer Status: CSU

17 hours Lecture

204 hours Lab

This course teaches shielded metal arc welding (SMAW), gas metal arc welding (GMAW), flux core arc welding (FCAW), gas tungsten arc welding (GTAW), oxyacetylene welding (OAW), and oxy-fuel cutting (OFC) processes on several piping systems. A variety of materials and configurations on sub-critical pipe welding to include pressure and power systems, cross-country transmission, water transmission and pipeline welding will be studied. Special attention and performance to the American Petroleum Institute (API) 1104 and American Society of Mechanical Engineers (ASME) Section IX code specifications for certification will be practiced. Intense training in pipe fitting, measurements, marking and layout tools used in the pipe welding industry will be stressed. Techniques of layout, cutting, fitting, and welding of various pipe joint designs will be performed. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated one time.

WLD 158 - SHOP PRACTICES FOR PIPE AND TUBE WELDERS**0.5 - 1 UNIT**

Prerequisite(s): NONE

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: NT

25.5 - 408 hours Lab

This is a supervised lab experience for those wishing to expand their welding skills, and gain welding time, and use a wide variety of equipment in the following processes: oxy-fuel welding (OFW), shielded metal arc welding (SMAW), gas metal arc welding (GMAW), gas tungsten arc welding (GTAW), flux core arc welding (FCAW), oxy-fuel cutting (OFC), air carbon arc cutting (CAC-A) and plasma arc cutting (PAC). Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated to a maximum of 8 units. Pass/No Pass Only. Open Entry/Open Exit.

WLD 162 – PIPE AND TUBE WELDING CERTIFICATION PRACTICES**1 - 2 UNITS**

Prerequisite(s): Welding certification or equivalent

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: NT

25.5 - 408 hours Lab

Welding practice to meet the required standard for qualification papers in welding codes using the AWS, API, and ASME specifications. Practice and training in the procedures using shielded metal arc welding (SMAW), gas metal arc welding (GMAW), flux core arc welding (FCAW) and gas tungsten arc welding (GTAW), in all positions on plate and pipe, in preparation for weld performance test with a certified welding inspector (CWI) or contractor. Since skills/proficiencies are enhanced by supervised repetition and practice, this course may be repeated to a maximum of 8 units. Pass/No Pass Only. Open Entry/Open Exit.

Name: _____

Welding Program SEMESTER 1

TOOL LIST

1 - Pair leather boots			Cost is your choice
1 - Pair Leather or Kevlar boot laces			Cost is your choice
1 - Leather Jacket			\$87.13
1 - Leather Chaps			\$45.50
1 - Tool Bag (16" long bag) or Metal Tool Box (9"W x 9"H x 18"L max)			\$34.86-64.09
5 - Pairs of serviceable leather gauntlet welding gloves			\$52.80-\$138.45
1 - Welding Helmet – Shades 10,11,& 12 or Auto Darkening (no pancake style)			\$129.60 to \$600.00
25 – Clear Protective Lenses (5- Inner & 20 Outer)			\$28.76 to \$90.00
2 – Pipeliners welding caps			\$17.28
2- Pairs of new Clear Safety Glasses (in wrapper) (yellow & blue ok, NO tinted)			\$10.79
2 - Paint Pens			\$9.10
1 - Soap Stone and Holder (replacements are \$0.26 + tax)			\$2.02
1 – Scribe			\$7.73
1 - Silver Pencil			\$1.17
1 - Sellstrom DP4 Multipurpose Faceshield			\$42.25
1 – Extra Shade #5 lens for Sellstrom Faceshield			\$13.55
1 - Ck 17 Tig Torch w/ Valve (CK17V-12R RG)			\$84.95
1 – Heavy Duty Compound Side/Wire Cutters			\$13.16
1 – Welper Mig Pliers			\$19.20
1 – Tomahawk style Chipping Hammer			\$12.58
1 – Large Long Wood Handle 4 Row Wire Brush			\$7.10
1 - Striker			\$1.86
1 - Oxyacetylene UN Tip End (Gooseneck)			\$68.01
1 - Oxyacetylene Welding Tip, (Victor <i>Size 3-TE</i>) OR <i>one piece tip</i>			\$22.50
1 – Oxyacetylene welding tip (smith PT# SMI MW 203 Oxygen Acetylene)			\$45.03
1 – Drill Bit Tip Cleaner (TDK-12) or Wire Tip Cleaner			\$10.90
1 - Oxyacetylene Cutting Tip, (Journeyman Victor style - sizes 0)			\$9.23
2 - Hydro flame Cutting tips, (Journeyman Victor style - size 1 and 2)			\$23.74
1 – Streamlight Stylus Pro - LED Flashlight			\$28.79
3 - Pairs of 11R Vise Grips			\$69.63
1 - Pair of 10R Vise Grips (straight jaws)			\$12.67
1 – 4 piece 12" Combination Set			\$59.57
1 - 16"x24" Framing Square			\$11.87
1 – 5/8" Cold Chisel - Mayhew			\$7.46
1 – 1/2" Center Punch - Mayhew			\$7.50
1 - Good quality pad lock (preferably combination)			\$6.85
1 - Box of foam Ear Plugs (or equivalent – 3 pair reusable Ear Plugs)			\$7.64 to \$29.00
1 – Box of Particle Masks or a reusable Respirator Mask (optional)			\$22.75 to \$30.82
1 – 25' Tape Measure (w/o fractional values) No metric			\$13.77
3 – Temp stick of each temperature: 150°, 300°, 600°			\$47.95
1 - 9-in-1 combination Screwdriver or 3/16 x 4" Slotted and #2 x 4" Phillips			\$10.75

Name: _____

1 - 12" Erector Style Adjustable Wrench (Spud Wrench)			\$45.07
1 - 32 oz. Ball Peen Hammer			\$20.88
1 – Standard Allen Wrench Set (sizes ranging from .05-3/8")			\$14.60
1 - 4 1/2" Electric Grinder (<i>No Cordless!</i>)			\$97.19
5 – 4 1/2" Grind disc			10.65
10 – 40 Grit 4 1/2" Flapper Discs			\$63.29
10 – .045" Cut Off Wheels for 4 1/2" Grinder			\$28.10
10 – 3/32" Cut Off Wheels for 4 1/2" Grinder			\$21.60
5 – 1/8" Grind/Cut Disc (pipeliner) for 4 1/2" Grinder			\$10.55
1 - Set Slag Picks (Dental Style)			\$5.75
1 – Pipe wrap (Wizard part # WW-17) 3 inch wide			\$17.17
1 – HB drawing pencil			\$1.05
1 – 6H drawing pencil			\$1.05
1 - Architect Scale			\$5.25- \$12.75
1 - French Curve set			\$6.50
1 - Protractor			\$1.99
1 – Eraser & Eraser Shield			\$2.95
1 - Divider & Compass combination			\$15.00-25.50
1 – 8" Clear triangle 45°-45°-90°			\$4.50
1 – 10" Clear triangle 30°-60°-90°			\$4.15
1 – 24" Tee Square			\$11.15-\$23.50
1 – Calculator (Texas Instruments -TI-30X/TI-30A/TI-30XIIIs)			\$16.50
1 – Clip board (that fits a 8.5" x 11" sheet of paper)			\$2.55-\$10.95
1 - 3" x 5" Memo Pad (60 Sheets)			Cost is your choice
1 – 2" 3 – Ring View Binder			\$7.99
1 – 6" Steel Machinists Ruler			\$12.87
1 - 10" Half Round File with Handle			\$28.29
1 – 3/8" open end wrench			\$5.84
1 – Acrylic Clear Coat Spray Paint Can			\$4.02
1 – American Welding Society (AWS) Membership			Free
1 – Ceriated Tungsten (2%) 1 Pack-3/32"			\$35.95
GTAW supplies -Gas Lens Heatshield (CK 3GHS) -Standard Collet 1- 3/32" (CK 10N24) -Gas Lens Collet Body 1- 3/32" (CK 45V26) -Gas Lens Cup 1- # 4 (CK 54N18), 1- # 6 (CK 54N16), 1- # 8 (CK 54N14)			\$84.87 to \$125.32

REQUIRED TEXTBOOKS

NCCER Welding Training Guide Level 1			\$93.05
NCCER Welding Training Guide Level 2			\$134.70
Metal Fabrication 4 th Edition			\$83.35
Blue Print Reading for Welders – 9 th Edition (no E-book)			\$150.00
Math for Welders 6 th Edition (no E-book)			\$74.65

***Note:** Please keep all receipts in case you have to exchange the tool for any reason.

***All tools, books, and supplies are required by the third day of the semester.

Day one of the first semester there will be an opportunity to visit local vendors for all supplies needed.

Name: _____

Welding Program SEMESTER 2 TOOL LIST

<u>GTAW supplies (some were purchased semester 1)</u>			
-Ceriated tungsten (2%) 5-3/32", 8- 1/8"			
-Gas Lens Heatshield (CK 3GHS)			
-Standard Collet 1- 1/8" (CK 10N25) and 1- 3/32" (CK 10N24)			
-Gas Lens Collet Body 1-1/8" (CK 45V27) and 1- 3/32" (CK 45V26)			
-Gas Lens Cup 1- # 4 (CK 54N18), 1- # 6 (CK 54N16), 1- # 8 (CK 54N14)			\$84.87 to \$125.32
1 - Large Long Wood Handle Stainless Steel 4 Row Wire Brush			\$ 7.10
1 - Plastic Divider box, for Tig supplies			Cost is your choice
2 - Small Wood Handle Stainless Steel Wire Brushes			\$ 7.29
1 – Box of Particle Masks or a reusable Respirator Mask (optional)			\$22.75 to \$30.82
1 - 4 1/2" Electric Grinder (2 <i>TOTAL CORDED GRINDERS</i>)			\$ 97.19
10 – 40 Grit 4 1/2" Flapper Discs			\$ 63.29
10 – 60 Grit 4 1/2" Flapper Discs			\$ 63.29
1 - Pneumatic Die Grinder			\$ 24.79
1 – Type T 1/4" male Automotive style air fitting (for die grinder)			\$ 1.02
2 - Knotted Wire Wheels for 4 1/2" Grinder			\$ 33.66
2 - 40 Grit Flapper Wheels for Die Grinder			\$ 23.62
10 – .045" Cut Off Wheels for 4 1/2" Grinder			\$ 28.10
10 – 3/32" Cut Off Wheels for 4 1/2" Grinder			\$ 21.60
5 – Grinding disc for 4 1/2" Grinder			\$10.65
5 – 1/8" Cut/Grind (pipeliner) Disc for 4 1/2" Grinder			\$10.55
1 – 3 pcs. Mandrel Set, fits 1/4" or 3/8" hole for cut off discs			\$ 10.98
10 – 1/16" x 3" Cut Discs for Grinders			\$ 16.90
1 – Temp stick of each temperature: 800°			\$ 30.24
1 - Fillet Weld Gauge Set			\$ 19.57
1 - 2 1/4" Dia. Telescoping Inspection Mirror			\$ 14.19
1 – 2' 3-Outlet 12 gauge Heavy Duty, Outdoor, Extension Cord (110Volt)			\$ 9.98
1 – Set of 8 Extra Wide Dividers with insertable tabs			Cost is your choice
1 – Clear Sleeves (100 sleeves)			Cost is your choice
1 – Resume Paper, White or Ivory (25 sheets)			Cost is your choice
1- H&M Style pipe wedge (no step style)			Cost is your choice
1 - 3" 3-Ring View Binder			Cost is your choice
1 – 1 1/2" to 2" 3-Ring View Binder			Cost is your choice
1 – Acrylic Clear Coat Spray Paint			\$ 4.02
<i>Items Still Required From Semester 1</i>			
1 - Pair leather boots			Purchased Semester 1
1 - Pair Leather or Kevlar boot laces			Purchased Semester 1
1 - Leather Jacket			Purchased Semester 1
1 - Leather Chaps			Purchased Semester 1
1 - Tool Bag (16" long bag) or Metal Tool Box (9"W x 9"H x 18"L max)			Purchased Semester 1
3 - Pairs of serviceable leather gauntlet welding gloves			Purchased Semester 1
1 – Welding Helmet – Shades 9,10,11,& 12 or Auto Darkening			Purchased Semester 1
13 – Clear Protective Lenses (3- Inner & 10 Outer)			Purchased Semester 1
1 – Pipeliner welding cap			Purchased Semester 1
2 - Pairs of new Clear Safety Glasses (in the wrapper) (yellow & blue ok, NO tinted)			\$ 2.50 to 20.00

Name: _____

1 - Paint Pen			Purchased Semester 1
1 - Soap Stone and Holder (replacements are \$0.26 + tax)			Purchased Semester 1
1 – Scribe			Purchased Semester 1
1 - Silver Pencil			Purchased Semester 1
1 - Sellstrom DP4 Multipurpose Faceshield			Purchased Semester 1
1 - Ck 17 Tig Torch w/ Valve (CK17V-12R RG)			Purchased Semester 1
1 – Heavy Duty Compound Side/Wire Cutters			Purchased Semester 1
1 – Welper Mig Pliers			Purchased Semester 1
1 – Tomahawk style Chipping Hammer			Purchased Semester 1
1 - Large Long Wood Handle 4 Row Wire Brush			Purchased Semester 1
1 - Striker			Purchased Semester 1
1 - <u>Set</u> Slag Picks (Dental Style)			Purchased Semester 1
1 - Drill Bit Tip Cleaner (TDK-12) or Wire Tip Cleaner			Purchased Semester 1
1 - Oxyacetylene Cutting Tip, (Journeyman Victor style - sizes 0)			Purchased Semester 1
2 - Hydro flame Cutting tips, (Journeyman Victor style - size 1 and 2)			Purchased Semester 1
1 – Streamlight Stylus Pro - LED Flashlight			Purchased Semester 1
3 - Pairs of 11R Vise Grips			Purchased Semester 1
1 - Pair of 10R Vise Grips (straight jaws)			Purchased Semester 1
1 – 4 piece 12”Combination Set			Purchased Semester 1
1 - 16”x24” Framing Square			Purchased Semester 1
1 – 5/8” Cold Chisel - Mayhew			Purchased Semester 1
1 – 1/2” Center Punch - Mayhew			Purchased Semester 1
10 prs - Foam Ear Plugs (or equivalent – 2 pair reusable Ear Plugs)			Purchased Semester 1
1 – 25’ Tape Measure (w/o fractional values) No metric			Purchased Semester 1
1 – Temp stick: 150°, 300°, 600°			Purchased Semester 1
1 - 9-in-1 combination Screwdriver or 3/16 x 4” Slotted and #2 x 4” Phillips			Purchased Semester 1
1 - 12” Erector Style Adjustable Wrench (Spud Wrench)			Purchased Semester 1
1 - 32 oz. Ball Peen Hammer			Purchased Semester 1
1 - Standard Allen Wrench Sets			Purchased Semester 1
1 - 4 1/2" Electric Grinder (Corded)			Purchased Semester 1
1 - 3" x 5" Memo Pad (60 Sheets)			Purchased Semester 1
1 – 6” Steel Machinists Ruler			Purchased Semester 1
1 - 10” Half Round File with Handle			Purchased Semester 1
1 – 3/8” open end wrench			Purchased Semester 1
REQUIRED TEXTBOOKS			
NCCER Welding Training Guide Level 2 5 th Ed			Purchased Semester 1
NCCER Welding Training Guide Level 3 5 th Ed.			\$ 134.70
AWS Welding Inspection Handbook 2015			\$ 127.80
Gas Tungsten Arc Welding Handbook 7 th Edition			\$ 69.40
Blue Print Reading for Welders – 9 th Edition (no E-book)			Purchased Semester 1
Math For Welders (no E-book)			Purchased Semester 1

ALL PRICES SUBJECT TO CHANGE

***Note:** Please keep all receipts in case you have to exchange the tool for any

*****All tools, books, and supplies are required by the third day of the semester.**

Costs for Program: (Subject to Change)

Tuition*: (Subject to Change depending upon what time of year a student enters the program and fees changing)

Butte College Promise Scholarship Program: This program is an opportunity to have your fees paid if you don't qualify for FAFSA. It is not income based; you must apply for FAFSA first. This program will apply if you don't qualify for FAFSA. For more information visit the Promise Program Website at:

<http://www.butte.edu/promise/>

Fall: \$960

Spring: \$1,145

Summer: \$206 Welding Certification Practice

(This does not include the PG&E PowerPathway Gas Pipeline Welding Program which is an additional \$500)

***Registration fees may be less (or eliminated) if you qualify for the CA College Promise Grant (CCPG) or the Butte College Promise Scholarship (BCPS). (Subject to change)**

*Registration costs indicated are for California State residents only. For more information on fees, please visit

<http://www.butte.edu/services/admissions/fees.html>.

Payment or creating a payment plan must be done within seven days of registration. Financial aid or other exemptions may apply. For more details go to www.butte.edu/7days or contact Admissions and Records at 530-895-2361 or Financial Aid at 530-895-2311.

Certification Tests: (Subject to Change)

Fee for each certification paper - \$40.00; students normally get 3-5 certifications.

ESTIMATED TOTAL COST FOR THE YEAR: \$5,900-\$6,800 (Will be less with Financial Aid)

(Does not include PG&E PowerPathway Gas Pipeline Welding Program)

Cost of supplies and books are based on the latest prices we receive from our suppliers, as well as the school.

Over the course of the year, each student should expect to spend \$3,600 - \$4,800 (included in estimated total) on school-related materials. Have a backup plan if your financial aid doesn't come through in time to purchase tools and books. You must have your tools by the third day of class. No exceptions.

Registration fees, books required, tools required, and tool fees are all subject to change