Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551-7650
(925) 424-1000
(925) 443-0742 (Fax)

Course Outline for WLDT 62AL

BEGINNING GTAW AND GMAW SKILLS LAB

Effective: Spring 2018

I. CATALOG DESCRIPTION:
WLDT 62AL — BEGINNING GTAW AND GMAW SKILLS LAB — 2.00 units

Skills of TIG (GTAW) and MIG (GMAW) welding of ferrous and non-ferrous alloys in the flat and horizontal positions to A.W.S. codes. Safety and proper use of TIG and MIG equipment, oxy-fuel welding and cutting, plasma cutting. Blueprint usage in welding shop environment.

2.00 Units Lab

Corequisite
WLDT 62A - Beginning GTAW and GMAW Theory
or

WLDT 62B - Advanced GTAW and GMAW Theory

Grading Methods:
Letter or P/NP

Discipline:
- Welding

	MIN
Lab Hours:	108.00
Total Hours:	108.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. Identify and safely use equipment associated with:
   1. Gas Tungsten Arc Welding (GTAW)
   2. Gas Metal Arc Welding (GMAW)
   3. Plasma cutting
   4. Oxy-fuel cutting
   5. Carbon arc cutting
B. Identify the uses and limitations of each process;
C. Identify proper electrode and wire selection for application;
D. Identify common metals;
E. GTAW, GMAW weld sheet and plate steel in the flat and horizontal positions to AWS specifications;
F. Circumferential welds in flat and rolled position;
G. Understand the uses and limitations of Constant Current and Constant Voltage power sources;
H. Plasma and oxy-fuel cut manually
I. Oxy-fuel cut with a machine;
J. Know and identify safe practices in the welding shop;
K. Know common shop hazards with respect to materials;
L. Use simple blueprints to make parts;
M. Safely operate welding support equipment:
   1. Grinder
   2. Saw

V. CONTENT:
A. Equipment associated with each welding/cutting process covered
B. Welding power supplies, AC and DC, constant current and constant voltage
C. American Welding Society nomenclature and symbols
D. Blueprint usage in the welding shop
E. Proper use and applications. Safe handling and use.
   1. Gas Tungsten Arc Welding (GTAW)
   2. Gas Metal Arc Welding (GMAW)

3. Oxy-fuel cutting
4. Plasma cutting

F. Welding support equipment safe use and care
1. Grinder
2. Saw

G. Hands-on process specific, experience in laboratory
H. Basic metallurgy and materials properties
1. Steel
2. Stainless Steel
3. Aluminum

I. Current career trends in the welding industry
J. Electrodes and wire associated with each process

VI. METHODS OF INSTRUCTION:

A. **Discussion** -
B. **Lecture** -
C. Correlation with real world industrial applications
D. Visual aids
E. One-on-one hands-on instruction
F. Group demonstration

VII. TYPICAL ASSIGNMENTS:

A. Welding samples using different welding processes
1. Gas Tungsten Arc Welding (GTAW)
2. Gas Metal Arc Welding (GMAW)

B. Welding samples using different welding joints
1. Butt joint
2. Tee joint
3. Lap joint
4. Lap joint
5. Corner joint
6. Edge joint

C. Welding samples using different positions
1. Flat
2. Horizontal

D. Welding Samples using different materials
1. Carbon Steel
2. Stainless Steel
3. Aluminum

E. Cutting samples using hand held oxy-acetylene cutting torch
F. Cutting samples using semi-automated oxy-acetylene cutting torch
G. Cutting samples using hand held plasma arc cutting torch

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Quizzes
3. Projects
4. Class Participation
5. Class Work
6. Lab Activities

B. **Frequency**

1. Exams once per semester
2. Projects on an as assigned basis
3. Participation will be evaluated daily
4. Work samples will be submitted for grading as completed over the duration of the semester
5. Homework as assigned
6. Lab safety and proper use of tools will be evaluated on a daily basis

IX. TYPICAL TEXTS:

1. American Welding Society (2012). *SPECIFICATION FOR WELDING PROCEDURE AND PERFORMANCE QUALIFICATION* (2012 ed.). Miami, Florida: American Welding Society.
2. Jeffus, L. (2012). *Welding Principles and Practices* (11th ed.). Clifton Park, NY: Delmar.
3. American Welding Society (2015). *Structural Welding Code - Steel* (2015 ed.). Miami, Florida: American Welding Society.
4. Brown, W.C., & Brown, R.K. (2016). *Print Reading for Industry* (10th ed.). Tinley Park , IL: Goodheart-Willcox Company.
5. Bowditch, W.A., Bowditch, K.E., & Bowditch, M.A. (2017). *Welding Fundamentals* (5th ed.). Tinley Park , IL: Goodheart-Willcox Company.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Personal Protective Equipment
B. Safety Glasses (ANSI Z87.1)
C. Leather welding gloves
D. Long sleeve shirt or jacket
E. Leather shoes or boots
F. Welding Helmet (preferred)