Las Positas College
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Course Outline for WLDT 70

INTRODUCTION TO WELDING

Effective: Spring 2018

I. CATALOG DESCRIPTION:
WLDT 70 — INTRODUCTION TO WELDING — 2.00 units

Basic skills in Shielded Metal Arc (SMAW), Gas Tungsten Arc (GTAW), Gas Metal Arc (GTAW) and Flux Core Arc (FCAW) welding. Oxy-fuel welding and thermal cutting. Emphasis on safety, proper usage, theory and care of welding equipment.

1.00 Units Lecture 1.00 Units Lab

Grading Methods:
Letter or P/NP

Discipline:
- Welding

	MIN
Lecture Hours:	18.00
Lab Hours:	54.00
Total Hours:	72.00

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. Demonstrate safe and proper use of equipment:
   1. Shielded Metal Arc (SMAW);
   2. Gas Tungsten Arc (GTAW);
   3. Gas Metal Arc (GMAW);
   4. Flux Core Arc (FCAW);
   5. Oxy-fuel welding and brazing;
   6. Plasma and oxy-fuel cutting

B. Apply gas welding sheet steel in flat position;
C. Practice GMAW, FCAW, SMAW weld steel in the flat position;
D. Practice GTAW weld steel, stainless, and aluminum in the flat position;
E. Demonstrate braze welding of a simple part;
F. Use plasma and oxy-fuel to cut manually and with a machine;
G. Safely operate welding support equipment;
H. Identify and list career potentials in the welding industry.

V. CONTENT:
A. Theory behind each welding/cutting process covered
B. American Welding Society nomenclature and symbols
C. Proper use and applications, Safe handling and use
   1. Shielded Metal Arc (SMAW)
   2. Gas Tungsten Arc (GTAW)
   3. Gas Metal Arc (GMAW)
   4. Flux Core Arc (FCAW)
   5. Oxy-fuel welding and brazing
   6. Plasma and oxy-fuel cutting

D. Welding support equipment safe use and application
E. Hands-on, process specific, experience in laboratory
F. Basic metallurgy and materials properties
   1. Steel
   2. Stainless steel
   3. Aluminum

G. Current career trends in the welding industry
H. Welding workplace environment basic safety procedures

VI. METHODS OF INSTRUCTION:
A. Correlation with real world industrial applications

B. **Lecture** -
C. One-on-one, hands-on instruction
D. **Discussion** -
E. Visual aids
F. Group demonstration

VII. TYPICAL ASSIGNMENTS:
A. Weekly reading assignments from text
B. Quizzes based on weekly reading assignments
C. Welding samples using different welding processes
    1. Gas Tungsten Arc Welding (GTAW)
    2. Gas Metal Arc Welding (GMAW)
    3. Shielded Metal Arc Welding (SMAW)
    4. Flux-Core Arc Welding (FCAW)
D. Welding samples using different welding joints
    1. Butt joint
    2. Tee joint
    3. Lap joint
    4. Corner joint
    5. Edge joint
E. Welding Samples using different materials
    1. Carbon Steel
    2. Stainless Steel
    3. Aluminum
F. Cutting samples using hand held oxy-acetylene cutting torch
G. Cutting samples using semi-automated oxy-acetylene cutting torch
H. Cutting samples using hand held plasma arc cutting torch
I. Evaluation of safe operations in welding workplace environment

VIII. EVALUATION:
A. **Methods**

    1. Exams/Tests
    2. Quizzes
    3. Class Participation
    4. Class Work
    5. Home Work

B. **Frequency**

    1. The Exams will be administered near the halfway point and during finals week
    2. Quizzes will be administered periodically during the semester on an as needed basis
    3. Participation will be evaluated daily
    4. Classwork evaluated as assigned
    5. Homework evaluated as assigned

IX. TYPICAL TEXTS:
1. Althouse, A., Turnquist, C., Bowditch, W., Bowditch, K., & Bowditch, M. (2012). *Modern Welding* (11th ed.). Tinley Park , IL: Goodheart-Willcox Company.
2. Jeffus, L. (2012). *Welding Principles and Practices* (7th ed.). Clifton Park, NY: Delmar.
3. American Welding Society (2015). *Structural Welding Code - Steel* (2015 ed.). Miami, Florida: American Welding Society.

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 Hood (preferred)