Las Positas College
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Course Outline for WLDT 70

INTRODUCTION TO WELDING

Effective: Fall 2008

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

Arc, TIG, MIG, Flux-core, gas and braze welding, plasma and fuel gas welding and cutting. Theory and care of welder's equipment with emphasis on safe practices.

1.00 Units Lecture 1.00 Units Lab

Grading Methods:
Letter or P/NP

Discipline:

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

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 4

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 and vertical positions;
C. Practice GMAW, FCAW, SMAW weld steel in the flat and horizontal positions;
D. Practice GTAW weld steel, stainless, and aluminum in the flat and horizontal positions;
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
   1. Shear
   2. Grinder
   3. Saw
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

VI. METHODS OF INSTRUCTION:

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

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

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Quizzes
3. Class Participation
4. Lab Activities
5. Other:
    a. Methods:
        1. Participation
        2. Workmanship samples
        3. Quizzes
        4. Midterm, and final
        5. Safe operation in the laboratory environment and the proper use of shop equipment

B. **Frequency**

1. Frequency:
    a. Participation will be evaluated daily
    b. Workmanship samples will be submitted for grading as completed over the duration of the semester
    c. Quizzes will be administered periodically during the semester on an as needed basics
    d. The midterm will be administered near the halfway point in the course followed by a two hour final exam during finals week
    e. Safety and proper use of tools will be evaluated on a daily basis

IX. TYPICAL TEXTS:

1. Althouse, Turnquist, Bowditch, Bowditch, Bowditch *Modern Welding*., Goodheart-Willcox Company, 2004.
2. Geary, Don *Welding.*, Mcgraw-Hill, 1999.
3. Finch, Richard *Welders Handbook*., HP Trade, 2007.

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)