Las Positas College
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Course Outline for WLDT 62B

ADV TIG, MIG, BLUEPRINT THEORY

Effective: Fall 2006

I. CATALOG DESCRIPTION:
WLDT 62B — ADV TIG, MIG, BLUEPRINT THEORY — 1.00 units

Theory and safety of TIG (GTAW) and MIG (GMAW) welding of steel, flame cutting, plasma and carbon arc cutting. American Welding Society nomenclature, electrode and wire selection, job opportunities. Blueprint reading, welding symbols for welders and hazardous material regulations.

1.00 Units Lecture

Corequisite
WLDT 62AL - Beginning GTAW and GMAW Skills Lab
or

WLDT 62BL - Advanced GTAW and GMAW Skills Lab

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	18.00
Total Hours:	18.00

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. Understand the theory and safe use of “TIG”, Gas Tungsten Arc Welding (GTAW) use for advanced levels of work and materials;
B. Understand the theory and safe use of Gas Metal Arc Welding (GMAW) for advanced levels of work and materials;
C. Understand the theory and use of shape cutting process;
D. Understand the theory and safe use of welding manipulators and positioners;
E. Understand the theory and safe use of special welding processes;
F. Uses and limitations of each welding/cutting process covered;
G. Understand basic metallurgy and numbering systems for stainless steels, aluminum, copper;
H. Understand electrode and wire selection and numbering systems for stainless steel, aluminum, copper;
I. Understand raw material manufacturing processes;
J. Understand and identify basic structural shapes, sheet and plate used in industry;
K. Understand and identify basic pipe and tubing used in industry;
L. Apply advanced orthographic and isometric blueprint reading skills;
M. Use and understand American Welding Society (AWS); Welding Procedure Specifications (WPS) and Procedure Qualification Reports (PQR);
N. Understand the role of the Certified Welding Inspector (CWI) and identify weld discontinuities and defects;
O. Non Destructive Testing (NDT);
P. Career opportunities in the welding trade.

V. CONTENT:
A. Advanced GTAW and GMAW theory and process
B. Shape cutting theory and process basics
    1. Laser Cutting
    2. Water Jet Cutting EDM Cutting’
    3. EDM Cutting
    4. Equipment & supplies
    5. Uses and limitations
    6. Safety
    7. Industrial applications
C. Welding positioners and manipulators
D. Special welding processes

E. Advanced industrial, metals, electrodes, metallurgy and numbering systems
    1. Stainless steel
    2. Aluminum
    3. Copper
F. Basic metals raw material manufacturing and sources
G. Structural shapes, sheet, plate, tubing, pipe. Common stock sizes, thicknesses and uses in industry
H. Advanced blueprint reading and interpretation
I. Welding inspection
    1. Welding procedures, PQR, WPS
    2. Welding discontinuities, NDT
    3. Role of the CWI
J. Metal trades hazards and safe practices, personal protective equipment

VI. METHODS OF INSTRUCTION:
A. **Lecture** -
B. Correlation with real world industrial applications
C. Visual aids
D. **Discussion** -

VII. TYPICAL ASSIGNMENTS:
A. Weekly reading assignments from text B. Quizzes based on weekly reading assignments

VIII. EVALUATION:
A. **Methods**

1. Exams/Tests
2. Quizzes
3. Class Participation
4. Other:
    a. Methods:
        1. Attendance and participation
        2. Quizzes
        3. Midterm, and final

B. **Frequency**

1. Frequency:
    a. Attendance and participation will be evaluated daily
    b. Quizzes will be administered periodically during the semester on an as needed basis
    c. The midterm will be administered near the halfway point in the course followed by a two hour final exam during finals week

IX. TYPICAL TEXTS:
1. Woods, Jefferson *Metals and How to Weld Them.*, The James F Lincoln Foundation, 1990.
2. Cary *Modern Welding Technology*., Prentice-Hall, 0.
3. Siy, Bennet *Blueprint Reading for Welders.*, Delmar Publishers, 1999.

X. OTHER MATERIALS REQUIRED OF STUDENTS: