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## Course Outline for WLDT 62AL

### BEG TIG, MIG, BLUEPRINT

Effective: Fall 2006

#### I. CATALOG DESCRIPTION:

WLDT 62AL — BEG TIG, MIG, BLUEPRINT — 2.00 units

Skills of TIG (GTAW) and MIG (GMAW welding of ferrous and non-ferrous alloys in the flat, horizontal, and vertical 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:

	<u>MIN</u>
<b>Lab Hours:</b>	108.00
<b>Total Hours:</b>	108.00

#### 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. 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 horizontal and vertical 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. Shear
  3. 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
  - 1. Shear
  - 2. Grinder
  - 3. 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 3. Vertical 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. Class Participation
- 2. Lab Activities
- 3. Other:
  - a. Methods:
    - 1. Attendance and participation
    - 2. Workmanship samples
    - 3. Safe operation in the laboratory environment and the proper use of shop equipment

##### B. **Frequency**

- 1. Frequency:
  - a. Attendance and participation will be evaluated daily
  - b. Workmanship samples will be submitted for grading as completed over the duration of the semester
  - c. Safety and proper use of tools will be evaluated on a daily basis

#### IX. TYPICAL TEXTS:

#### 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