Las Positas College
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Course Outline for WLDT 69A

BEGINNING PIPE WELDING

Effective: Spring 2018

I. CATALOG DESCRIPTION:
WLDT 69A — BEGINNING PIPE WELDING — 3.00 units

Theory and practical application of: pipe joint preparation and design, API (American Petroleum Institute) and AWS (American Welding Society) welding codes specification for pipe and pipe fittings, analysis of joint configuration, plasma and flame cutting of pipes, wire and electrodes selections, beginning of pipe welding blue print and welding symbols, SMAW, GMAW, FCAW and GTAW of pipe joints, non-destructive and destructive test and qualitative concepts of evaluation. Welding in the 1G and 2G positions.

1.00 Units Lecture 2.00 Units Lab

Prerequisite
WLDT 61BL - Advanced SMAW and FCAW Skills Lab
with a minimum grade of C
or

WLDT 62BL - Advanced GTAW and GMAW Skills Lab
with a minimum grade of C

Grading Methods:
Letter or P/NP

Discipline:
- Welding

	MIN
Lecture Hours:	18.00
Lab Hours:	108.00
Total Hours:	126.00

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

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering the course a student should be able to:

A. WLDT61BL
B. WLDT62BL

IV. MEASURABLE OBJECTIVES:

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

A. Identify and understand the API and AWS codes specification;
B. Interpret the blueprint concepts in practical welding application;
C. Demonstrate fit up and align pipe welding joints, to standard;
D. Apply pipe joints manually using plasma, oxy-fuel and gouging equipment in accordance with manufacturing standards;
E. Operate and weld pipes to code specification with proper techniques in rotated flat (1G) and horizontal (2G) position using SMAW, GMAW, FCAW and GTAW processes;
F. Identify welding pipe discontinuities and defects;
G. Apply destructive and non-destructive welding test evaluations;
H. Employ welder performance tests in 1G and 2G using one of the four welding processes mentioned above.

V. CONTENT:
A. Welding codes and specifications:
    1. API Code
    2. AWS Code
B. Blueprints as used in pipe welding:
    1. Welding symbols
    2. Orthographic
    3. Isometric
    4. Piping symbols

5. Assembly
6. Details
7. Weld mapping

C. Welded pipe
1. Typical joints
2. Material prep
3. Fit up
4. Alignment
5. Tack welds
6. Purging

D. Cutting pipe
1. Plasma
2. Oxy-fuel
3. Gouging
4. Saws
5. Machined

E. Weld pipe to code specification with proper techniques
1. 1G rotated
2. 2G fixed
3. SMAW
4. GMAW
5. GTAW
6. FCAW

F. Pipe welding inspection
1. Discontinuities
2. Cause
3. Corrective action

G. Welding test evaluations
1. Non destructive testing
2. Destructive testing
3. Hydrostatic testing

H. Welder performance tests
1. 1G rotated
2. 2G fixed

VI. METHODS OF INSTRUCTION:
A. **Observation and Demonstration** -
B. **Lecture** -
C. **Field Trips** -
D. **Demonstration** -
E. Videos

VII. TYPICAL ASSIGNMENTS:

A. Prepare the pipe ends to be welded

B. Fit together the pipes in accordance with the welding procedure

C. Execute welds in 2G position

D. Prepare to discuss weld defects, discontinuities and other quality requirements

VIII. EVALUATION:
A. **Methods**

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

B. **Frequency**

1. Class participation level daily
2. Performance of laboratory task list of assignments and projects as assigned
3. Homework assignments weekely
4. Quizzes bi weekly
5. Final exam end of course

IX. TYPICAL TEXTS:

1. American Welding Society (2012). *SPECIFICATION FOR WELDING PROCEDURE AND PERFORMANCE QUALIFICATION* (2012 ed.). Miami, Florida: American Welding Society.
2. Althouse, A., Turnquist, C., Bowditch, W., Bowditch, M., & Bowditch, K. (2013). *Modern Welding* (11th ed.). Tinley Park , IL: Goodheart-Willcox Company.
3. American Welding Society (2015). *Structural Welding Code - Steel* (2015 ed.). Miami, Florida: American Welding Society.
4. Jeffus, L., & Baker, B. (2017). *Pipe Welding* (1st ed.). Boston, MA: Cengage Learning.
5. Brown, W., & Brown, R. (2016). *Print Reading for Industry* (10th ed.). Tinley Park , IL: Goodheart-Willcox Company.

X. OTHER MATERIALS REQUIRED OF STUDENTS:
A. Welding protective clothing
B. Welding gloves
C. Welding goggles
D. Welding helmet
E. Welding safety glasses
F. Welding jacket
G. Welding boots