Modesto Junior College
Course Outline of Record

WELD 300

I. **OVERVIEW**
The following information will appear in the 2011 - 2012 catalog

WELD 300  *Intermediate Welding*  3 Units

*Prerequisite:* Satisfactory completion of WELD 200.

Intermediate level course that uses a lecture/lab format of instruction. Activities and topics cover the welding procedures for mild steel plate, manual and automated oxyfuel cutting, and carbon arc gouging. Qualification testing procedures that meet the American Welding Society’s structural code (D1-1) will also be covered.

*Materials Fee Required*

Field trips might be required.  (A-F or P/NP - Student choice) Lecture /Lab

II. **LEARNING CONTEXT**
Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

A. **COURSE CONTENT**

1. **Required Content:**
   
   a. Safety
   
   b. Fillet welds
   
   c. Groove welds
   
   d. Groove preparation
   
   e. Distortion control
   
   f. Codes and certification processes
   
   g. Metallurgy
   
   h. Testing procedures and weld defects
   
   i. Weld inspection and quality control

2. **Required Lab Content:**
   
   a. Shielded metal Arc Welding activities: Job steets #1- #6
   
   b. Automated oxyfuel beveling: all groove joint preparation
   
   c. Carbon arc gouging: weld defects
   
   d. Certification procedure preparation: guide bend tests

B. **ENROLLMENT RESTRICTIONS**
1. **Prerequisites**

Satisfactory completion of WELD 200.

2. **Requisite Skills**

*Before entering the course, the student will be able to:*

a. Fabricate basic welding joints: butt, lap, corner, T, and edge.

b. Demonstrate basic knowledge of oxyacetylene equipment and set-up

c. Place required weld joints in required positions during laboratory exercises.

3. **Health and Safety Skills/Restrictions**

*Before entering the course, the student must demonstrate the following skill or condition:*

a. Health and Safety Skill: Have a satisfactory understanding of general metal shop and electric welding safety

b. Health and Safety Skill: Have a satisfactory understanding of the basic safety principles and rules of oxyacetylene operations.

C. **HOURS AND UNITS**

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<tr>
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D. **METHODS OF INSTRUCTION (TYPICAL)**

*Instructors of the course might conduct the course using the following method:*

1. Related material will be presented through designated class lecture and lab demonstrations.

2. Additional studies will be required from a textbook and supplementary handouts.

3. Use of multimedia videos, slide presentations.

4. Guest speakers from industry.

5. Lab review and feedback of student work during lab times.

E. **ASSIGNMENTS (TYPICAL)**

1. **EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS**

*Time spent on coursework in addition to hours of instruction (lecture hours)*

a. Weekly reading assignments

b. Prepare for periodic quizzes and exams

c. Complete processes to turn in lab assignments as they progress through each lab activity

2. **EVIDENCE OF CRITICAL THINKING**

*Assignments require the appropriate level of critical thinking*
a. Homework: The textbook states that SMAW power sources produce constant current while the voltage can change with...

b. Mid-term examination: The last number in the AWS electrode stands for... a. tensile strength  b. position  c. polarity and coating  d. none are correct

c. Laboratory instruction: Students are given job sheets that include both written instructions and graphic illustrations. They must interpret the written instructions to set equipment parameters, and the illustrations to fabricate the required projects.

F. TEXTS AND OTHER READINGS (TYPICAL)


III. DESIRED LEARNING

A. COURSE GOAL

As a result of satisfactory completion of this course, the student should be prepared to:

- explain and practice fundamental safety rules of the SMAW and OFW/OFC equipment and process;
- explain and practice the basic procedures and concepts of welding certification/codes, weld testing, metallurgy; comprehend and develop welds, weld joints and welding positions from the instructions of job sheets JS-1 through JS-6.

B. STUDENT LEARNING GOALS

Mastery of the following learning goals will enable the student to achieve the overall course goal.

1. Required Learning Goals

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

a. Explain the mechanical, physical, and chemical properties of metals.

b. Identify the various types of weld defects as described and classified by the American Welding Society (AWS).

c. Identify the parts of a prepared groove joint: groove face, root face, root opening, groove angle, open/closed root, backing strip, feather edge.

d. Identify parts of a groove weld: face, toe, throat face reinforcement, root reinforcement.

e. Identify parts of a fillet weld: face, toe, throat, leg, root.

2. Lab Learning Goals

Upon satisfactory completion of the lab portion of this course, the student will be able to:

a. Use the oxyfuel apparatus, appropriate power tools and materials to prepare and weld a t-joint per job sheet specifications. (job sheets #1,2)

b. Use appropriate electrodes to develop a filler weld in a t-joint in all 4 welding positions. (job sheets #1,2)

c. Use the oxyfuel apparatus, appropriate power tools and materials to prepare a v-groove joint per job sheet specifications. (job sheets #3-6)

d. Use appropriate electrodes to develop a groove weld in all 4 welding positions. (job sheets #3-6)
IV. METHODS OF ASSESSMENT (TYPICAL)

A. FORMATIVE ASSESSMENT

1. Weekly laboratory assignments
2. Weekly homework assignments
3. Bi-monthly quizzes
4. Mid Term

B. SUMMATIVE ASSESSMENT

1. Evaluation of total completed laboratory assignments
2. Final examination