Course Outline of Record

Los Medanos College           2700 East Leland Road        Pittsburg CA 94565        (925) 439-2181

Course Title: Blueprint Reading for Welders        Subject Area/Course Number: WELD-035

New Course □ OR Existing Course  ☒

Instructor(s)/Author(s): Joe Meyer

Subject Area/Course No.: WELD-035        Units: 3
Course Name/Title: Blueprint Reading for Welders
Discipline(s): Welding

Pre-Requisite(s): None
Co-Requisite(s): None

Advisories: Successful Completion of WELD-010, WELD-040, ENGL-095, MATH-012

Catalog Description: Blueprint reading skills and the ability to interpret American Welding Society Welding Symbols is required by the metalworking and fabrication industry. It covers the basic orthographic principles of three-view projections, dimensioning, sections, and freehand sketching. Emphasis is placed on plate and structural fabrication, print reading, steel classifications, interpretation of the American Welding Society (AWS) Welding Symbols, and cost estimating of materials for fabrication.

Schedule Description: This course is designed to teach blueprint reading skills to both beginning welding students and experienced welders. Blueprint reading skills and the ability to interpret American Welding Society Welding Symbols is required by the metalworking and fabrication industry. It is a must for employment as a welder and/or a fitter. It is a required for employment as a Journeyman welder. This course makes you more valuable to employers and will improve your employment potential.

Hours/Mode of Instruction: Lecture 54  Lab      Composition      Activity      Total Hours 54
(If Non-Credit desired, contact Dean.)

Credit  ☒ Credit Degree Applicable (DA)        Grading  □ Pass/No Pass (P/NP)        Repeatability  ☒ 0
□ Credit Non-Degree (NDA)        □ Letter (LR)        1
(If Non-Credit desired, contact Dean.)        □ Student Choice (SC)        2
                          □ 3

Last date of Assessment: __FA16_____        Cohort #:  ___4___

Please apply for:
LMC General Education Requirement and/or Competency & Graduation Requirement(s): None

Transfer to:  ☒ CSU  □ UC  □ IGETC  LDTP  Course is Baccalaureate Level:  ☒ Yes  □ No
Course Title: Blueprint Reading for Welders

Subject Area/Course Number: WELD-035

FOR OFFICE OF INSTRUCTION ONLY. DO NOT WRITE IN THE SECTION BELOW.

Begin in Semester ____________

Dept. Code/Name: ______________

ESL Class: Yes / No

Class Code

☐ A Liberal Arts & Sciences
☐ B Developmental Preparatory
☐ C Adult/Secondary Basic Education
☐ D Personal Development/Survival
☐ E For Substantially Handicapped
☐ F Parenting/Family Support
☐ G Community/Civic Development
☐ H General and Cultural
☐ I Career/Technical Education
☐ J Workforce Preparation Enhanced
☐ K Other non-credit enhanced
☐ Not eligible for enhanced

T.O.P.s Code: ______________

DSPS Class: Yes / No

SAM Code

☐ A Apprenticeship
☐ B Advanced Occupational
☐ C Clearly Occupational
☐ D Possibly Occupational
☐ E* Non-Occupational
☐ F Transfer, Non-Occupational
☐ NBS Not Basic Skills

Remediation Level

☐ 0 One level below transfer
☐ 1 Two levels below transfer
☐ 2 Three levels below transfer

Course approved by Curriculum Committee as Baccalaureate Level: Yes / No

LMC GE or Competency Requirement Approved by the Curriculum Committee: ______________

Distribution: Original: Office of Instruction
Copies: Admissions Office, Department Chairperson
Rev 09-17-2008
Course Outline of Record
Los Medanos College          2700 East Leland Road          Pittsburg CA 94565           (925) 439-2181

Course Title: Blueprint Reading for Welders         Subject Area/Course Number: WELD-035

Institutional Student Learning Outcomes

☐ General Education SLOs (Recommended by GE Committee)
   At the completion of the LMC general education program, a student will:
   1. read critically and communicate effectively as a writer and speaker.
   2. understand connections among disciplines and apply interdisciplinary approaches to problem solving.
   3. think critically and creatively
   4. consider the ethical implications inherent in knowledge, decision-making and action.
   5. possess a worldview informed by diverse social, multicultural and global perspectives.

Program-Level Student Learning Outcomes (PSLOs)

1. Be able to know and specify the safety requirements and knowledge as required in the welding trade.
2. Demonstrate the ability and theory to effectively solve problems encountered while welding or cutting and perform in accordance with industry standards.
3. Be prepared to learn the step-by-step procedure to pass the AWS Welder Qualification/Certification Exam, essential for employment as a welder.

Course-Level Student Learning Outcomes (CSLOs):

CSLO 1: Read and interpret a variety of shop and field blueprints that include standard AWS welding symbols (PSLO 2, 3)

CSLO 2: Draw a freehand sketch with dimensions of a fabricated object (PSLO 2)

CSLO 3: Create a Bill of Materials for a metal fabrication project and/or calculate a cost estimate (PSLO 1, 2)

Assessments:

<table>
<thead>
<tr>
<th></th>
<th>Unit Review/Exercises</th>
<th>Quizzes</th>
<th>Midterm</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSLO 1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CSLO 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSLO 3</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

CSLO 1: This CSLO can be assessed from the homework exercises, quizzes, midterm and final. There are 25 units (chapters) from the textbook that are covered and assigned in this course. Each unit is extremely comprehensive and covers an incredible depth of material. The first section of each unit is text which students are required to read and the second section is in workbook format – “Unit Review”, and requires students to practice and apply the information covered in the unit.

An example of a unit review exercise for CSLO 1 from Unit 3 is:

Refer to the Corner Bracket drawing and answer the following questions:

- How many parts are required to fabricate the corner bracket?
- What type of material is used?
- How many views are shown and name each view shown?
- Name each type of line used in the drawing?
- How many holes are to be drilled?
- How deep is each hole to be drilled?
- What is the diameter of the hole?
- What is the significance of the note, “Break All Sharp Edges”?

Answering these questions allows students to practice reading a blueprint including the AWS symbols and drawings to learn important information required to interpret the blueprint.
Method of Evaluation/Grading:

“A”-level student work is characterized by:

CSLO 1: Completing unit reviews when due with detailed answers that are at least 90% accurate; quizzes, midterms and the final that are at least 90% accurate.

CSLO 2: Clear and neat sketches that include top, front and right side views with appropriate line types, weights and scale, including appropriate dimensioning rules, complete and detailed leaders.

CSLO 3: Completing unit reviews when due with detailed answers that are at least 90% accurate; quizzes, midterms and the final that are at least 90% accurate.
"C"-level student work is characterized by:

CSLO 1: Completing unit reviews with answers that are 70% to 79% accurate; quizzes, midterms and the final that are 70% to 79% accurate.

CSLO 2: Sketches that include some of the views (top, front and right side) with most appropriate line types, weights and scale, including appropriate some dimensioning rules and partially complete leaders.

CSLO 3: Completing unit reviews with answers that are 70% to 79% accurate; quizzes, midterms and the final that are 70% to 79% accurate.

Point Structure:

- Participation: 10%
- Homework Exercises: 40%
- Quizzes: 20%
- Midterm: 15%
- Final: 15%

Grading Structure:

- A = 90% to 100%
- B = 80% to 89%
- C = 70% to 79%
- D = 60% to 69%
- F = 59% and below

Course Content:

- Basic Lines and Views
  - Basic lines
  - Basic views
- Sketching
  - Purpose of sketching
  - Basic sketching techniques
- Notes and Specifications
- Dimensions
  - Purpose of dimension
  - Linear and angular dimensions
  - Radius and arc dimension
  - Drilled hole dimension
  - Countersunk and counterbored holes and spotface dimensions
  - Tolerance dimensions
  - Scale size
  - Thread dimensions
  - Dimensioning methods
- Bill of Materials
  - Preparation of the bill of materials
  - Specifying types of steel
  - Project summary worksheet
- Structural shapes
  - Metal forms and identifications
  - Steel classifications and identification
  - Metal alloys, description, applications and identification
- Other Views
  - Views with conventional breaks
  - Auxiliary views
  - Use of both right side and left side views
  - Alternate positions of side view
Course Outline of Record
Los Medanos College           2700 East Leland Road        Pittsburg CA 94565        (925) 439-2181

Course Title: Blueprint Reading for Welders  Subject Area/Course Number: WELD-035

- Enlarged detail views
- Developed views
- Revolved views
- Corrections and revisions on prints

- Sections
  - Full sections
  - Half sections
  - Revolved sections
  - Assembly sections
  - Phantom sections
  - Aligned sections
  - Broken-out sections

- Detail, Assembly, and Subassembly prints
  - Detail drawing
  - Assembly prints
  - Subassembly prints

- Welding symbols and Abbreviations
  - Welding symbols
  - Location of weld symbols
  - Obsolete weld symbols
  - Preferred symbols
  - Contour and finish symbols
  - Multiple weld symbols
  - Designations of member to be beveled
  - Dimension on welding symbols
  - Designation of special information
  - Location of the welding symbol on orthographic views
  - Duplicate welds
  - Multiple reference lines and their applications
  - Welding abbreviations
  - Weld symbol dimension tolerance

- Basic Joints for Weldment Fabrications
  - Basic joints
  - Other kinds of joints
  - Joints commonly used with structural shapes
  - Joint fitup

- Fillet Welds
  - Size of the legs
  - Length of fillet welds
  - Determining the extent of welding
  - Pitch of intermittent welding
  - Contour and finishing
  - Use of fillet weld in combination with other symbols

- Groove Welds
  - Groove Weld
  - Depth of groove preparation
  - Groove weld size
  - Length and pitch of groove weld
  - Root opening of groove welds
  - Groove angle
  - Contour and finishing
  - Groove weld combinations
  - Back-gouging and its application to groove welds
  - Backing and spacer material symbols and their application to groove welds
  - Consumable inserts and their application to groove welds
  - Seal welds
Course Outline of Record
Los Medanos College 2700 East Leland Road Pittsburg CA 94565 (925) 439-2181

Course Title: Blueprint Reading for Welders Subject Area/Course Number: WELD-035

Instructional Methods:
☒ Lecture
☐ Lab
☐ Activity
☒ Problem-based Learning/Case Studies
☐ Collaborative Learning/Peer Review
☒ Demonstration/Modeling
☐ Role-Playing
☒ Discussion
☐ Computer Assisted Instruction
☐ Other (explain) _____________________________

Textbooks: