

Western Iowa Tech Community College
Course Outline of Record

Date: 03/06/2014

Prefix & No.: WEL 208 Course Title: Introduction to Fabrication

Semester **Credit** Hours: 2.00

Lecture **Contact** Hours per Semester: 16.00

Lab **Contact** Hours per Semester: 48.00

Clinical **Contact** Hours per Semester: 0.00

OJT or Internship **Contact** Hours per Semester:

Course/Lab Fee: Yes No

Pre and Post Assessments: __

Course Description

This course combines lecture and lab activities to develop individualized skills needed in a manufacturing atmosphere such as tool usage, layout methods and material estimation. Students are provided an opportunity for plate welding certification. Prerequisite: Assessment and advising.

Prerequisite: None

Corequisite: None

Course Needs Statement

This course will allow the student to apply learned skills to practical applications which will better prepare the individual for the job market.

Required Textbooks and/or materials

Yes No Other

Course Objectives:

The course will provide information which should enable the student to:

1. Use shop tools in a safe and skillful manner
2. Work with a variety of measurement tools
3. Use layout procedures
4. Identify different types of metal working equipment
5. Do simple lathe operations
6. Explain basic welding metallurgy
7. Explain the importance of coatings used in metal fabrication
8. Estimate time and material costs
9. Plan and organize shop work
10. Use blue prints in the fabrication process

Content Outline

- I. Tools
 - A. Grinders
 - B. Chains and hooks
 - C. Clamping and cleceives
 - D. Scaffolding
 - E. Jacks and pullers
- II. Measuring
 - A. Steel tapes
 - B. Squares
 - C. Dividers and calipers
 - D. Micrometers
 - E. Vernier gauges
 - F. Protractors
- III. Layout
 - A. Working from blue prints

- B. Squaring
- C. Leveling
- D. Angular layout
- E. Bolt circles
- F. Bending layouts
- G. Work points and elevations
- IV. Metal Working Equipment
 - A. Plate shears
 - B. Punches
 - C. Drills
 - D. Plate, angle, and bar rolls
 - E. Press brake
 - F. Machine shop machinery
 - 1. Lathe
 - 2. Mills
 - 3. Grinders
- V. Metallurgy
 - A. Heat treating
 - B. Annealing
 - C. Hardening
 - D. Tempering
- VI. Coatings
 - A. Paints
 - B. Galvanizing
- VII. Estimating (Time and Materials)
 - A. Employee experience and skill
 - B. Equipment
 - C. Project design
 - D. Material availability and cost

Assessment

Course Competencies

At the conclusion of the course, the student will be able to:

1. Demonstrate the proper use of shop tools
2. Explain the principles of layout work
3. Identify different structural shapes (angles, channels, beams, etc.)
4. Identify the uses of different metal working equipment
5. Demonstrate proper methods of fasteners, their identification and uses (bolts, screws, rivets)
6. Explain the principles of basic metallurgy
7. Explain how coating protects metal
8. Identify the different types of welding fabrication. (sheet metal, heavy structural, material handling, maintenance, etc.)
9. Measure using steel tapes, squares, dividers and calipers, micrometers, Vernier gauges and protractors
10. Create written estimates of materials and labor for a given project
11. Layout-steel plate showing all process needed to make product from a blueprint
12. Design, construct, and finish a fabrication project according to AWS specifications
13. Determine proper tools and dies used for various metal working operations
14. Demonstrate the proper methods to sharpen cutting tool bits (drills and lathe bits)
15. Research and summarize metallurgy topics.
16. Summarize welding skills utilized within the industry based on plant tours taken during the semester

Addendum

Prefix & No.: WEL 208 **Course Title:** Introduction to Fabrication

Key words:

Required Textbooks and/or Materials

Title: Welding Principles Applications

Author: **Jeffus & Johnson**

Edition: **Current**

Publisher: **Delmar Publications**

ISBN-13:

ISBN-10:

Other Materials:

Course/Lab Fee: \$126.00

Rationale (usage) for lab fees: welding materials

Additional Information:

Common Final: Yes No

See Division Chair for facility and equipment needs.

Reminder: Each Course Outline of Record is expected to be reviewed every five (5) years.

Attached Files: