ISET-2160: STRUCTURAL FABRICATION

Cuyahoga Community College

Viewing: ISET-2160 : Structural Fabrication

Board of Trustees:
January 2023

Academic Term:
Fall 2023

Subject Code
ISET - Integrated Systems Engineering

Course Number:
2160

Title:
Structural Fabrication

Catalog Description:
Complete a fabrication project, beginning by interpreting a set of prints, developing a plan, and working to cut, prepare, fit and weld raw materials together. The fabrication project will resemble a real world scenario related to the shipbuilding, construction, aeronautical, or related industries on a smaller scale.

Credit Hour(s):
4

Lecture Hour(s):
2
Lab Hour(s):
4

Requisites

Prerequisite and Corequisite
ISET-1101 Welding Blue Print Reading, and ISET-2100 Gas Metal Arc Welding (MIG).

Outcomes

Course Outcome(s):
Complete a structural fabrication project related to the welding industry in accordance with predetermined specifications.

Objective(s):
1. Perform accurate measurements for specified fabrication projects.
2. Properly prepare material surfaces for fitting.
3. Perform basic repairs and modifications as the project progresses.

Course Outcome(s):
Take proper safety precautions to deal with hazards pertaining to fitting and welding.

Objective(s):
1. Practice safe operation of fitting equipment and tools.
2. Discuss safe handling of different types of fire extinguishers.
3. Practice safe drilling, gouging, and beveling techniques.

Course Outcome(s):
Develop a fabrication plan based on prints or specifications.

Objective(s):

1. Interpret and create complex prints, drawings, layouts, centerlines, circles, and parallel lines.
2. Identify different types of structural steel beams and tubes as well as brackets, plates, tack welds and their strengths and uses.
3. Identify transversal and longitudinal frames.

Methods of Evaluation:

a. Laboratory assignments
b. Written assignments
c. Online course materials (aws.org)
d. Classroom participation
e. Weekly quizzes
f. Midterm exam
g. Final exam

Course Content Outline:

1. Concepts
   a. Welding equipment safety and setup
   b. Safe use and operation of welding support tools
   c. OSHA Safety standards/codes
   d. Structural fabrication terminology
   e. Welding equipment safety and set up
   f. Different types of structural fabrication mechanisms
   g. Trade Science
   h. Trade Theory
   i. Measurements (Metric and standard)
   j. Elaborate advanced drawing sketching
   k. Complex blueprint reading
   l. Advanced trade math
   m. Structural fabrication tools
   n. Different plate perforations according to prints
   o. Different tack welding strengths
   p. Plasma Cutting
   q. Oxy fuel Cutting
   r. Oxy fuel washing
   s. Selecting proper measuring and hand tools for different job applications as specified
   t. AutoCAD: small blue print development project
2. Skills
   a. Perform accurate measurements
   b. Interpreting complex prints, drawings, and layouts
   c. Creating complex prints, drawings, and layouts
   d. Material surface preparation
   e. Drilling, gouging, and beveling techniques
   f. Cutting techniques
   g. Tack welding
   h. Tool/equipment selection
   i. Tool/equipment setup
3. Issues
   a. Print interpretation and creation
   b. Advanced trade math
   c. Accurate measurements
   d. Material preparation
   e. Safe installation

Resources

Larry Jeffus. *Welding and Metal Fabrication*. 1. Delmar Cengage Learning, 2019.

Thomas E. Proctor, Jonathan F. Gosse. *Printreading for Welders*. 5. Amer Technical Pub, 2021.

Syamal Mukherjee. *Metal Fabrication Technology*. 1. Prentice-Hall of India Pvt.Ltd, 2022.

Resources Other
AWS.org

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