ISET-1301: MECHANICAL/ELECTRICAL PRINT READING

Cuyahoga Community College

Viewing: ISET-1301 : Mechanical/Electrical Print Reading

Board of Trustees:
May 2023

Academic Term:
Fall 2023

Subject Code
ISET - Integrated Systems Engineering

Course Number:
1301

Title:
Mechanical/Electrical Print Reading

Catalog Description:
Introduction to fundamental theory and application of blueprint reading skills. Included material will cover electrical, mechanical, structural drawings with symbols and wiring diagrams, basic troubleshooting techniques. Extensive guided instruction and practice provided.

Credit Hour(s):
3

Lecture Hour(s):
2

Lab Hour(s):
2

Requisites

Prerequisite and Corequisite
None.

Outcomes

Course Outcome(s):
Differentiate between mechanical and electrical blueprints, correctly identify electrical symbols, and create freehand sketches of blueprints to use when installing, repairing, and maintaining industrial equipment.

Objective(s):
1. Recognize and interpret mechanical drawings and symbols.
2. Recognize and interpret electrical drawings and symbols.
3. Demonstrate freehand blueprint sketching.
4. Re-create drawings with sketches.
5. Identify reference points.
6. Use engineering drawings to isolate and identify problems.
7. Developing one-line diagrams.

Course Outcome(s):
Recognize and interpret different blueprint views to provide adequate information to produce a working part.

Objective(s):
1. Identify different types of views.
2. Apply different views for drawing interpretations.
3. Describe the required views for part manufacturing.

Course Outcome(s):

Identify and select proper tools and processes needed for manufacturing.

Objective(s):

1. Identify industrial processes.
2. Recognize equipment needed to support the manufacturing process.
3. Identify and apply proper tool selection.

Course Outcome(s):

Recognize technology applicable to blueprint design and drawings.

Objective(s):

1. Identify software used in the development of drawings.
2. Identify firmware for drawing applications.

Course Outcome(s):

Apply math concepts involving decimals, fractions, and measurement when interpreting engineering drawings.

Objective(s):

1. Identify and convert units and standards of measurement from engineering drawings.
2. Identify the characteristics and features of linear measurements.
3. Convert decimals and percentages using the legend from engineering drawing to correct scale.
4. Apply exponentials for converting figures from engineering drawings to scale.

Methods of Evaluation:

a. Written and/or verbal quizzes weekly at minimum.
b. Mid-term and final exams
c. Classroom participation
d. Completion and demonstration of assigned projects

Course Content Outline:

a. CONCEPTS
   i. Unit conversions
   ii. Standards symbols
   iii. Industrial processes
   iv. Equipment specifications
   v. Control circuits
   vi. Schematics
   vii. Flowcharts
   viii. Pump and motor nomenclature
   ix. Hydraulic circuits
   x. Tools
   xi. One-line diagrams
   xii. Instrumentation
   xiii. Installation specifications
   xiv. Troubleshooting
b. SKILLS
   i. Decimal & percentage conversion
   ii. Apply exponents
   iii. Print reading
   iv. Freehand sketching
   v. Load calculations

vi. Troubleshooting (fundamentals) using drawings
vii. Component applications
viii. Providing good customer service

c. ISSUES
i. Relate theory to practical applications
ii. Identify different drawing applications globally
iii. Identifying quality manufactures
iv. Networking
v. Communication
vi. Environmental conditions

Resources

Olivo T.C. and Olivo, C. T. *Basic Blueprint Reading and Sketching*. 8th. Cliffton Park, New York: Demar Publishing, Inc., 2022.

Mandrell, Nussbaum and Orr. *Reading Technical Diagrams*. 2022.

Kramer. *Mathematics for Electricity and Electronics*. 2nd. Cliffton Park, New York: Demar Publishing, 2020.

Charles R. Miller. *Ugly's Electrical References*. 2020. Burlington, MA: Jones and Barlett Learning,

Glen A. Mazur, Wiliam J. Weindorf. *Print reading for installing and troubleshooting electrical systems*. 2nd. Orlando Park IL: American Technical Publishers, 2022.

Top of page
Key: 5074