ATMW-2330: PRECISION OPTICS

Cuyahoga Community College

Viewing: ATMW-2330 : Precision Optics

Board of Trustees:
2007-05-24

Academic Term:
Spring 2019

Subject Code
ATMW - Appld Ind Tech - Millwrighting

Course Number:
2330

Title:
Precision Optics

Catalog Description:
In-depth study of concepts related to precision optics. Topics include operational theory, operation of tilting level and jig transit, interpretation and application of a Whyteface® scale, peg testing, measurement theory, and mirror usage.

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

Prerequisite and Corequisite
Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

Outcomes

Course Outcome(s):
Work effectively and efficiently on a job site where precision optics occurs.

Objective(s):
1. 1. Properly set up a tilting level and a jig transit by using operational theory in an active learning setting.
2. 2. Take precision measurements by discussing concepts and taking readings.
3. 3. Whyteface® scale interpretation and application
4. 4. Peg test and calibration of a tilting level.
5. 5. Calibration of an axel mirror.

Methods of Evaluation:
1. Quizzes
2. Exams
3. Classroom participation
4. Demonstration of assigned projects

Course Content Outline:
A.Concepts
1.Tilting level
2.Operational theory
3.Jig transit
4.Precision measurements

5.Readings
6.Whyteface® scale graduations
7.Optical micrometer
8.Peg test
9.Equipment setup
10.Calibration
11.Tilting level
12.Axel mirror
13.Stand & instrument set up
14.Firm foundation
15.Removal from carrying case
16.Rough level with bull's-eyes
17.Finish with coincidence and long vial
18.Buck into known coordinates
19.Level slim changes
20.Elevation transfers
21.90° turns
22.Parallel conditions
B.Skills
1.Properly setting up tilting level using operational theory
2.Properly setting up jig transit using operational theory
3.Taking precision measurements
4.Taking readings
5.Interpreting readings
6.Using Whyteface® scale graduations
7.Using optical micrometer
8.Completing peg test
9.Calibrating a tilting level
10.Setting up equipment
11.Calibrating an axel mirror
12.Following procedures
C.Issues
1.Safety
2.Inability to identify problems
3.Understanding potential hazards
4.Professional demeanor to promote credibility of the trade
5.Communication skills to promote effective interpersonal skills

Resources

Basaraba, Bruce. *Industrial Trades Training Manual.* Alberta: IPT Publishing, 1986.

Cubic Precision. *Optical Alignment Manual.* Teterboro, NJ: Cubic Precision, 1986.

Garley, Ron. *Metal Training Manual.* Alberta: IPT Publishing, 1996.

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