

ATOE-1700: PAVING, TRACTOR, BACKHOE OPERATIONS

Cuyahoga Community College

Viewing: ATOE-1700 : Paving, Tractor, Backhoe Operations

Board of Trustees:

September 2025

Academic Term:

Fall 2025

Subject Code

ATOE - Appd Ind Tech-Operating Engin.

Course Number:

1700

Title:

Paving, Tractor, Backhoe Operations

Catalog Description:

Introduction to design concepts of paving, identifying operation controls of any hydraulic and loader equipment, basic operations and maintenance safety of equipment, standard and conventional scraper, differentiate one-engine and two-engine scrapers, inspection and start-up, and safety procedures.

Credit Hour(s):

3

Lecture Hour(s):

3

Lab Hour(s):

0

Requisites

Prerequisite and Corequisite

Departmental approval: Admissions to Operating Engineering Technology apprenticeship program.

Outcomes

Course Outcome(s):

N/A

Objective(s):

1. Explain components of asphalt paving.
2. List and demonstrate pre and post operations procedures.
3. Explain safety operation procedures.
4. Explain temperature effects on rolling asphalt.
5. Define and explain fundamentals of construction leveling and grades.
6. Demonstrate setup and use of a level only laser on site preparation.
7. Demonstrate setup and use of a dual slope transmitter.

Methods of Evaluation:

1. Quizzes
2. Exams
3. Classroom participation

Course Content Outline:

1. Basic functions
 - a. Components of asphalt paving
 - i. tractor
 - ii. screed
 - b. Safety operations
 - i. maintenance performance of machine
 - ii. pre-operation check-out procedures
 - iii. self-leveling and traction features
 - iv. manual paving
 - v. controlling mat quality
 - vi. post-operation procedures
 - c. Temperature
 - i. effects on rolling
 - ii. paving depth in relation to rolling
 - d. Safety operation work rules
 - e. Compaction variables
 - i. rolling zones
 - ii. rolling patterns
 - iii. determination of rolling patterns
 - f. Maintenance
 - g. Standards and specifications
2. Safety precautions
3. Operation techniques
 - a. Hand signals
 - b. Backhoe maintenance
 - c. Walk around inspection
 - d. Hydraulic hoe
4. Trenching
5. Excavations standards
6. Soil classifications
7. Selected OSHA construction industry guidelines
8. Site preparation
 - a. Stages of site preparation
 - b. Safety
9. Site preparation
 - a. Components of laser survey methods
 - i. lenker rod
 - ii. level only laser
 - iii. receiver - beam detector
 - iv. slope
 - v. dual slope laser
 - vi. calibration
 - vii. laser placement
 - viii. machine set-up
 - ix. laser maintenance
 - x. tripod maintenance
10. Construction steps
 - a. Measurement and control
 - b. Line and distance
 - c. Elevation

Resources

International Union of Operating Engineers, Local #18--Apprenticeship and Training. "Training for Operating Engineers, First Year"

International Union of Operating Engineers, Local #18–Apprenticeship and Training. "Training for Operating Engineers, Second Year, Book Two"

International Union of Operating Engineers, Local #18–Apprenticeship and Training. "Operating Engineers, Second Year Student Workbook, Book One"

Top of page

Key: 536