

# UT-2010: EQUIPMENT OPERATIONS II

---

## Cuyahoga Community College

**Viewing:** UT-2010 : Equipment Operations II

**Board of Trustees:**

October 2024

**Academic Term:**

Fall 2025

**Subject Code**

UT - Utilities Technology

**Course Number:**

2010

**Title:**

Equipment Operations II

**Catalog Description:**

Operations of compact equipment and machines for construction of utility systems. Machine operations, maintenance, equipment inspection, and safety procedures will be covered. Students will perform basic and advanced operations of excavation through dedicated lab activity. Students need to be 18 years of age or older due to equipment to be used during lab activities per Occupational Safety and Health Administration (OSHA) regulations.

**Credit Hour(s):**

3

**Lecture Hour(s):**

1

**Lab Hour(s):**

6

## Requisites

**Prerequisite and Corequisite**

CNST-1290 Construction Print Reading; and CNST-2050 Advanced Construction Safety, or concurrent enrollment; and CNST-2230 Gas Pipeline Systems or concurrent enrollment; and CNST-2240 Water and Wastewater Systems, or concurrent enrollment, or departmental approval

## Outcomes

**Course Outcome(s):**

Analyze and perform the functions of compact excavating equipment and related accessories.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Identify uses of compact track loaders.
2. Identify uses of compact skid-steer loaders.
3. Identify uses of compact excavators.

---

**Course Outcome(s):**

Demonstrate and recommend earthwork techniques for compact excavators.

**Objective(s):**

1. Identify trench cutting path and profile.

2. Perform trench cutting technique.
3. Identify proper size of bucket for trench digging.
4. Demonstrate the use of a rotating laser level.
5. Identify cross-trench paths and profiles.
6. Perform cross-trench technique.
7. Identify loading techniques.
8. Perform loading techniques.
9. Identify backfill techniques.
10. Perform backfill techniques.
11. Recognize OSHA regulations for trenching and excavation.
12. Safely load and unload equipment onto and from a trailer.

---

**Course Outcome(s):**

Demonstrate and justify the functions of a compact track loader.

**Objective(s):**

1. Perform front end loading operations with a track loader.
2. Recognize tractor load limits of a track loader.
3. Perform backfill techniques with a track loader.
4. Recognize safety guidelines for track loaders.
5. Safely load and unload track loader onto and from a trailer.

---

**Course Outcome(s):**

Analyze and perform the functions of a skid-steer loader.

**Objective(s):**

1. Perform front end loading operations with a skid-steer loader.
2. Recognize tractor load limits of a skid-steer loader.
3. Perform backfill techniques with a skid-steer loader.
4. Perform grading techniques with a skid-steer loader.
5. Recognize safety guidelines for skid-steer loaders.
6. Safely load and unload skid-steer loader onto and from a trailer.

---

**Methods of Evaluation:**

1. Quizzes
2. Written Assignments
3. Exams
4. Lab Activities
5. Participation
6. Projects

**Course Content Outline:**

1. Construction drawings of utility systems
  - a. Utility site plans
  - b. Examples of civil plan/profile drawings
2. Compact heavy equipment for construction
  - a. Compact track loader
  - b. Compact skid-steer
  - c. Compact excavator
  - d. Safety guidelines
3. Compact tractor loader and skid-steer operation

- a. Soil loading and unloading
- b. Aggregate loading and unloading
- c. Earthwork backfilling
- d. Equipment safety
- e. Equipment loading onto trailer
- f. Equipment unloading from trailer
- 4. Compact excavator operation
  - a. Soil conditions
  - b. Trench path and depth
  - c. Bucket size change
  - d. Trench digging
  - e. Rotating laser levels
  - f. Earthwork backfilling
  - g. Grading
  - h. Equipment safety
  - i. Equipment loading onto trailer
  - j. Equipment unloading from trailer

## Resources

Schaufelberger, J. E. & Migliaccio, G. C. (2019) *Construction equipment management*, Routledge.

---

### Resources Other

Mustang/CAT. (2021). *A handbook on compact equipment attachments*. <https://www.mustangcat.com/a-handbook-on-compact-equipment-attachments/>

Mustang/CAT. (2024). *Everything you need to know about mini excavators*. <https://www.mustangcat.com/need-to-know-mini-excavators/>

Bobcat. (2021). *T740 Track loader operation and maintenance digital manual*. 7536681ENUSPDF. <https://shop.bobcat.com/manuals/operation-and-maintenance-manuals>

Bobcat. (2021). *S70 Skid steer loader operation and maintenance digital manual*. 7504494ENUSPDF. <https://shop.bobcat.com/manuals/operation-and-maintenance-manuals>

Bobcat. (2021). *E60 Excavator operation and maintenance digital manual*. 7507252ENUSPDF. <https://shop.bobcat.com/manuals/operation-and-maintenance-manuals>

Top of page

Key: 5254