



## Milwaukee Area Technical College

# HORT-116 Landscape Equipment

## Course Outcome Summary

### Course Information

<b>Description</b>	This course covers maintenance, adjustment and productive use of specialized rolling stock and tools used in landscaping. Students practice safe operation of an array of landscape equipment.
<b>Total Credits</b>	3
<b>Total Hours</b>	64

### Types of Instruction

Instruction Type	Credits/Hours
Lecture	2cr/32hrs
Lab	1cr/32hrs

### Career Essentials

1. Technological Competency

### Program Outcomes

#### 1. Communicate as a horticulture professional

*Status*    *WIP*

##### Criteria

- 1.1. learner refers to plants by common and approved nomenclature
- 1.2. learner articulates phases of project management
- 1.3. learner displays professional character
- 1.4. learner interacts with professional organizations, colleagues, and community
- 1.5. learner applies current technology to the profession

#### 2. Provide horticulture maintenance

*Status*    *WIP*

##### Criteria

- 2.1. learner protects existing vegetation, structures, and property
- 2.2. learner implements cultural practices to maintain plants and or communities
- 2.3. learner operates maintenance equipment
- 2.4. learner schedules maintenance operations
- 2.5. learner adheres to safety standards

### Course Competencies

#### 1. Summarize General Safety

##### Linked Program Outcomes

Communicate as a horticulture professional

##### Assessment Strategies

- 1.1. Competency will be demonstrated by passing a written test

**Criteria**

*Your performance will be successful when:*

- 1.1. Learner matches safe operating procedures for each piece of landscape equipment.
- 1.2. Learner identifies 5 hazards that can occur during equipment operation

**Learning Objectives**

- 1.a. Identify situations where accidents could occur.
- 1.b. Describe safe work habits and procedures.

**2. Demonstrate General Safety**

**Assessment Strategies**

- 2.1. Competency will be demonstrated by executing a pre-operation inspection check list.

**Criteria**

*Your performance will be successful when:*

- 2.1. Learner utilizes personal protective equipment 95% of the time.
- 2.2. Learner demonstrates safe working habits and procedures to 70% accuracy.

**Learning Objectives**

- 2.a. Demonstrate safe working habits while working in and around equipment.
- 2.b. Use proper personal protective equipment.

**3. Operate Equipment Safely**

**Assessment Strategies**

- 3.1. performance test

**Criteria**

*Your performance will be successful when:*

- 3.1. Learner matches driving speed to work site conditions
- 3.2. Learner identifies pre-operation inspection items on the equipment with 70% accuracy.
- 3.3. learner utilizes 3 points of contact while entering and exiting the equipment
- 3.4. learner completes the safe operating techniques of each equipment to 80% accuracy

**Learning Objectives**

- 3.a. Evaluate the equipment for readiness of use before operation.
- 3.b. Identify potential hazard areas on the equipment.
- 3.c. Demonstrate safe working procedures while operating the equipment.

**4. Adjust Landscape Tractors**

**Assessment Strategies**

- 4.1. performance test

**Criteria**

*Your performance will be successful when:*

- 4.1. Learner calibrates implement to match specific work site conditions
- 4.2. Learner details maintenance procedures for tractors to 70% accuracy.
- 4.3. Learner identifies 80% of the parts of hitching systems for tractors.

**Learning Objectives**

- 4.a. Identify the regular maintenance needs of a tractor.
- 4.b. Recognize the different types of hitch and implement attachments.
- 4.c. Identify the controls for the different adjustment points on a tractor.
- 4.d. Perform basic maintenance needs on tractor.

**5. Operate Landscape Tractors**

**Assessment Strategies**

- 5.1. Competency will be demonstrated by hands on operation.

**Criteria**

*Your performance will be successful when:*

- 5.1. Learner drives and operates the tractor to 70% proficiency.
- 5.2. Learner completes 80% of landscape tasks for each tractor

- 5.3. Learner attaches implements on a landscape tractor.
- 5.4. Learner starts and stops implements on a landscape tractor.
- 5.5. Learner detaches implements on a landscape tractor.

**Learning Objectives**

- 5.a. Drive and operate landscape tractors.
- 5.b. Perform basic landscape tasks using tractors.
- 5.c. Attach and detach implement from tractor.
- 5.d. Engage and operate the implement for it's intended purpose.

**6. Transport Equipment**

**Assessment Strategies**

- 6.1. Competency will be demonstrated by written test .
- 6.2. Competency will be demonstrated by classroom assessment.

**Criteria**

*Your performance will be successful when:*

- 6.1. Learner matches tie down gear to each specific piece equipment
- 6.2. Learner summarizes the procedures for tying down equipment to 70% accuracy.
- 6.3. Learner loads equipment on trailers according to manual specifications to 80% accuracy.

**Learning Objectives**

- 6.a. Explain how equipment weight and location can affect trailer performance.
- 6.b. Demonstrate the loading of equipment onto a trailer.
- 6.c. Identify the quantity and type of tie down supplies needed.
- 6.d. Perform equipment securement on a trailer.

**7. Operate Materials Handling Equipment**

**Linked Career Essentials**

Technological Competency

**Assessment Strategies**

- 7.1. Competency will be demonstrated by hands-on operation.

**Criteria**

*Your performance will be successful when:*

- 7.1. Learner performs front end loader tasks to 70% accuracy
- 7.2. Learner performs skid steer loader tasks to 70% accuracy.
- 7.3. Learner performs backhoe tasks to 70% accuracy.
- 7.4. Learner performs mini-excavator tasks to 70% accuracy.
- 7.5. Learner obtains full buckets of material
- 7.6. Learner attaches implements to material handling equipment.
- 7.7. Learner performs dump truck tasks with 70% accuracy
- 7.8. Learner performs pick up truck tasks with 70% accuracy
- 7.9. Learner measures distances and elevations using surveying tools.
- 7.10. Learner detaches implements from material handling equipment

**Learning Objectives**

- 7.a. Drive skid steers and front end loaders.
- 7.b. Load, transport, and dump materials using skid steer and front end loader.
- 7.c. Drive mini excavator and backhoe.
- 7.d. Dig and fill holes using mini excavator and backhoe.
- 7.e. Drive, back up, and parallel park manual transmission pickup truck
- 7.f. Drive, back up and park manual transmission dump truck while pulling attached trailer.
- 7.g. Operate truck dumping controls on both electric and PTO dump beds.

**8. Compare Tillage and Planting Equipment**

**Assessment Strategies**

- 8.1. Competency will be demonstrated by written test.

**Criteria**

*Your performance will be successful when:*

- 8.1. Learner summarizes the operational characteristics of tillage and planting equipment on the market to 70% accuracy.
- 8.2. Learner summarizes the adjustment of the variety of primary tillage equipment on the market to 70% accuracy.

### **Learning Objectives**

- 8.a. Differentiate the different types of tilling equipment in the industry.
- 8.b. Adjust tilling equipment to perform tasks.
- 8.c. Compare industry planting equipment.
- 8.d. Identify planting equipment needed for different types of planting.

## **9. Operate Tillage and Planting Equipment**

### **Assessment Strategies**

- 9.1. Competency will be demonstrated by hands on operation.

### **Criteria**

*Your performance will be successful when:*

- 9.1. Learner calibrates tilling equipment to 70% accuracy.
- 9.2. Learner operates tilling equipment to 70% accuracy.
- 9.3. Learner operates planting equipment to 70% accuracy.

### **Learning Objectives**

- 9.a. Calibrate tilling equipment for soil conditions and intended depth.
- 9.b. Till the soil using tilling equipment to proper depth and consistency.
- 9.c. Utilize tree spade to transplant a tree or shrub.
- 9.d. Utilize an auger attached to a skid steer to dig a hole to given dimensions.

## **10. Operate Chemical Application Equipment**

### **Assessment Strategies**

- 10.1. Competency will be demonstrated by written test.
- 10.2. Competency will be demonstrated by classroom assessment.

### **Criteria**

*Your performance will be successful when:*

- 10.1. Learner calibrates granular application equipment to 70% accuracy.
- 10.2. Learner calibrates liquid chemical sprayers to 70% accuracy.
- 10.3. Learner details proper safe chemical handling and application procedures to 70% accuracy.
- 10.4. Learner field adjusts chemical application equipment to 70% accuracy.

### **Learning Objectives**

- 10.a. Calibrate granular spreader for specified application rate.
- 10.b. Calibrate liquid sprayer for intended application rate.
- 10.c. Summarize chemical handling and storage procedures.

## **11. Operate Turf Maintenance Equipment**

### **Linked Program Outcomes**

Provide horticulture maintenance

### **Assessment Strategies**

- 11.1. Competency will be demonstrated by hands on operation.

### **Criteria**

*Your performance will be successful when:*

- 11.1. Learner performs pre-operation inspection of turf equipment to 80% accuracy.
- 11.2. Learner starts, operates, and shuts down 90% of turf equipment.

### **Learning Objectives**

- 11.a. Demonstrate safe working procedures while using turf equipment.
- 11.b. Wear personal protective equipment during operation and maintenance of turf equipment.
- 11.c. Identify the needed PPE for turf equipment operation.
- 11.d. Perform pre-operation inspection of all turf equipment.
- 11.e. Mow grass using various types of walk behind and riding mowers.
- 11.f. Trim grass or weeds using a string trimmer.
- 11.g. Strip sod using a sod cutter.
- 11.h. Edge bed using a bed edger.
- 11.i. Clean work site using power blower.
- 11.j. Aerate soil using rolling drum and reciprocating tine aerators.
- 11.k. Till soil using small and large rototillers.
- 11.l. Dethatch turf using power rake.
- 11.m. Plant seed in bare areas using overseeder.
- 11.n. Perform regular maintenance on small equipment. This includes: fluids, belts, tires, filters, fuses, and

other parts.

11.o. Adjust and calibrate turf equipment for desired results.

11.p. Identify sustainable power sources for turf equipment.

## 12. Operate Arboriculture Equipment

### Assessment Strategies

12.1. Competency will be demonstrated by hands on operation.

### Criteria

*Your performance will be successful when:*

12.1. Learner operates chain saw with no errors.

12.2. Learner performs maintenance of chain saws to 80% proficiency.

12.3. Learner cleans up brush using the chipper.

12.4. Learner wears all proper personal protective equipment needed while using arboriculture equipment.

### Learning Objectives

12.a. Identify and wear PPE needed for arboriculture equipment.

12.b. Make cuts on logs or branches using the chainsaw.

12.c. Chip logs, branches, and other brush using the chipper.

12.d. Identify the regular maintenance tasks to perform and chainsaws and chippers.

## 13. Perform Small Engine maintenance

### Assessment Strategies

13.1. Competency will be demonstrated by written test.

13.2. Competency will be demonstrated by simulation.

13.3. Competency will be demonstrated by classroom assessment.

### Criteria

*Your performance will be successful when:*

13.1. Learner identifies 75% of the major differences between two and four cycle

13.2. Learner diagnoses why a small engine won't start

13.3. Learner prepares small engine for winter storage.

13.4. Learner identifies a minimum of 3 sustainable power sources for engines.

13.5. Learner fixes common engine problems

13.6. Learner replaces filters on small engines

13.7. Learner adds fluids to small engines

### Learning Objectives

13.a. Identify the differences between two and four stroke engines.

13.b. Identify the components of a small engine.

13.c. Identify common breakdowns with small engines.

13.d. Perform regular maintenance tasks on small engines.