



## Milwaukee Area Technical College

# HORT-126 Landscape Estimating and Bidding

## Course Outcome Summary

### Course Information

<b>Description</b>	The numerical aspects of landscape installations and maintenance are studied, including estimation of labor and material costs. Linear, area, and volume calculations of materials needed for landscape projects from landscape plans are thoroughly covered, as well as garden center figuring, landscape design calculations, nursery and greenhouse set-up, and fertilizer materials and calibration.
<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. Mathematical 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

### Course Competencies

1. **Calculate the amount of hardscape materials needed from a landscape plan.**

#### Linked Program Outcomes

Communicate as a horticulture professional

#### Assessment Strategies

- 1.1. Written Objective Test
- 1.2. Project (a landscape installation estimate)

#### Criteria

*Your performance will be successful when:*

- 1.1. you calculate the number of timbers needed for a timber retaining wall.
- 1.2. you calculate the tons of stone needed for a stone retaining wall.
- 1.3. you calculate the strips of edging needed for landscape beds.

- 1.4. you calculate the number of fence posts and fence sections needed on a fencing plan.
- 1.5. you calculate the amount of natural stone or brick needed for a patio.
- 1.6. you calculate the amount of base material needed for a patio.
- 1.7. you calculate the number of cubic yards of landscape mulch or topsoil needed.
- 1.8. you show your calculations with units.
- 1.9. you calculate materials with 80% accuracy.

#### **Learning Objectives**

- 1.a. Describe the importance of a base layer for retaining walls.
- 1.b. Convert linear distances to other units (such as inches to feet).
- 1.c. Convert areas to other units (such as square inches to square feet).
- 1.d. Convert volumes to other units (such as cubic inches to cubic feet).

### **2. Calculate the amount of plant material needed from a landscape plan.**

#### **Linked Program Outcomes**

Communicate as a horticulture professional

#### **Assessment Strategies**

- 2.1. Written Objective Test
- 2.2. Project (a landscape installation estimate)

#### **Criteria**

*Your performance will be successful when:*

- 2.1. you calculate the number of plants needed on a check row (grid pattern) spacing from a landscape plan.
- 2.2. you calculate the number of plants needed on an on-center (offset) spacing from a landscape plan.
- 2.3. you calculate the number of rolls of sod needed for a landscape plan.
- 2.4. you calculate the number of pounds of seed needed for a landscape plan.
- 2.5. you calculate plant materials with 80% accuracy.

#### **Learning Objectives**

- 2.a. Explain the difference between check row and off set row planting.
- 2.b. Explain why seeding rates vary with different turf species.

### **3. Calculate the percent slope from a landscape plan.**

#### **Linked Program Outcomes**

Communicate as a horticulture professional

#### **Assessment Strategies**

- 3.1. Written Objective Test

#### **Criteria**

*Your performance will be successful when:*

- 3.1. you calculate the percent slope given the elevation change and the distance apart.
- 3.2. you calculate the elevation change given the percent slope and the distance apart.
- 3.3. you calculate the distance apart given the elevation change and the percent slope.
- 3.4. you calculate percent slope problems with 80% accuracy.

#### **Learning Objectives**

- 3.a. Explain how percent slope affects activities taking place on that surface.
- 3.b. Explain why a 100% slope is not a cliff.

### **4. Calculate areas from a landscape plan.**

#### **Linked Program Outcomes**

Communicate as a horticulture professional

#### **Assessment Strategies**

- 4.1. Written Objective Test
- 4.2. Project (a landscape installation estimate)

#### **Criteria**

*Your performance will be successful when:*

- 4.1. you estimate area with geometrical shapes to within 5%.
- 4.2. you calculate area with polygon overlay to within 5%.
- 4.3. you calculate area with graph paper to within 5%.
- 4.4. you use the engineer or architect scale that matches the plan.
- 4.5. you convert from one scale to another.

**Learning Objectives**

- 4.a. Measure fractions of a foot with the inch marks on an architect scale.
- 4.b. Explain why scale is used on landscape plans.

**5. Calculate fertilizer problems.**

**Linked Program Outcomes**

Communicate as a horticulture professional

**Assessment Strategies**

- 5.1. Written Objective Test
- 5.2. Project (a landscape installation estimate)

**Criteria**

*Your performance will be successful when:*

- 5.1. you calculate the number of pounds of fertilizer needed for a given area of turf or beds.
- 5.2. you calculate the rate of nitrogen applied to a given area of turf.
- 5.3. you calculate the area that a given bag of fertilizer will cover.
- 5.4. you calculate which bag of fertilizer is the better buy for nitrogen.
- 5.5. you calculate fertilizer problems with 80% accuracy.

**Learning Objectives**

- 5.a. Explain how the analysis relates to nitrogen in a volume of fertilizer.
- 5.b. Compare the application techniques between broadcast and drop spreaders.

**6. Calculate gross profit from sales at a garden center.**

**Linked Program Outcomes**

Communicate as a horticulture professional

**Assessment Strategies**

- 6.1. Written Objective Test
- 6.2. Case Study

**Criteria**

*Your performance will be successful when:*

- 6.1. you calculate the gross profit from sales of items received from a wholesale invoice with 80% accuracy.
- 6.2. you apply discounts to sale items.
- 6.3. you back out sales tax out of the total receipts.

**Learning Objectives**

- 6.a. Calculate the retail price given the mark-up and wholesale cost.
- 6.b. Calculate the sale price given the retail price and the discount.

**7. Estimate the cost to install a landscape plan.**

**Linked Career Essentials**

Mathematical Competency

**Linked Program Outcomes**

Communicate as a horticulture professional

**Assessment Strategies**

- 7.1. Written Objective Test
- 7.2. Project (a landscape installation estimate)

**Criteria**

*Your performance will be successful when:*

- 7.1. you calculate the amount of hardscape and plant materials needed.
- 7.2. you calculate the cost of hardscape and plant materials needed.
- 7.3. you calculate the labor cost needed.
- 7.4. you apply overhead, contingency, subcontractor and profit mark-ups.
- 7.5. you apply the sales tax to the estimate.
- 7.6. you provide suggestions to reduce the estimate cost without degrading the landscape plan.
- 7.7. you calculate the estimate with 80% accuracy.

**Learning Objectives**

- 7.a. Compare fixed costs to variable costs.
- 7.b. Apply labor take offs to landscape construction activities.
- 7.c. Obtain costs of landscape materials from various resources.

**8. Estimate the cost to maintain a landscape from a landscape plan.**

**Linked Program Outcomes**

Communicate as a horticulture professional

**Assessment Strategies**

- 8.1. Written Objective Test
- 8.2. Case Study

**Criteria**

*Your performance will be successful when:*

- 8.1. you measure the areas to be maintained.
- 8.2. you calculate the labor cost needed.
- 8.3. you apply sales tax to the estimate.
- 8.4. you calculate the cost of the estimate with 80% accuracy.

**Learning Objectives**

- 8.a. Measure landscape areas with a measuring wheel.
- 8.b. Investigate measuring landscapes with online resources.

**9. Propose efficiency improvements to greenhouse benches.**

**Linked Program Outcomes**

Communicate as a horticulture professional

**Assessment Strategies**

- 9.1. Written Objective Test
- 9.2. Case Study

**Criteria**

*Your performance will be successful when:*

- 9.1. you redesign greenhouse benches to hold more pots.
- 9.2. you redesign greenhouse benches to hold more flats.
- 9.3. you calculate the increase in pots and flats that can be grown.
- 9.4. you calculate increases with 80% accuracy.

**Learning Objectives**

- 9.a. Calculate the number of flats that will fit on a greenhouse bench.
- 9.b. Calculate the number of pots that will fit on a greenhouse bench given the spacing requirements.