

SOUTHEAST COMMUNITY COLLEGE
COURSE SYLLABUS
ADVANCED TECHNOLOGIES & SKILLED TRADES
Horticulture & Turfgrass Management Program
Revision Date: August 2020

I. CATALOG DESCRIPTION

Course Number: HORT 1153
Course Title Soils and Plant Nutrition for Horticulture
Prerequisite(s): None

Catalog Description: This course will cover the management and properties of soils and rooting media as they pertain to horticulture professions. With discussions on physical, chemical, and biological aspects of soil management. Students will also study soil amendments for fertilization, pH, and salt issues. Students will also gain an understanding for for practical fertility management for soils, modified root zones, and potting media that are unique aspects to the horticulture and turfgrass industry.

Credit Hours: 4.0
Class Hours: 45
Lab Hours: 45
Total Contact Hours: Total of Class + Lab Hours 90

II. COURSE OBJECTIVES: *Course will:*

1. Discuss soil parent materials.
2. Introduce, discuss, and identify different soil structures and textures.
3. Introduce soil moisture stages, and how they pertain to horticulture crops
4. Discuss how pH and salts affect soils.
5. Introduce land use planning.
6. Provide hands on application of soil sampling, testing, and surveying.
7. Introduce and discuss soil taxonomic principles
8. Introduce soil organic matter and its influence on soil structure and plant development
9. Identify the essential nutrients for plant growth and development
10. Discuss soil factors affecting fertilization application and plant utilization of nutrients
11. Demonstrate methods for fertilizer applications
12. Introduce fertilizer blending calculations.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

A. STUDENT LEARNING OUTCOMES: *Student will be able to:*

1. Demonstrate proper identification of common parent materials.
2. Demonstrate proper identification of soil texture and structure by the following:
 - a. hand feel method

- b. textural triangle
 - c. soil sediment method
- 3. Demonstrate proper soil moisture identification by the following methods:
 - a. Hand feel method
 - b. Electrical resistance blocks and tensiometers
 - c. Electrical moisture probe
 - d. TDR moisture meters
- 4. Have the knowledge to discuss the soil factors affecting fertilizer application and plant utilization.
- 5. Demonstrate proper soil surveying techniques including the following.
 - a. properly closing on both profile and differential surveying.
 - b. properly record field notes on profile and differential surveying.
- 6. Demonstrate understanding of soil pH and proper techniques for correcting soil pH issues.
- 7. Prescribe and formulate different fertilizers based on agronomic needs.
- 8. Demonstrate proper methods for soil organic matter accumulation.
- 9. Demonstrate understanding of soil taxonomy.
- 10. Demonstrate utilization of technology in soils such as WebSoil Survey.
- 11. Identify nutrient deficiencies and discuss their impact on plant growth and development.
- 12. Discuss and apply the methods of calibration and operations of fertilizer equipment.

B. GENERAL EDUCATION LEARNING OUTCOMES

GEO #3: Critical Thinking & Problem Solving

Critical thinkers have the ability to evaluate a problem or assumption and determine an appropriate course of action. They use reason and evidence to make judgments and decisions. Critical thinking and problem solving skills rank highly among employer expectations.

Outcomes:

- 1) Collect, identify, interpret and analyze data.
- 2) Synthesize information to arrive at reasoned solutions to problems.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A. Soil origin, formation, and classification
- B. Soil organic matter
- C. Soil water and air
- D. Soil acidity and liming practice
- E. Soil survey and land use planning
- F. Soil fertility and plant nutrition
- G. Nutrient deficiencies
- H. Soil testing and fertilizer recommendation

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): *The Nature & Properties of Soils*, 14th Edition; Nyle C. Brady and Ray R. Weil
- B. Supplemental Text: *Soils of Nebraska*, Resource Report #2 University of Nebraska
- C. Other Resources:
 - calculator, notebook (capable of holding handouts), pen, and pencil

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:

1. Lecture, classroom discussion
2. Laboratory demonstration and practice
3. Field demonstration and practice

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

- B. Grading of examinations, quizzes, and written assignments
- C. Participation in laboratory and field exercises
- D. Accurately demonstrate proper soil identification, sample collection and nutrient testing
- E. Attendance will be in accordance with the SCC policy located in the student handbook

SCC STANDARD GRADING SCALE POLICY:

A+ 95-100	C+ 75-79
A 90-94	C 70-74
B+ 85-89	D+ 65-69
B 80-84	D 60-64
	F Below 60

VIII. SPECIFIC COURSE REQUIREMENTS:

Student must meet all of the following to receive a passing grade

- a. Achieve passing grade of 60% or higher, based on SCC grade scale
- b. Participate in laboratory and outdoor exercises
- c. Field demonstration and practice