FLCC Course Syllabus

General Information

Date

11/04/2016

Department

Environmental Conservation & Horticulture

Course Prefix:

AGR

Course Number:

100

Course Title:

Soil Science

Course Information

Credit Hours

3

Lecture Contact Hours

3

Catalog Description

A practical introduction to the composition and importance of soils. Topics covered: sampling, classifications and naming of soils with their various uses, nutrient components, analysis and management of nutrients, soil organisms, environmental and man-made damage to soils with discussions on mitigation. This course is foundational for a variety of environmental disciplines.

Grading Scheme

Letter Grade

FLCC Values

College Learning Outcomes Addressed by the Course

Inquiry
Vitality
Perseverance

Course Learning Outcomes

Course Learning Outcomes

1 : Define and give examples for terms as they relate to soils, soil composition and components, soil nutrients and the tools and procedures used for sampling and testing.
2 : Systematically apply several methods for analysis and recognition of a variety of soils commonly found in Upstate, Central, and Western New York State (Ex. Cultural characteristics and/or land use groups).
3 : Classify a selected number of soils into their cultural characteristic or land use groups in preparation for practical application (Ex. land use careers and problem diagnosis).
4 : Evaluate the effects of man-made and natural influences on a variety of soil and environmental conditions.

Program Affiliation

This course is required as a core program course in the following program(s)

AAS Horticulture
AAS Viticulture and Wine Technology - Main Track
AAS Viticulture and Wine Technology - Viticulture Track
AAS Viticulture and Wine Technology - Enology Track
Horticulture Certificate
AAS Natural Resources Conservation

Outline of Topics Covered

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1. Introduction to soils
a. Components of perfect soils
b. Source of components
c. Importance of components
2. Soil Physical Properties
a. Texture
i. Components that cause or influence texture
ii. Effects that will change texture
iii. Testing for texture
b. Soil Structure
c. Porosity
i. Components that cause or influence porosity
ii. Effects that will change porosity
d. Soil Consistence
e. Soil Color
3. Soil Water Properties
a. Hydrologic Cycle
b. Relationship of physical properties to water storage capacity
c. Infiltration & Runoff
d. Percolation
e. Evaporation
f. Water storage & Movement
g. Water available to plants
4. Soil Chemical Properties
a. Colloids
b. Cation Exchange
c. Cation Exchange Capacity
d. Soil pH
e. Soil Aggregation
5. Soil Organisms
a. Variety of soil organisms
b. Compost Creation
c. Benefits of Organic Material
6. Soil Formation
a. Five soil forming factors
b. Soil Horizons

c. Diagnostic Horizons
7. Soil Taxonomy
a. Terminology of soil types
b. Characteristics of soil types
8. Acidic Soils
a. Causes & sources
b. Effects to soil structure
c. Effects to Cation Exchange Capacity
9. Salt Affected Soils
a. Causes & sources
b. Effects to soil structure
c. Effects to Cation Exchange Capacity
10. Soil Fertility
a. Soil Nutrients
b. Macro and Micronutrients
c. Effects of pH on nutrient availability
d. Fertilizers
e. Calculating nutrients in fertilizers
11. Soil Erosion
a. Various control measures and options
b. Soil tillage systems
c. Horticulture relationship to erosion
12. Soil Surveys
a. Tools & Resources
b. Land-use planning
13. Water Resources
a. Irrigation
b. Wetlands
c. Drainage
d. Conservation
14. Soil Pollution & Protection
a. Environmental Integrity
15. Various Media
a. Greenhouse soils
b. Soilless mixtures
c. hydroponics