

CUMBERLAND COUNTY COLLEGE

Course: AG 209 Introduction to Soil Science

Credit: 4

Prerequisites: RD 100, EN 060

Course Description

Acquaints the student with soil concepts, plant nutrients, and their influence on plant growth. Emphasis will be placed on soil testing, nutrient deficiency symptoms, and fertilizer requirements.

Learning Outcomes

Upon successful completion of this course, the student will be able to:

- Name and differentiate between the three soil separates.
- Describe an ideal soil.
- Determine soil texture by both feel and analytical methods.
- Perform soil nutrient and pH tests and derive recommendations to correct imbalances
- Calculate rates of fertilizer and lime applications.
- Differentiate between primary, secondary, and trace elements.
- Differentiate between bulk density and particle density.

Topical Outline

- Course orientation
 - A word about PAS
 - Lecture: Introduction to Soils – Function, medium, regulator, recycler, habitat
- Introduction to Soils – Profile, Topsoil & subsoil, interface
 - Lab: Soil Horizons
- Lecture: Parent Materials – Weathering, material transport
 - Lab: Soil Origin and Development
- Lecture: Physical Properties – Color, texture, textural classes
 - Lab: Soil texture and Structure
- Lecture: Physical Properties – Density, pore space, structure
 - Lab: Soil Density and Pore Space
- Lecture: Soil Water – Properties, capillarity, moisture, flow
 - Lab: Soil Moisture
- Lecture: Soil Water – Infiltration, percolation, evaporation, drainage
 - Lab: Infiltration
- Lecture: Soil Reaction – pH, acidity, alkalinity, liming
 - Lab: pH Testing
 - Mid-term Exam
- Lecture: Organic Matter – Carbon cycle, decomposition, humus, compost
 - Lab: Composting
- Lecture: Essential Plant Nutrients – Nitrogen, sulfur, legumes
 - Lab: Soil Sampling

- Lecture: Essential Plant Nutrients – Phosphorus, potassium, cations, Anions

- Lab: Testing for Macronutrients
- Lecture: Nutrient Management – Goals, organic fertilizers, inorganic fertilizers
 - Lab: Testing for Micronutrients
- Lecture: Nutrient Management – Fertilizer/lime, plant analysis
 - Lab: Fertilizer Recommendations
- Lecture: Soil Organisms – Diversity, roots, beneficial organisms, detrimental organisms
 - Lab: Personal Soil Testing
- Final exam

Text: Plaster, Edward J. (2014). *Soil Science and Management*, 6th ed. Delmar Cengage Learning Clifton Park, New York

Academic Integrity: Plagiarism is cheating. Plagiarism is presenting in written work, in public speaking, and in oral reports the ideas or exact words of someone else without proper documentation.

Whether the act of plagiarism is deliberate or accidental [ignorance of the proper rules for handling material is no excuse], plagiarism is, indeed, a “criminal” offense. As such, a plagiarized paper or report automatically receives a grade of **ZERO** and the student may receive a grade of **F** for the semester at the discretion of the instructor.

Note: If you are having difficulty with work in this class tutoring is available through the Center for Academic & Student Success. If you think that you might have a learning disability, contact Project Assist at 856.691.8600 x 1282 for information on assistance that can be provided to eligible students.

Before Withdrawing From This Course

If a student experiences adverse circumstances while enrolled in this course and considers withdrawing, s/he should see an advisor (division or advisement center) BEFORE withdrawing from the class. A withdrawal may cause harmful repercussions to completion rate standards and overall GPA which can limit or eliminate future financial aid in addition to causing academic suspension.