### Title: Soil Science

**Abbreviation and Number:** AGRI152  
**School:** Chemistry, Environmental and Life Sciences  
**Department:** Biology  
**Credits:** 3  

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<tr>
<th>Course Sequence</th>
<th>Fall</th>
<th>Spring</th>
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<td>Lecture</td>
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**Hours Per Week: ( ) Other (Specify)**

- **Pre-requisite(s):** First-year standing
- **Co-requisite(s):** None

### COURSE DESCRIPTION

Students examine the formation, properties and classification of Bahamian soils. Modes of management and preparation are also discussed.

### SPECIFIC OBJECTIVES

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

1. Explain the methods of soil formation;
2. Describe the physical and chemical properties of soils;
3. Discuss the importance of different types of nutrients;
4. Discuss the various uses of water by plants;
5. Apply basic soil management techniques; and
6. Explain the significance of common soil organisms.

### COURSE CONTENT

I. **Soil Formation**
   - A. Types of rocks
   - B. Weathering
     - i. Physical factors
     - ii. Chemical factors
     - iii. Biological factors
   - C. Types of soil
     - i. Loam
     - ii. Sandy
     - iii. Clay
     - iv. Silt

II. **Physical Properties of Soil**
    - A. Profile
    - B. Composition
    - C. Structure
      - i. Density
      - ii. Bulk
      - iii. Pore space
    - D. Texture
III. Chemical Properties of Soil
   A. pH
   B. Ion Exchange
      i. Cation exchange
      ii. Base saturation
      iii. Soil colloids
      iv. Complementary ion effects
      v. Absorption

IV. Plant Nutrients and Fertilizers
   A. Essential elements
   B. Forms of available elements
   C. Functions of essential elements
   D. Deficiency symptoms
   E. Organic fertilizers
      i. Manures
      ii. Seaweed

V. Soil Water
   A. Types
   B. Retention
   C. Measurement
   D. Control
   E. Loss
   F. Fresh water supply in The Bahamas
   G. Irrigation methods and drainage

VI. Soil Management
   A. Erosion
   B. Acidity
   C. Alkalinity

VII. Soil Organism
   A. Macro
      Earthworms
   B. Micro
      i. Nematodes
      ii. Actinomycetes
      iii. Bacteria
   C. Algae
   D. Fungi
   E. Mycorrhizae

VIII. Laboratory
   A. Soil taxonomy
   B. Soil profile
C. Soil sample preparation
D. Soil testing
E. Soil components
   i. Water
   ii. Air
   iii. Humus
   iv. Microorganisms
F. Water weight of soil
G. Soil porosity
H. Soil pH and Lime
I. Comparisons

ASSESSMENT
Laboratory………………………………… 25%
Assignments……………………………… 20%
Mid-term Examination…………………….. 15%
Final Examination……………………….. 40%
Total………………………………………. 100%

REQUIRED TEXT

SUPPLEMENTARY READING/MATERIAL

WEBSITES
www.agf.gov.bc.ca/agric/hortweb/Florprod.htm
www.aggie-horticulture.tamu.edu/vegetable.html
www.ars.usda.gov
www.fao.org
www.helsinki.fi/kmus/botecon.html
www/luminet.net/
www.usda.mannlib.cornell.edu
www.planfacts.osu.edu
www.csrees.usda.gov/glinks/partners/state_partners.html
www.hort.ufl.edu/nutdef