

# Northern Marianas College

## CURRICULUM ACTION REQUEST

Effective Semester / Session: Fall 2021

Type of Action:

- New
- Modification
- Move to Inactive (Stop Out)
- Cancellation

Course Alpha and Number: AG281

Course Title: Soil Science

**Reason for initiating, revising, or canceling:**

This course replaces AG280 Principles of Soil Science since the content is modified to accommodate and include requirements of the Associate of Science in Agriculture degree. The reason this course is being replaced by a new course alpha number is the change in program from NMC CREES to the Natural Resource Management program to revive the Associate of Science in Agriculture degree for students.

<p><i>Virendramohan</i> Dr. Virendra M. Verma</p>	<p>05/24/2021</p>
<p>Proposer</p>	<p>Date</p>
<p><i>Alfredo</i> Alfredo De Torres</p>	<p>05/25/21</p>
<p>Program Coordinator</p>	<p>Date</p>
<p><i>Adam Walsh</i> Adam Walsh</p>	<p>05.20.21</p>
<p>Language &amp; Format Review Specialist</p>	<p>Date</p>
<p><i>Ajani Burrell</i> Ajani Burrell</p>	<p>05.24.2021</p>
<p>Academic Council Chair</p>	<p>Date</p>
<p><i>Charlotte Cepeda</i> Charlotte Cepeda</p>	<p>6/4/2021</p>
<p>Dean of Learning &amp; Student Success</p>	<p>Date</p>

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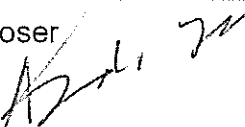
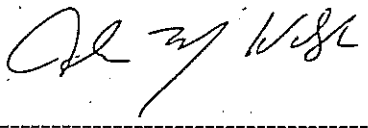


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## Course Guide

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Course: AG281 Soil Science

### 1. Department

Natural Resource Management

### 2. Purpose

Students will develop an understanding of the physical, biological, and chemical processes that occur in soil; the role of soil in food production; and, the importance of environmental management for soil conservation. This course is for students who are in the field of agriculture (plant and animal production), agricultural economics, animal health, agricultural development and extension, as well as students who are in the field of health and nutrition, food security, and sustainable agriculture. Students credited with this course would be able to handle extension and outreach activities and do individual research, experimentation, and reporting. This course will fulfill a degree requirement for the Associate of Science in Agriculture degree.

### 3. Description

#### A. Required/Recommended Textbook(s) and Related Materials

Required:

Plaster, Edward. *Soil Science and Management, 6th Edition*, Cengage Learning Custom Publishing, 2014.

Recommended: None

#### B. Contact Hours

1. **Lecture:** 3 per week / 45 per semester
2. **Lab:** 3 per week / 45 per semester
3. **Other:** None

#### C. Credits

1. **Number:** 5
2. **Type:** Regular Degree Credits

#### D. Catalogue Course Description

This course introduces the chemical, physical, and biological nature of soils. It includes terminology used in soil science, soil formation, soils and spatial variability, soil inventory, examples of the use of soil information in crop production estimation, land use, and management planning. Students will examine how soils function in terms of plant growth, nutrient supply, the global carbon cycle, ecological habitat, and water purification. Community-based learning projects will provide hands-on experience with fundamental soil science principles and the impact of human activities on soil quality and sustainability. Pre-requisites: A grade of "C" or better in B1101 or B1106. MA132 with a grade of "C" or better or concurrent enrollment, (Offered Fall and Spring.)

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**E. Degree or Certificate Requirements Met by Course**

This is a required course for the Associate of Science in Agriculture degree. A grade of "C" or higher earned in this course also fulfills an elective requirement for any Associate of Science degree with a science major and satisfies the science elective option for non-majors.

**F. Course Activities and Design**

Course activities include: lectures, group work, discussions, laboratory activities, homework, web-based assignments, viewing audio-visual materials, periodic quizzes, tests, field trips, comprehensive final exam, and research projects that require presentations.

**4. Course Prerequisite(s); Concurrent Course Enrollment**

Prerequisites: BI101 or BI106

Concurrent Course Enrollment: MA132

**Required English/Mathematics Proficiency Level(s)**

English Placement Level: EN101

Mathematics Placement Level: MA132

**5. Estimated Cost of Course; Instructional Resources Needed**

Cost to the Student: Tuition for a 5-credit course, cost of the textbook, lab fee, and instructional materials fee.

Cost to the College: Instructor's salary

Instructional resources needed for this course include: classroom and laboratory-equipped space; whiteboard and pen; audio-visual programs/software; multimedia projectors; and various laboratory materials, chemicals, and equipment.

**6. Method of Evaluation**

Student learning will be assessed on the basis of class attendance and participation, homework completion, in-class and online quizzes, midterm and final exams, and presentations. For laboratory activities, students will be evaluated on the basis of attendance, laboratory exercise completion, and laboratory pre- and post- reports. NMC's grading and attendance policies will be followed.

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## 7. Course Outline

This is a topical outline and does not necessarily indicate the sequence in which the material will be presented.

- 1.0 Soil Origin and Development
  - 1.1 Ecological functions of soil
  - 1.2 Formation and development of soil
  - 1.3 Components of soil
  
- 2.0 Soil Classification and Survey
  - 2.1 Types of soil and soil survey
  - 2.2 Soil classification and mapping
  - 2.3 Physical properties of soil
  
- 3.0 Water Conservation
  - 3.1 Drainage and irrigation
  - 3.2 Conservation strategies
  - 3.3 Purpose and benefits of water conservation
  - 3.4 Types of water conservation
  
- 4.0 Soil Fertility
  - 4.1 Soil pH and salinity
  - 4.2 Plant nutrition
  - 4.3 Soil sampling and testing
  - 4.4 Fertilizers
  - 4.5 Organic amendments
  - 4.6 Horticultural uses of soil
  
- 5.0 Soil Conservation
  - 5.1 Conservation tools
  - 5.2 Tillage and cropping systems
  - 5.3 Method of soil conservation
  - 5.4 Importance of soil conservation
  - 5.5 Types of soil conservation
  
- 6.0 Government Agencies and Programs
  - 6.1 Natural Resources Conservation Service (NRCS)
  - 6.2 Soil conservation initiatives
  - 6.3 Agricultural policies

Course: AG281 Soil Science

**8. Instructional Goals**

The course will introduce students to:

- 1.0 The Importance of soil;
- 2.0 Classification of soil based on their composition;
- 3.0 The importance of water conservation;
- 4.0 Soil fertility management;
- 5.0 The importance of soil conservation; and
- 6.0 Soil Conservation Programs.

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**9. Student Learning Outcomes**

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

- 1.0 Describe the importance of soil, soil formation, and soil properties;
- 2.0 Classify soil;
- 3.0 Name different ways to conserve water;
- 4.0 Identify current methods to increase soil fertility;
- 5.0 Identify plant nutrient deficiency symptoms;
- 6.0 Illustrate practical soil and water conservation management schemes;
- 7.0 Explain how to conserve soil; and
- 8.0 Discuss Soil Conservation Programs available nationally and locally.

**10. Assessment Measures of Student Learning Outcomes**

Assessment of student learning may include, but not be limited to, the following:

- 1.0 Tests and Quizzes;
- 2.0 Laboratory/Research Report;
- 3.0 Homework
- 4.0 Presentation;
- 5.0 Project; and
- 6.0 Exam.