Northern Marianas College
CURRICULUM ACTION REQUEST

Effective Semester / Session: Fall 2021

Type of Action:

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

Course Alpha and Number: AG182

Course Title: Crop Production

Reason for initiating, revising, or canceling:
This course replaces AG 181 Introduction to Crop Production as the content is modified to accommodate and include requirements of the Associate of Science in Agriculture degree. This course is being activated to help revive the Associate of Science in Agriculture degree for students who may choose a career in agriculture and related sectors.

Dr. Virendra M. Verma — 05/25/2021

Proposer — Date

Dr. Alfredo De Torres — 5/25/21

Director — Date

Adam Walsh — 05.25.21

Language & Format Review Specialist — Date

Ajani Burrell — 05.25.2021

Academic Council Chair — Date

Charlotte Cepeda — 6/4/2021

Dean of Learning & Student Success — Date

1. **Department**
   Natural Resource Management

2. **Purpose**
   This course introduces principles of plant-soil-climate relationships and physical characteristics for crop production and cultural management. 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 along with conducting individual research, experimentation, and reporting.

3. **Description**

   A. **Required/Recommended Textbook(s) and Related Materials**
      Required:
      Carroll L. Shry, Jr. and H. Edward Reiley (2017). *Introductory Horticulture*, 9th Edition, Cengage Learning Custom Publishing.

      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 principles of plant-soil-climate relationships and physical characteristics in crop production including current cultural practices and management of agricultural and horticultural crops. Emphasis will be given on the practical aspects of producing tropical agricultural crops for food, feed, fiber, including instruction on soils, plant taxonomy, plant propagation, plant physiology, plant pathology, pest management, pre and post harvesting techniques, and marketing. Students will actively participate in class discussions and perform experiments in the laboratory as well as in the field. Prerequisite: A grade of "C" or better in BI101 or BI106. Prerequisite: MA132 and EN095.

E. **Degree or Certificate Requirements Met by Course**
This is a required course for the Associate of Science in Agriculture. 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, audio-visual materials, periodic quizzes, tests, field trips, a comprehensive final exam, and research projects that require presentations.

4. **Course Prerequisite(s); Concurrent Course Enrollment**
Prerequisites: BI101, MA132, EN095
Concurrent Course Enrollment: None

Required English/Mathematics Proficiency Level(s)
English Placement Level: EN101
Mathematics Placement Level: MA161

5. **Estimated Cost of Course; Instructional Resources Needed**
Cost to the Student: Tuition for a 5-credit course, cost of the textbooks, 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 markers, audio-visual programs/software, multimedia projectors, 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, final exam, 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.

7. **Course Outline**

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

1.0 Exploring the Horticulture Field
- 1.1 Growing and harvesting
- 1.2 Handling and storing
- 1.3 Processing and marketing

2.0 Plant Taxonomy
- 2.1 Taxonomic system
- 2.2 Hierarchical structure
- 2.3 Classification of plants

3.0 Parts of the Plant and Their Functions
- 3.1 Roots
- 3.2 Stems
- 3.3 Leaves
- 3.4 Flowers
- 3.5 Fruits
- 3.6 Seeds

4.0 Environmental Requirements for Good Plant Growth
- 4.1 Growth stimulants, retardants, and rooting hormones
- 4.2 Sunlight, proper temperature, moisture, air, and nutrients
- 4.3 Essential nutrients
- 4.4 Space and time of planting
- 4.5 Fertilizer
- 4.6 Stages of plant growth

5.0 Softwood, Hardwood, and Semi-Hardwood Cuttings and Micropropagation
- 5.1 Seeds
- 5.2 Separation and division
- 5.3 Grafting
- 5.4 Budding
- 5.5 Layering
- 5.6 Micropropagation

6.0 Pest Management
- 6.1 Safe use of pesticides
- 6.2 Insecticides
- 6.3 Fungicides
- 6.4 Herbicides
- 6.5 Rodenticides and other pesticides

7.0 Principles of Landscaping
- 7.1 Establishing
- 7.2 Maintaining
- 7.3 Renovating

8.0 Planning and Preparing the Vegetable Garden
- 8.1 Planting
- 8.2 Maintaining
- 8.3 Renovating

9.0 Beginning and Agriculture Business
- 9.1 Financial operations
- 9.2 Human relations
- 9.3 Business communications and marketing
- 9.4 Agriculture in the age of technology
- 9.5 Leadership development in agriculture

8. **Instructional Goals**
The course will introduce students to:

1.0 General Principles of Crop Production and Improvement;

2.0 Growth and Development of Plants;

3.0 Principle Plant Parts and Their Primary Functions;

4.0 Plant Growth Regulators;

5.0 Micropropagation Techniques;

6.0 Cultural Management Methods;

7.0 Vegetable Garden Design;

8.0 Methods of Pest Management and Control; and

9.0 Post-Harvest Production Techniques and Marketing of Agricultural Crops.

9. Student Learning Outcomes

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

1.0 Describe the principles of crop establishment;

2.0 Classify the hierarchy of plants structure and organisms;

3.0 Explain the process of plant growth and development;

4.0 Discuss plant environment and the various environmental conditions influencing plant growth and development;

5.0 Demonstrate softwood and hardwood cutting and pruning;;

6.0 Characterize crop protection among nutrient deficiencies, insects, diseases, weeds, and other pests;

7.0 Discuss the recommended technologies in crop improvement, propagation methods, pre and post harvest handling; and

8.0 Describe storage, marketing, and distribution of produce.

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 Lab Work and Reports;

3.0 Homework;

4.0 Presentation;

5.0 Project Work and Report; and

6.0 Final Exam.