

**Northern Marianas College**  
**CURRICULUM ACTION REQUEST**

**Effective Semester / Session:** Fall 2014

**Type of Action:**

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


**Course Alpha and Number:** BI 101

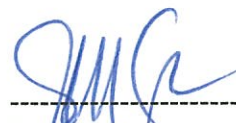
**Course Title:** Principles of Biology

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

This course guide has been updated to reflect changes in the English Placement requirements (from EN 93/94 to EN 101).

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Matthew Crane  
Proposer  
Date 04/21/14

  
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Velma C. Deleon Guerrero  
Acting Department Chair  
Date 4.24.2014

  
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Barbara K. Merfalen  
Dean of Academic Programs and Services  
Date 4.24.14

# Northern Marianas College Course Guide

Course: BI 101 Principles of Biology

## 1. Department

Sciences, Mathematics, Health, and & Athletics

## 2. Purpose

Principles of Biology provides an overview of the fundamental concepts and theories of the biological sciences. It introduces students to the scientific method, the theories of life sciences, the structure and function of living things and the complex mechanisms that govern life. It provides the students scientific literacy that enables them to evaluate new information, to relate concepts and to integrate the information that they gather from many areas.

## 3. Description

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

Required Textbook:

Lecture:

Audeskirk, Audeskirk, and Byers. (2008). Biology: Life on Earth (8<sup>th</sup> ed.) Upper Saddle River, NJ.: Pearson Prentice Hall.

Laboratory:

Gunstream, S. (2008). Exploration in Basic Biology (11<sup>th</sup> ed.). Upper Saddle River, NJ.: Pearson Prentice Hall.

Readability level: 13

### B. Contact Hours

1. **Lecture:** 3 hours per week/48 per semester
2. **Lab:** 3 hours per week/48 per semester
3. **Other:** None

### C. Credits

1. **Number:** 4
2. **Type:** Regular Degree Credits

### D. Catalogue Course Description

This introductory course covers the principles of general biology and such topics as cell biology, genetics, evolution, diversity, and ecology. Laboratory exercises and field trips are required. English Placement Level: EN 101; Math Placement Level: MA 091. (Offered Fall and Spring)

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

A grade of "C" or higher earned in this course fulfills an elective requirement for any A.S. degree with a science major and satisfied the science elective option for non-majors.

## **F. Course Activities and Design**

This course includes pretest and posttest, lectures, group work, discussions, laboratory activities, homework and web-based assignments, viewing audio-visual materials, PowerPoint presentation, periodic quizzes, tests, and comprehensive final exam, field trip, and research projects that require presentations.

## **4. Course Prerequisite(s); Concurrent Course Enrollment; Required English/Mathematics Placement Level(s)**

English Placement Level: EN 101; Math Placement Level: MA091

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

Cost to the Student: Tuition for a 4-credit course; cost of textbooks, laboratory fee, research activities expenses, and instructional materials fee.

Cost to the College: Instructor's salary

Instructional resources needed for this course include classroom and laboratory space; whiteboard and pen; TV/VCR; audio-visual programs/software; transparency and multimedia projectors; and various laboratory materials, chemicals, equipments and facilities.

## **6. Method of Evaluation**

Students grades will be based on the regular letter grade system as described below:

- A: Excellent – grade points: 4.0;
- B: Above average – grade points: 3.0;
- C: Average – grade points: 2.0;
- D: Below average – grade points: 1.0;
- F: Failure – grade points: 0.0.

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.

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- 1.0 Life on Earth
  - 1.1 How Do Scientists study Life?
  - 1.2 The Unifying Theory of Biology
  - 1.3 The Characteristics of Living Things
  - 1.4 How Do Scientists Categorize the Diversity of Life
- 2.0 Cell Biology
  - 2.1 Atoms, Molecules, and Life
  - 2.2 Biological Molecules
  - 2.3 Cell Structure and Function
  - 2.4 The Cell Membrane
  - 2.5 Energy Flow
  - 2.6 Capturing and Harvesting Energy
- 3.0 Genetics
  - 3.1 DNA: The Molecule of Heredity
  - 3.2 Gene Expression and Regulation
  - 3.3 Cellular Reproduction
  - 3.4 Patterns of Inheritance
  - 3.5 Biotechnology
- 4.0 Evolution and Diversity of Life
  - 4.1 Principles of Evolution
  - 4.2 The Origin of Species
  - 4.3 Systematics
  - 4.4 Diversity of Living Things
- 5.0 Human Anatomy and Physiology
  - 5.1 Tissues and Organs
  - 5.2 Organ Systems
  - 5.3 Functions of Organ Systems
- 6.0 Behavior and Ecology
  - 6.1 Community Interactions
  - 6.2 How Do Ecosystems Work?

## 8. Instructional Goals

This course will introduce students to:

- 1.0 Biology and its unifying theories;
- 2.0 Cell Biology;

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- 3.0 Genetics;
- 4.0 Evolution and Diversity of living things;
- 5.0 Human Anatomy and Physiology;
- 6.0 Behavior and Ecology.

### 9. Student Learning Outcomes

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

- 1.0 Describe the unifying theories and characteristics of life;
- 2.0 Discuss the chemical composition of life;
- 3.0 List the structure and function of the cell;
- 4.0 Explain the concepts of energetic such as energy flow, capturing and harvesting of energy;
- 5.0 Explain the concepts of genetics such as the DNA, gene expression and regulation, cellular reproduction, patterns of inheritance, and biotechnology;
- 6.0 Describe the principles of evolution and the origin of species;
- 7.0 Describe the principles of taxonomy or systematics;
- 8.0 Classify the different categories of living things;
- 9.0 Recall the components and functions of the human body;
- 10.0 Recognize the different types of species and community interactions;
- 11.0 Explain how ecosystems work; and
- 12.0 Employ the knowledge learned in biology into research work.

### 10. Assessment Measures

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

- 1.0 Student learning will be reflected in the results of assignments, periodic quizzes, tests, comprehensive final exam, laboratory exercise reports, and fieldtrip reports.
- 2.0 A research project paper will demonstrate the student's ability to choose a useful biological issue and apply the scientific method.