

**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 103

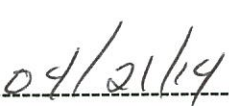
**Course Title:** Marine Biology


**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

  
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Date

  
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Velma C. Deleon Guerrero  
Acting Department Chair

  
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Date

  
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Barbara K. Merfalen  
Dean of Academic Programs and Services

  
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Date

# Northern Marianas College Course Guide

Course: BI 103 Marine Biology

1. **Department**  
Sciences, Mathematics, Health, and Athletics
2. **Purpose**  
This course provides an intensive overview of biological concepts and ecological concepts. During this course students will explore the biological and physical principles affecting human/environment interactions in marine ecosystem. This course will also show cell structure and chemistry; growth, reproduction, genetics, evolution, and anatomy/physiology of a variety of marine organisms including micro invertebrates and vertebrates. This course will provide the knowledge of our marine species and their importance to the society.
3. **Description**
  - A. **Required/Recommended Textbook(s) and Related Materials**  
Required:  
Castro, P. and Michael Huber. *Marine Biology*. New York: McGraw Hill Group of Companies, 2007.  
Readability level: Grade 10  
  
Recommended:  
Karleskint, G., Richard Turner, and James Small. *Introduction to Marine Biology*. Cengage Learning, 2010.  
Readability level: Grade 10
  - B. **Contact Hours**
    1. **Lecture:** 3 hours per week / 48 hours per semester
    2. **Lab:** 3 hours per week / 48 hours per semester
    3. **Other:**
  - C. **Credits**
    1. **Number:** 4
    2. **Type:** Regular Degree Credits
  - D. **Catalogue Course Description**  
This course focuses on marine organisms, the sea as a habitat, and relationships between the organisms and the physical/chemical properties of their environments, and their adaptations to those environments and human relationship with marine ecosystem. Students will study marine organisms, elements of biological, chemical and physical oceanography, field sampling methods with associated statistics and laboratory techniques. Adaptations to diverse marine

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environments and marine microbiology will also be emphasized. The class will study physical features of marine waters, nutrients, biological productivity and regional topics in marine science. Specific biological concepts covered include cell structure and chemistry; growth, reproduction, genetics, evolution, and anatomy/physiology of a variety of marine organisms including micro invertebrates and vertebrates. Prerequisite: None. English Placement Level: EN 101, Math Placement Level: MA 091 or consent of instructor. (Offered Fall and Spring)

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

This course fulfills the requirements for the A.S. degree in Natural Resource Management. This course also serves as an elective science requirement for other program majors.

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

Activities include: Problem based learning Case Study (Micronesian Challenge), Seminars, Cooperative Learning Activities, Homework Assignments (Reading & Project), Laboratory & Field Investigations, Tests & Quizzes Field Trips, Service Learning Project, On-line assignments and activities, and Research Projects.

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

Prerequisite(s): None  
English Placement Level: EN 101  
Math Placement Level: MA 091

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

Cost to the Student: Tuition for a 4-credit course; the cost of the textbook and materials and lab fees.

Cost to the College: Instructor's salary.

Instructional resources needed for this course include classroom and laboratory space, chalkboard/whiteboard and supplies, TV/VCR, videotaped programs and supplies/materials, digital camera, video flex camera attachment for microscopes, stereo and compound microscopes, microscope slides and cover slips, electronic board and multimedia projector, basic laboratory/field supplies and access to computers and the internet.

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## 6. Method of Evaluation

Student 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.

- 1.0 Applying Scientific Principles to Class Assignment and Research Topics
  - 1.1 The role of science in everyday life
  - 1.2 Use of basic measurement tools
  - 1.3 Making observations
  - 1.4 Analyzing patterns of data to solve a problem
  - 1.5 Evaluating scientific experiments
  - 1.6 Identifying constants and variables
  - 1.7 Drawing conclusions using data
  - 1.8 Recognizing logical hypothesis
  - 1.9 Research validity
- 2.0 Describing and Identifying Specific Ecological Principles
  - 2.1 Associations between symbolic organisms
  - 2.2 Abiotic factors chemical and physical properties
  - 2.3 Organism interaction
  - 2.4 Trophic dynamics
  - 2.5 Community structure
  - 2.6 Habitats
- 3.0 Explaining Fundamental Theories of Sea Floor Spreading
  - 3.1 Plate tectonics
  - 3.2 Continental drift
  - 3.3 Plate boundaries and land forms
- 4.0 Identifying Marine Organisms Using Basic Taxonomic Principles
  - 4.1 Taxonomic relationships and classification

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- 4.2 Life histories (evolution)
- 4.3 Anatomy and physiology
- 4.4 Adaptation

## 5.0 Analyzing the Interactions of Humans and the Marine Environment

- 5.1 Cultural connections
- 5.2 Marine resources
- 5.3 Pollution
- 5.4 Modified habitats
- 5.5 Economic connections

## 6.0 Applying a Variety of Technological Devices and Resources to Complete Assignments, Presentations and Reports

- 6.1 Software applications (e.g. Word, PowerPoint, Excel, etc.)
- 6.2 E-Portfolios of work
- 6.3 Using forum and other internet tools to complete assignments

## 8. Instructional Goals

This course will introduce students to:

- 1.0 The scope of the field of marine biology, both scientifically and within the context of society in general;
- 2.0 The major groups of organisms that inhabit the marine environment, including: Taxonomic relationships, life histories, and adaptations to specific kinds of habitats;
- 3.0 Trophic dynamics, community structure, and other ecological relationships in a variety of marine systems; and
- 4.0 The effects associated with pollution, habitat modification, and exploitation of resources in marine environments.

## 9. Student Learning Outcomes

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

- 1.0 Apply scientific principles to class assignments and research topics;
- 2.0 Describe and identify specific ecological principles;
- 3.0 Explain fundamental theories of sea floor spreading;
- 4.0 Identify marine organisms using basic taxonomic principles;
- 5.0 Analyze the interactions of humans and the marine environment; and

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- 6.0 Apply a variety of technological devices and resources to complete assignments, presentations and reports.

### 10. **Assessment Measures**

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

- 1.0 Student are evaluated through classroom participation, quizzes, mid-term test, and final exam, researched written reports, and research multimedia presentations, participation/reactions, assignments and research projects.