

# Northern Marianas College

## CURRICULUM ACTION REQUEST

**Course:** BI 103 Marine Biology

**Effective Semester / Session:** Fall 2023

**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:**

Additional compensation of 1 credit is being added to the course guide for the extra time and effort associated with the lab preparation.

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Dave Benavente Sep 12, 2023

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**Proposer** Date

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**Academic Unit Head** Date

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**Language & Format Review Specialist** Date

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**Academic Council Vice Chair** Date

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**Interim Dean of Academic Programs and Services** Date

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## Course Guide

Course: BI 103 Marine Biology

### 1. Department

Science, Math, Health, and Athletics

### 2. Purpose

This course provides an intensive overview of biological and ecological concepts. During this course, students will explore the biological and physical principles affecting human/environment interactions in the 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 society. Lastly, this course will provide a platform to promote water competency in terms of safety and proper interactions with the marine ecosystem.

### 3. Description

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

Required:

Karleskint, George, Richard Turner, and James Small. Introduction to Marine Biology. Cengage Learning, 2013

Recommended: None

#### B. Contact Hours

1. **Lecture:** 3 per week/ 45 per semester
2. **Lab:** 3 per week/ 45 per semester
3. **Other:** N/A

#### C. Credits

1. **Number:** 4
2. **Type:** Regular Degree Credits or Non-Degree Units

#### D. Catalogue Course Description

This course focuses on marine organisms, the sea as a habitat, and relationships between organisms and the physical/chemical properties of their environments, their adaptations to those environments, and human relationships with the 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 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

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Course: BI 103 Marine Biology

variety of marine organisms including micro-invertebrates and vertebrates. In addition to biological concepts, emphasis will be placed on basic water competency skills and best practices while interacting with the marine environment. Prerequisite: None. English Placement Level: EN101, Math Placement Level: MA091 or consent of instructor. (Offered Fall and Spring).

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

This course fulfills the requirements for the AS. 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 (readings and project), laboratory and field Investigations, tests and quizzes, field trips, service learning project, online assignments, activities, and research projects.

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

Prerequisites: EN095 & MA089

Concurrent Course Enrollment: None

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

English Placement Level: EN 101

Mathematics Placement Level: MA 091

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

Cost to the Student: Tuition for a 4-credit course; cost of the textbooks; lab fee; and instructional materials fee.

Cost to the College: Instructor's salary for 5 credits, encompassing 4 credits plus an additional 1 course credits to accommodate the instruction of a science lab.

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

### **6. Method of Evaluation**

Students' 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.

### 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
- 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
- 5.6 Mitigating actions and best practices for marine ecosystem interactions
- 5.7 Plant diversity across biomes

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### 8. Instructional Goals

The 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 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 Identify marine organisms using basic taxonomic principles;
- 2.0 Describe and identify ecological principles observed in marine environments;
- 3.0 Explain fundamental theories of sea floor spreading; and
- 4.0 The effects associated with pollution, habitat modification, and exploitation of resources in marine environments.

### 10. Assessment Measures of Student Learning Outcomes

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

- 1.0 Quizzes;
- 2.0 Exams;
- 3.0 Homework; and
- 4.0 Laboratory/Research reports;











# BI 103 Fall 2023















Final Audit Report

2023-09-12

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