

## SDG 14. Life Below Waters

*The Institute of Fisheries offers a Bachelor of Science in Fisheries, preparing graduates to enhance and increase aquatic wildlife populations while addressing community and industry needs. The program enhances students' practical skills and industry readiness through hands-on training in food processing techniques like smoking, bottling, canning, and baking. It fosters community engagement and learning by conducting at least four community training sessions per semester. Additionally, the program aims to develop the food processing center into a valuable income-generating facility for the university by producing and selling processed food products, supporting academic and economic objectives to ensure sustainability and growth within the institution.*



Republic of the Philippines  
OFFICE OF THE PRESIDENT  
**COMMISSION ON HIGHER EDUCATION**  
**REGION IV-B MIMAROPA**



**CHED MIMAROPA ORDER**  
**No. 005 Series of 2017**

**SUBJECT: CERTIFICATE OF PROGRAM COMPLIANCE (COPC)/  
GOVERNMENT RECOGNITION (GR) GRANTED TO MINDORO  
STATE COLLEGE OF AGRICULTURE AND TECHNOLOGY  
(MinSCAT), BONGABONG CAMPUS, BONGABONG, ORIENTAL  
MINDORO TO OPERATE THE BACHELOR OF SCIENCE IN  
FISHERIES PROGRAM EFFECTIVE ACADEMIC YEAR 2016-2017**

In accordance with the pertinent provisions of Republic Act (RA) No. 7722, otherwise known as the "Higher Education Act of 1994," the Mindoro State College of Agriculture and Technology (MinSCAT), Bongabong Campus, Bongabong, Oriental Mindoro, is hereby granted the Certificate of Program Compliance (COPC)/Government Recognition (GR) to operate the Bachelor of Science in Fisheries program, effective Academic Year 2016-2017.

This COPC/GR shall be subject to revocation if the herein institution fails to operate in accordance with the laws of the Republic of the Philippines and/or fails to comply with the rules and regulations of the Commission on Higher Education (CHED) pertaining to the organization, administration and supervision of State Universities and Colleges (SUCs). The school authorities shall inform the Commission of any plan(s) or action(s) regarding closure or phasing out of the program, or any change(s) in the prescribed requirements.

This COPC/GR shall remain in force and in effect as long as the institution sustains the required standards for the said program and the budgetary allocations for its operations are provided for and maintained. Furthermore, this authority does not extend to any branch of the institution, whether located in the same municipality or elsewhere.

Issued at Quezon City, Philippines, this 21<sup>st</sup> day of February, 2017.

FOR THE COMMISSION:

**VIRGINIA D. AKIATE, Ed.D., CESO III**  
**Director IV**



Republic of the Philippines  
MINDORO STATE COLLEGE OF AGRICULTURE AND TECHNOLOGY  
Main Campus  
Alcate, Victoria, Oriental Mindoro

College of Arts and Sciences  
BS ENVIRONMENTAL SCIENCE

COURSE SYLLABUS IN ES4

|                                    |                                                            |
|------------------------------------|------------------------------------------------------------|
| Course Title: Aquatic Biology      | Instructor/s:<br><br>Katherine P. Sanchez-Escalona         |
| Prerequisite: Bio 1 (Biodiversity) | Class Schedule:<br><br>9-12 T (lecture)<br><br>Th, F (lab) |
| Credit Units: 5                    | Consultation Hours:<br><br>TBA                             |
| Number of Hours: 9                 | Term: 1                                                    |

College of Arts and Sciences VMGO

Vision

College of Arts and Sciences as an agent of change where students and faculty members demonstrate innovative skills, academic excellence, and ethical values towards intellectual and moral transformation of the society.

Mission

To serves as an avenue of intellectual, professional, and technical excellence to become center of liberal education and foundation courses.

BSES Program Goals

To produce graduates equipped with multidisciplinary and integrated tools and approaches; and perspectives and values related to environmental problems and concerns.

BSES Program Objectives

Specifically, the program has the following objectives:

1. To expose students in an integrated way to environmental processes and phenomena, as well as, environmental issues, from the perspective of the natural sciences.
2. To train them to recognize and understand the natural environment, how humans affect the environment, and how the environment impacts on society.



**CORE VALUES: Responsibility, Involvement, Commitment and Excellence**

## PROGRAM OUTCOMES

Common to the Science and Mathematics Disciplines

1. Equipped with sufficient knowledge of the scientific theories and techniques needed to monitor and understand environmental quality;
2. Able to integrate and apply the various disciplines towards the understanding of environmental problems;
3. Knowledgeable regarding relevant local, regional, and global environmental issues; and
4. Able to employ a rational structured approach to solving environmental problems.

## COURSE DESCRIPTION

**Aquatic Ecology** is an introductory course on two large areas that encompasses aquatic sciences, Limnology and Marine Science. The course is designed to provide basic concepts in limnology, aquatic ecology, aquatic biology, aquatic conservation and management, oceanography, and marine biology. Laboratory activities are designed to train skills on necessary for water management.

## LEARNING OUTCOMES

At the end of the course, the students must have:

1. *Understand and explain the basic concepts of limnology and marine science.*
2. *Understand the concepts of water quality management*
3. *Be able to execute water sampling protocols;*

## LINK TO PROGRAM OUTCOMES

| Course Outcomes: |                                                                                      | PROGRAM OUTCOMES |   |   |   |
|------------------|--------------------------------------------------------------------------------------|------------------|---|---|---|
|                  | After completing this course, the student must be able to:                           | a                | b | c | d |
|                  | 1. <i>Understand and explain the basic concepts of limnology and marine science.</i> | ✓                | ✓ | ✓ | ✓ |
|                  | 2. <i>Understand the concepts of water quality management.</i>                       | ✓                | ✓ | ✓ | ✓ |
|                  | 3. <i>Be able to execute water sampling protocols.</i>                               | ✓                | ✓ | ✓ | ✓ |

## Lecture Outline

| Week | Course Outcomes                         | Topics                                                                                    | Teaching / Learning Activities | Assessment |
|------|-----------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------|------------|
| 1    |                                         | Class orientation                                                                         |                                |            |
| 2-3  | Introduction of basic aquatic processes | I. Introduction<br>1. Characteristics of water<br>2. Water Cycle and associated processes | Face-to-face classes           | Quiz       |



|       |                                                    |                                                                                                                                                                                   |                      |                            |
|-------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------|
|       |                                                    |                                                                                                                                                                                   |                      |                            |
| 4-9   | Understand the concepts of freshwater management   | II. Limnology<br>1.Geomorphology of lakes<br><br>i. formation<br><br>ii. ecological significance<br><br>2.Rivers and streams<br><br>3. Wetlands<br><br>4. Conservation Approaches | Face-to-face classes | quiz                       |
| 10    |                                                    |                                                                                                                                                                                   |                      |                            |
| 11-15 | Understand the concepts of marine water management | III.Marine Science<br>1.Physical Oceanography<br><br>2.Water Chemistry<br><br>3.Marine Biology<br><br>4. Conservation Approaches                                                  | Face-to-face classes | Quiz<br><br>Reaction paper |
| 16    | FINAL EXAMINATION                                  |                                                                                                                                                                                   |                      |                            |

#### Laboratory Outline

| Week | Course Outcomes                                 | Topics                                                                                                                                                                                                                         | Teaching / Learning Activities | Assessment |
|------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------|
| 1    |                                                 | I. Writing Laboratory Report                                                                                                                                                                                                   | Lecture                        |            |
| 3-5  | Execution of water quality monitoring protocols | II. Water quality monitoring protocols<br><br>i. physico-chemical properties<br><br>ii. primary parameters<br><br>iii. secondary parameters<br><br>iv. biological properties<br><br>a.benthos<br><br>b. plankton<br><br>c.fish | Laboratory activity/field work | report     |



|    |                                                 |                                                                                                                                            |                                |        |
|----|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------|
|    | Execution of water quality monitoring protocols | II. riparian properties<br>i. physico-chemical properties<br><br>ii. biological properties<br><br>a.benthos<br><br>b. plankton<br><br>ater | Laboratory activity/field work | report |
| 18 | FINAL EXAMINATION                               |                                                                                                                                            |                                |        |

### COURSE POLICIES

1. Only students enrolled in the course are allowed to participate in the class.
2. The mode of learning is strictly online.
3. Students' attendance to online face to face is required.
4. Students must observe virtual classroom netiquette.
5. In the event that the absences, which exceed the maximum allowed is due to sickness, the student will be dropped from the roll or be allowed to be on **Leave of Absence (LOA)**.
6. In order to avoid receiving a failing grade in the subject or subject dropped, a student should file the corresponding dropping form within a week after the midterm examination.
7. The entry on the records concerning a particular subject dropped by a student who filed the required dropping form would be officially dropped (OD). On the other hand, a student who drops a subject without filing the required dropping form shall be given a **failing grade** therein.
8. Students' final grade will be determined by their active participation and performance in the discussions, assignments and examination.
9. In order to pass the course, a student must both pass the lecture and the lab. Each component will compose 50% each, divided in to midterm exam (30%), final exam (30%) and quizzes/lab reports (40%). Grades shall either be passing (3.0) and above, or failure (5.0). No incomplete (Inc.) mark shall be given to a student for failure to submit a term paper or report project of similar nature. The corresponding grade shall be given with proper deductions for paper submitted. A student who fails to take the final examinations for whatever valid reasons shall be given a No Final Examination (NFE) mark if he is passing prior to final examinations. However, if such student is failing prior to final examination and is deemed to fail even if he perfects the final examination, a failing grade shall be given to the student. (MinSCAT Student Handbook, 2016, page 12)
10. The College adopts the following grading system:

| Percent Equivalent | Numerical Equivalent | Grade Description |
|--------------------|----------------------|-------------------|
| 97-100             | 1.00                 | Excellent         |
| 94-96              | 1.25                 | Outstanding       |
| 91-93              | 1.50                 | Very Good         |
| 88-90              | 1.75                 | Good              |
| 85-87              | 2.00                 | Very Satisfactory |



|           |      |                       |
|-----------|------|-----------------------|
| 82-84     | 2.25 | Thorough Satisfactory |
| 79-81     | 2.50 | Satisfactory          |
| 76-78     | 2.75 | Fair                  |
| 75        | 3.00 | Passing               |
| Below 75% | 5.00 | Failing               |

11. Cheating in an examination is penalized with a failure grade. Transmission or solicitation of any information between the students during the examination is forbidden. Both students in this case, if warranted will be given a grade of failure for that particular examination.
12. All forms of intellectual dishonesty such as cheating during examinations, copying assignments, plagiarism and data fabrication will not be tolerated.

**COURSE REQUIREMENT:** Major Exams, Assessment Outputs

**GRADING SYSTEM:**

|            |      |
|------------|------|
| Lecture    | 50%  |
| Laboratory | 50%  |
| TOTAL      | 100% |

$$\text{Final Grade} = (\text{Midterm Grade} + \text{Tentative Final Grade}) / 2$$

**LEARNING RESOURCES**

**PRIMARY LEARNING RESOURCES**

Doods, WK. 2002. Freshwater Ecology Concepts and Environmental Applications. Academic Press.  
Licuanan, WC, Mordeno, PZB, Go, MV. 2021. C30- A simple, rapid, scientifically valid, and low-cost method for citizen-scientists to monitor coral reefs. Regional Studies in Marine Science 47(5):101961.  
MBIOASSESS video presentations of marine ecosystems.  
Primavera, JH. 2009. Field Guide to Philippine Mangroves.  
Ryansky. AS. 2018. Coral Reefs Philippines.  
Smith, B, Storey, R, and Valois, A. SHMAK Macroinvertebrate Guide.  
Webb, Paul. Introduction to Oceanography. <http://rwu.pressbooks.pub/webboceanography>

Prepared by

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Checked and Recommended for Approval

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Approved

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