



AQUATIC ECOLOGY

Credit number: 2 credit (1 theory credit, 1 practice credit)

Semester: III (Semester I, 2nd year)



ISO 9001:2008

MODULE CONTENT

Chapter 1: General introduction on water ecology and ecology
 Chapter 2: Aquatic ecosystem, material metabolism and energy metabolism, biological productivity in the water body
 Chapter 3: Populations, communities, and aquatic ecosystems
 Chapter 4: Aquatic plants and animals, life forms of aquatic life
 Chapter 5: The main ecological factors in the aquatic environment affect aquatic life.
 Chapter 6: The role of aquatic organisms and propose measures to protect sustainable aquatic ecosystems.

EXPECTED LEARNING OUTCOMES (ELOs)

KNOWLEGES

- ELO 1 **Apply** mathematical, scientific, technical, social knowledge, and knowledge on contemporary issues in the field of Aquaculture
- ELO 2 **Analyze** data to conduct surveys and research in the field of Aquaculture
- ELO 3 **Assess** the quality of care, treatment, and health management of Aquaculture species
- ELO 4 **Design** the model of Aquaculture farming and seed production along the direction of clean production and ensuring safety food sources for human.

SOFT SKILLS

- ELO 5 **Apply** creative thinking, critical thinking, and problem solving skills in a variety of contexts.
- ELO 6 **Work** independently, lead the team, and manage the project towards its goals.
- ELO 7 **Communicate** effectively, understand cultural differences, read English documents in the field of Aquaculture

ADVANCED SKILLS

- ELO 8 **Provide** technical advice and business solutions in the field of Aquaculture to benefit stakeholders (producers, traders, communities).
- ELO 9 **Use** information technology and modern equipment of the Aquaculture sector effectively.

ATTITUDES

- ELO 10 **Develop** a professional work attitude, uphold professional ethics, demonstrate an awareness of environmental and human protection, love and protect animals.
- ELO 11 **Demonstrate** a spirit of entrepreneurship and life-long learning

COURSE EXPECTED LEARNING OUTCOMES (CELOs)

Symbol	Expected learning results of the module Complete this module, students made	Expected learning outcomes
KNOWLEGES		
CELO 1	Presentation of issues related to aquatic ecology	ELO 1
CELO 2	Analysis of the influence of ecological factors on aquatic animals for the survey of environmental factors in ponds	ELO 2
CELO 3	Identify the nutrition and living relationships of aquatic organisms, the material and energy metabolism in the ecosystem serving the design of farming models in the direction of protecting the ecological environment	ELO 4
SKILLS		
CELO 4	Applying analytical, critical and thinking to solve problems in the aquatic ecosystem	ELO 5
CELO 5	Working independently, communicating, discussing, working in groups to solve, reporting and presenting topics on aquatic ecosystems	ELO 6, 7
ATTITUDES		
CELO 6	Love nature, consciously protect the environment and people, love and protect aquatic animals, sustainable development of natural ecosystems and people.	ELO10
CELO 7	Research orientations on a number of topics on the ecological rearing of aquatic animals and ecological models of sustainable development	ELO11

LEARNING METHODS

- Students self-read documents, develop hypotheses and related questions
- Students participate in lectures, answer questions and discuss in groups
- Students participate in field surveys of real water bodies, making reports and presentations to understand issues related to aquatic ecology.
- Students do their own practical operations in the laboratory under the guidance of the teacher.
- Students think and solve exercises about water ecology
- Students work in groups to build a simulation model of aquatic ecosystems using simple tools: paper, straws, plastic wrap, wooden sticks, pickles,...

Lecturers in main charge:
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Lecturers teach together:
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DUTIES OF STUDENTS

- Attendance: Students must attend at least 80% for the theory and 100% for the practical.
- Preparation for lectures: Students must read teaching materials and course-related syllabus.
- Attitude: actively participating in asking questions, group discussions, exchanges, and marketing.

RATING AND SCORING

1. Measure point: 10

2. Weight: process evaluation: 50% (group discussions / short questions, practical exercises, sample observation practices, group reports / presentations, development of simulation model of the ecosystem); Final exam: 50%

COURSE DESCRIPTION

The course aims to introduce students to knowledge of environmental ecology, populations and biomes, and aquatic ecology including types of water bodies and biological meanings, aquatic ecosystems, and energy biological productivity and energy transformation in water bodies. It helps students identify ecological ecology of aquatic organisms, including aquatic populations, biomes; biological characteristics, environment and living activities of aquatic organisms, as well as identify characteristics of aquatic plants and animals, analyze the important role of aquatic organisms and the exploitation and protection of seafood resources. Students are trained several skills such as identification and classification of water bodies and biological meanings of water bodies, distinguishing aquatic ecosystems and populations, aquatic biomes, identification and classification of aquatic species, aquatic plants. After this course, students can present the role of the subject, study the materials, make group works, report, have an attitude towards the love of their jobs, and self-study.

