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Course Name: MARINE RESOURCES AND ENVIRONMENT MANAGEMENT
Number of credits: 3 ECTs

Period: Fall/spring semester

Cooordinator	Faculty of Marine Resources and Management
Credits	3 ECTS
Lecturers	**Tran Thi Kim, Nguyen Van Tin, Nguyen Ky Phung**
Level	BSc.
Host institution	Ho Chi Minh City University of Natural Resources and Environment
Course duration	1 semester (the classes will be scheduled in accordance with the university timetable)
New/revised	new course

Summary

The course provides basic knowledge about the resources of the sea and islands, tools for the management of marine resources, marine pollution and the control of marine pollution. The course also introduces the knowledge of the country's marine and island environment.

Target student audiences

BSc. students majoring in Marine Resources Management

Prerequisites

Required courses (or equivalents): NO

Aims and objectives

The principal purpose of the course is to give students the following knowledge:

- Analysis and evaluation of present marine environmental resources.
- Acquire knowledge of marine resource management tools.
- Marine Resource Assessment (MPA).
- Marine environment resource management tools.

The Authentic Tasks:

The course provides an understanding of marine resources and the environment.

General learning outcomes:

By the end of the course, successful students will:

Knowledge	• Understand the basic concepts of the marine and coastal environment.

	• Understand the management and planning guidelines for the coastal/coastal zone. • Knowledge of marine and island resources • Capture objects and ways to manage a specific sea area. • Impacts of marine pollution • Marine-ocean pollution control systems.
Comprehensive	• Presenting the basic knowledge of the marine environment, the impacts of marine pollution and the marine-ocean pollution control systems.
Application	• Management and development of coastal zones
Analysis	• Resources of marine resources and the impact of marine pollution
Synthesis	• Knowledge of marine and island resources, the impact of marine pollution, marine-ocean pollution control systems

Overview of sessions and teaching methods

The course will make most of interactive and self-reflective methods of teaching and learning and, where possible, avoid standing lectures and presentations

Learning methods

- Video presentations
- Project Based Learning
- Literature review
- Brainstorming
- Puzzles
- Query
- Mind map
- Problem-based learning
- Team work

Course outline

Week	**Topics**
Week 1	Integration for management of the natural resources and environment of the islands
Week 2; 3,4&5	Marine resources and the benefits of marine resources
Week 6-10	Marine pollution, the impacts of marine pollution
Week 11-15	Management of marine resources and environment

Course Schedule

Topic 1 - Integration for management of natural resources and environment of the islands	
Learning objectives	• The concepts of marine space and coastal zones, marine resources, marine environment, and marine pollution

Learning outcomes	• Understand the concepts of the marine space and coastal zones, marine resources, marine environment, and marine pollution
Student deliverables	• Exercise: individual assignments • Semi – Final examination • Final assessment
Topic materials	Lecture: • Lecture of Marine resources and environment management
Outline	1.1. Basic concepts **1.2.**Marine environment **1.3.** Marine environmental problems
Topic 2- MARINE RESOURCES	
Learning objectives	• The marine environment: Biological resources, Non-living resources • Coastal ecosystems
Learning outcomes	• Determine the marine environment: Biological resources, Non-living resources: • Coastal ecosystems: corals, sea-grass beds, mangrove forests
Student deliverables	• Exercise: individual assignments • Semi – Final examination • Final examination
Topic materials	Lecture: Lecture of Marine resources and environment management
Outline	2.1. Benefit of Biological resources 2.2. Benefit of Non-living resources 2.3. Coastal ecosystems 2.4. Assessment method of resource benefit
Topic 3 - THE EFFECTS OF NATURAL RESOURCES EXPLOITATION ON THE MARINE ENVIRONMENT	
Learning objectives	• Determine problems of marine environmental resources. • The impact of marine resources on organisms
Learning outcomes	• Understand physical, biological and ecological characteristics of the sea. • Determine impact of marine resources on organisms and Non-living resources
Student deliverables	• Exercise: individual assignments • Semi – Final examination • Final examination
Topic materials	Lecture: Lecture of Marine resources and environment management

Outline	3.1. Natural characteristics of the marine environment 3.2. Impacts by mining resources using the resource 3.2.1 For biological resources 3.2.2 For non-living resources
Topic 4: Management Of Marine Resources And Environment	
Learning objectives	• Determine the marine environment problem and propose suitable solution. • The processes of the transmission of substances to the marine and ocean environment • Basic skills to use model in in simulating contaminants transmission processes in marine environment. • Demonstrate active learning capacity
Learning outcomes	• Presenting the basic knowledge of flow dynamics and hydrography, the basic knowledge of modeling of substance transmission in marine environment. • Simulating the processes of substance transmission in water • Analysis of natural systems and design of numerical models • Demonstrate active learning capacity
Student deliverables	• Exercise: individual assignments • Semi – Final examination • Final examination
Topic materials	Lecture: Lecture of Marine resources and environment management
Outline	4.1. Tools for managing environmental resources 4.1.1. Laws and policies 4.1.2. Economic tools 4.1.3. Emission fee 4.1.4. Pollution emission control 4.1.5. Escrow - refund system 4.1.6. Ecolabel 4.2. Resource planning and management 4.3. Marine pollution control system 4.4. Ocean pollution control system

Literature

Compulsory
[1]. Lecture of Marine resources and environment management
Recommended:
[1] Phung, Nguyen Ky, Management of marine resources, 2015
[2] Au, Nguyen Van, East Sea Natural Geography, VNU Publishing House, 2003
[3] Joan Brown, Angela Colling, Dave Park, John Phillips, Dave Rothery vµ John Wright, Trinh Le Ha, Ocean structure and processes, Publishing Ha Noi, 2001.

[4] Lac, Vo, General geology, Publishing Ha Noi, 2001

Course workload

The table below summarizes course workload distribution:

Activities	Learning outcomes	Assessment	Estimated workload (hours)
In-class activities (34 hours)			
Lectures	Integration for management of natural resources and environment of the islands	Class participation	16
Moderated in-class discussions	Understand the basic concepts of the marine and coastal environment. Types of marine resources causes of marine pollution, marine-ocean pollution control systems	Class participation and preparedness for discussions	6
In-class assignments, homework assignment	Determine the national sea and island spatial distance. The benefits of marine resources	Class participation and preparedness for assignments	6
Reading and discussion of assigned papers for preparation for lectures	Familiarity with and ability to critically and creatively discuss key concepts, tools and methods as presented in the literature	Class participation, creative and active contribution to discussion	6
Independent work (70 hours)			
Home work and Exercise	Ability to interpret data, analyze objects and use concepts, tools, and methods, and equations to solve problems.	Quality of individual assignments	70
Total			***104***

Course Assignments

Course assignments will constitute a multi-part project:

- Assignment #1 -(in-class)
- Assignment #2 - (home work)
- Assignment #3 –(home work)
- Assignment #4 (mostly in-class)

Assignment #1: The students will learn in detail what marine space and coastal zones, marine resources, marine environment, and marine pollution are, how these are zoned and identified. Some prime examples will be discussed in this assignment.

Assignment #2: will help the students to study the marine environment including: Biological resources and non-living resources; ccoastal ecosystems (corals, sea-grass beds, mangrove forests). Individual assignments will be issued to help the students in ddetermine the marine environment.

Assignment #3: The students will deal with physical, biological and ecological characteristics of the sea. What and how to determine impact of marine resources on organisms and non-living resources by using the problem tree analysis.

Assignment #4: The students will present the basic knowledge of flow dynamics and hydrography, the basic knowledge of modeling of substance transmission in marine environment through a seminar in class. The scheme for analysis of natural systems and design of numerical models and simulate the processes of substance transmission in water.

Grading

The students' performance will be based on the following:

Assessment	• Progress assessment (30%): - Exercise (15%): - Homework (15%): • Final assessment (60%): - Final examination (45%) - Semi- Final examination (15%)
Evaluation	A (8,5 – 10) B (7,0 – 8,4) C (5,5 - 6,9) D (4,0 – 5,4)