



Course Name: OCEAN ENVIRONMENTAL MANAGEMENT
Number of credits: 4.5 ECTs (equivalent to 3 Vietnamese Credits)

Period: Fall/spring semester (11 weeks)

Coordinator	Vietnam Maritime University
Credits	4.5 ECTs (equivalent to 3 Vietnamese Credits)
Lecturers	DINH THI THUY HANG, TRAN DUC PHU
Level	BSc.
Host institution	Vietnam Maritime University
Course duration	45 in-class hours (in line with the overall academic schedule), 90 self-study hours, total 135 hours
Course duration	45 class hours (in line with the overall academic schedule)
New/revised	Revised

Summary

The marine environment is becoming increasingly stressed by growing global populations and industries. The world population has witnessed spectacular growth in the twentieth century, and may double in size by the middle of the twenty-first. This growth, combined with economic development and modernization, places extreme stress on all-natural resources, ocean resources included. In this class, we will look at environmental issues such as maritime pollution; ocean oil, as, and natural resource exploration; coastal dynamics and shoreline protections. We will also explore and analyze the various solutions proposed to deal with them. Designed for students with little or no scientific background, the course provides basic science education integrated with major international environmental concerns, offshore energy, waste management, sustainable development, coastal dynamics and shoreline protections.

Target student audiences

BSc. students majoring in Global Study and Maritime Affairs

Prerequisites

Required courses (or equivalents): NO

Aims and objectives

Students can be able to detect key problems of marine environment and construction and select appropriate solutions to deal with such issues

The Authentic Tasks:

The course provides basic knowledge of marine environment and constructions.

General learning outcomes:

By the end of the course, successful students will:

Knowledge	<ul style="list-style-type: none"> Have basic knowledge on some physical, chemical, biological features and typical basic processes in marine environment
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Comprehensive	<ul style="list-style-type: none"> • Be able to understand typical problems of marine environment and relevant solutions to them.
Application	<ul style="list-style-type: none"> • Be able to select feasible technical and managerial solutions to marine environment, constructions and resources issues
Analysis	<ul style="list-style-type: none"> • Analyze typical marine pollution problems, main features of coastal construction and some challenges in marine resources management
Synthesis	<ul style="list-style-type: none"> • Summarize the overall solutions related to marine environment and constructions.

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
 - Team work

Course outline

Week	Topics
Week 1	The world oceans
Week 2	How climate change alters the ocean chemistry
Week 3	Climate change impacts on marine ecosystems
Week 4	Living resource and medical knowledge from the sea
Week 5	Marine minerals and energy, and maritime highways
Week 6	Polluting the seas
Week 7	Oil spill (<i>revised</i>)
Week 8	Pollution cleanup (<i>revised</i>)
Week 9	Coastal processes and classification
Week 10	Coastal erosion and flooding (<i>revised</i>)
Week 11	Coastal protection and shoreline management (<i>revised</i>)
Final exam	

Revised topics

Topic 1. Oil spill	
Learning objectives	<ul style="list-style-type: none"> • Provide basic knowledge about oil properties, the weathering process of oil and the impacts of an oil spill on the marine environment





Learning outcomes	<ul style="list-style-type: none">• Students can understand the properties of oil and how it is decomposed in the environment under different weathering conditions.• Students can assess the impacts of a specific oil spill on the marine environment and introduce some typical case studies of oil spill.
Student deliverables	<ul style="list-style-type: none">• Presentations by group of 4 members related to marine pollution in general or oil spill in specific.• Discussion in class under the facilitation of lecturer.
Topic materials	<ul style="list-style-type: none">• Handouts provided by lecturer prior to the class time.• Students' own searching related to oil pollution.
Outline	<ul style="list-style-type: none">• The properties of oil• The fate of oil spill• The impacts of oil spill on the marine environment
Topic 2. Pollution cleanup	
Learning objectives	<ul style="list-style-type: none">• Provide basic knowledge about the mechanical and chemical methods to cleanup oil pollution.
Learning outcomes	<ul style="list-style-type: none">• Students can select appropriate methods for a specific oil pollution incident.
Student deliverables	<ul style="list-style-type: none">• Presentations by group of 4 members related to marine pollution and/or cleanup measures.• Discussion in class under the facilitation of lecturer.
Topic materials	<ul style="list-style-type: none">• Handouts provided by lecturer prior to the class time.• Students' own searching related to pollution cleanup.
Outline	<ul style="list-style-type: none">• Mechanical methods• Chemical methods• Other methods
Topic 3. Coastal erosion and flooding	
Learning objectives	<ul style="list-style-type: none">• Provide basic knowledge about coastal terms, the beach materials and their origins; the basic hydrodynamics (waves, currents, water- levels) and meteorological factors (wind); the morphological processes and form elements; the shoreline evolution.
Learning outcomes	<ul style="list-style-type: none">• Students summarize coastal erosion and flooding process• Students present meteomarine factors for the coastal morphological processes• Students identify features of erosional coasts, depositional coasts• Students present causes and solutions for coastal flooding
Student deliverables	<ul style="list-style-type: none">• Presentations by group of 4 members related to the topic as per students' interest.• Discussion in class under the facilitation of lecturer.
Topic materials	<ul style="list-style-type: none">• Handouts provided by lecturer prior to the class time.• Students' own searching





Outline	<ul style="list-style-type: none">• Meteomarine for the coastal morphological processes• Coastal Settings• Erosional coasts, depositional coasts• Fetures of erosional coasts and depositional coasts• Causes of coastal erosion• Causes and solutions for coastal flooding
Topic 4. Coastal protection and shoreline management	
Learning objectives	<ul style="list-style-type: none">• Provide basic knowledge about coastal protection and shoreline managements
Learning outcomes	<ul style="list-style-type: none">• Students present the nature of coastal erosion and beach loss, then select appropriate measures to stabilize the shore.
Student deliverables	<ul style="list-style-type: none">• Presentations by group of 4 members related to the topic as per students' interest.• Discussion in class under the facilitation of lecturer.
Topic materials	<ul style="list-style-type: none">• Handouts provided by lecturer prior to the class time.• Students' own searching
Outline	<ul style="list-style-type: none">• Coastal erosion and beach loss• Stabilizing the shore• Responses to Coastal Erosion and Beach Loss

Literature

Course books:

- World Ocean Review, "Episode 1. Living with the Oceans";
- World Ocean Review, "Episode 2. The Future of Fish";
- World Ocean Review, "Episode 3. Marine Resources".

Reference books:

- Consortium for Ocean Leadership (join!): <http://oceanleadership.org/>
- Global Ocean Commission: <http://missionocean.me/>
- International Programme on the State of the Ocean: <http://www.stateoftheocean.org/index.cfm>
- United Nations Atlas of the Oceans: <http://www.oceansatlas.com/index.jsp>
- MP-Atlas for Marine Protected Areas: <http://www.mpatlas.org/>
- International Seabed Authority: <http://www.isa.org.jm/en/home>
- List of Ocean NGOs: <http://www.un.org/Depts/los/Links/NGO-links.htm>
- 'Sea Around Us' Project, Pew Charitable Trust: <http://www.seaaroundus.org/global/1.aspx>
- Global Partnership for the Oceans: <https://www.globalpartnershipforoceans.org/>
- United Nations Convention on the Law of the Sea
- Introduction to coastal dynamics and shoreline protection https://www.researchgate.net/publication/257052511_INTRODUCTION_TO_COASTAL_DYNAMICS_AND_SHORELINE_PROTECTION





Course workload

The table below summarizes course workload distribution:

Activities	Learning outcomes	Assessment	Estimated workload (hours)
Lectures	Students can understand the definition and related regulations on the topics	Mid-term, accounting for 30% of overall score Final, accounting for 30% of overall score	25
Facilitated discussions	Students can debate on a specific issue related to the topic, show their understanding and point of view on the matter, resulting in developing their critical thinking and communication skills.	Class participation and preparedness for discussions. Students can earn bonus via significant contribution to the discussions.	10
Presentations and follow-up discussions	Students can present their findings on a specific issue based on their own search and information consolidation.	As 1 mid-term, accounting for 30% of overall score	10
Independent work			
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	90
Total			135

Course Assignments

Course assignments will constitute a multi-part project:

- Assignment #1 – Presentation (Y₁)
- Assignment #2 – Mid-term (Y₂)
- Assignment #3 – Final (Y₃)

Assignment #1: Students are encourage to select their favourite topics related to the theme of the course and conduct presentation within 20 minutes each group of 4 members.

Assignment #2: Multiple choice test covering week 1-5.

Assignment #3: Multiple choice test covering week 6-11.

Grading

The students' performance will be evaluated based on the following:

Ass. components	Ass. evidences
X. Progress grade	X – Attend class in at least 75% of total class hours
Y. End-of-course grade	Y ₁ – Mid-term exam





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	Y ₂ – Presentation on a specific issue
	Y ₃ – Final exam

Evaluation

Course evaluation grade: $Z = 0.1X + 0.3Y_1 + 0.3Y_2 + 0.3Y_3$

