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**Course Name:** CONTROL OF MARINE POLLUTION

**Number of credits:** 3 ECTs

**Period:** Fall/spring semester

Coordinator	Faculty of Marine Resources and Management
Credits	3 ECTs
Lecturers	Nguyen Ky Phung, Dang Thi Thanh Le
Level	BSc.
Host institution	Ho Chi Minh City University of Natural Resources and Environment 1
Course duration	semester (the classes will be scheduled in accordance with the university timetable)
New/revised	New course

### **Summary**

This course will provide students with in-depth knowledge of the environmental field and skills to perform environmental management according to modern development trends. Specifically, the course will provide students with knowledge of measures to prevent and control marine pollution and related legal requirements in the control and monitoring of marine environment.

### **Target student audiences**

BSc. students majoring in Marine Resources Management

### **Prerequisites**

Required courses (or equivalents): NO

### **Aims and objectives**

The main course objective is to equip students with knowledge of:

- Measures for prevent and control of marine pollution
- Monitoring compliance with legal requirements in marine pollution control.
- Work at the individual level and team collaboration to communicate, discuss among individuals in groups to study and report.

### **The Authentic Tasks are:**

The course will provide students with knowledge of measures to prevent and control marine pollution and related legal requirements in the control and monitoring of marine environment.

### **General learning outcomes:**

By the end of the course, successful students will:

- Knowledge • Presenting the issues of the state of marine environment.
- Understanding the role of marine pollution control.
  - Distinguishing sources of marine pollution.
  - Apply professional ethics in designing solutions to prevent and control marine pollution.



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- Comprehensive
  - Evaluate the marine pollution control plan
  - Understanding the role of marine pollution control.
  - Distinguishing sources of marine pollution.
- Application
  - Apply professional ethics in designing solutions to prevent and control marine pollution.
- Analysis
  - Evaluating the marine pollution control plan

### 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
- Interviews, surveys, group work, written articles/essay
- Project Based Learning
- Literature review
- Brainstorming
- Puzzles
- Query
- Mind map
- Role-playing method
- Problem-based learning
- Team work

### Course outline

#### Week Topics

- Week 1 Introduction + Course project introduction
- Week 2 Marine resources and Environmental and issues
- Week 3 Legal aspects of marine pollution control
- Week 4 Integrated control of marine pollution.
- Week 5,6,7&8 Prevent and response to marine environmental incidents
- Week 9&10 Project presentation and evaluation

### Course Schedule

Topic 1 - Marine resources and Environmental and issues	
Learning objectives	<ul style="list-style-type: none"> <li>• Measures for prevent and control of marine pollution</li> <li>• Demonstrate active learning capacity</li> </ul>
Learning outcomes	<ul style="list-style-type: none"> <li>• Presenting the issues of the state of marine environment.</li> <li>• Understanding the role of marine pollution control.</li> </ul>



Student deliverables	<ul style="list-style-type: none"> <li>• Homework: Working in group and preparing one Legal aspects of marine pollution control</li> <li>• Semi - Final examination</li> <li>• Final assessment</li> </ul>
Topic materials	Lecture: • Lecture of Control of marine pollution
Outline	1.1. The State of the global marine environment 1.2. Natural conditions and marine resources

### Topic 2- Legal aspects of marine pollution control

Learning objectives	<ul style="list-style-type: none"> <li>• Monitoring compliance with legal requirements in marine pollution control.</li> <li>• Work at the individual level and team collaboration to communicate, discuss among individuals in groups to study and report.</li> </ul>
Learning outcomes	<ul style="list-style-type: none"> <li>• Understanding the role of marine pollution control.</li> <li>• Distinguishing sources of marine pollution.</li> <li>• Apply professional ethics in designing solutions to prevent and control marine pollution.</li> <li>• Demonstrate active learning capacity</li> </ul>
Student deliverables	<ul style="list-style-type: none"> <li>• Exercise: Role-playing game: Each group will present about one legal aspect of marine pollution control</li> <li>• Semi - Final examination</li> <li>• Final examination</li> </ul>
Topic materials	Lecture: • Lecture of Control of marine pollution
Outline	2. 1 International Convention for the Prevention of the marine environment 2.2. International Maritime Organization (IMO) conventions 2.3. International Convention for the Prevention of Pollution from Ships (MARPOL) 2.4. Laws and policies on Vietnamese marine management

### Topic 3 - Integrated control of marine pollution

Learning objectives	<ul style="list-style-type: none"> <li>• Measures for prevent and control of marine pollution</li> <li>• Monitoring compliance with legal requirements in marine pollution control.</li> <li>• Work at the individual level and team collaboration to communicate, discuss among individuals in groups to study and report.</li> </ul>
Learning outcomes	<ul style="list-style-type: none"> <li>• Understanding the role of marine pollution control.</li> <li>• Distinguishing sources of marine pollution.</li> <li>• Apply professional ethics in designing solutions to prevent and control marine pollution.</li> <li>• Demonstrate active learning capacity</li> </ul>



Student deliverables	<ul style="list-style-type: none"> <li>• Semi - Final examination</li> <li>• Final examination</li> </ul>
Topic materials	Lecture: Lecture of Control of marine pollution
Outline	3.1. Control of marine pollution. 3.2. Tasks and scientific basis of integrated control of marine pollution 3.3. Ocean control system

#### Topic 4: Prevent and response to marine environmental incidents

Learning objectives	<ul style="list-style-type: none"> <li>• Measures for prevent and control of marine pollution</li> <li>• Monitoring compliance with legal requirements in marine pollution control.</li> <li>• Work at the individual level and team collaboration to communicate, discuss among individuals in groups to study and report.</li> </ul>
Learning outcomes	<ul style="list-style-type: none"> <li>• Understanding the role of marine pollution control.</li> <li>• Distinguishing sources of marine pollution.</li> <li>• Apply professional ethics in designing solutions to prevent and control marine pollution.</li> <li>• Evaluating the marine pollution control plan</li> <li>• Demonstrate active learning capacity</li> </ul>
Student deliverables	Exercise: Presenting the role of marine pollution control. <ul style="list-style-type: none"> <li>• Semi - Final examination</li> <li>• Final examination</li> </ul>
Topic materials	Lecture: Lecture of Control of marine pollution
Outline	4.1. Prevention of Pollution from land-based sources 4.2. Prevention of Pollution from Ship

#### Topic 5- Group assignment presentation

Learning objectives	The students should be able to apply the integrated knowledge obtained from the course to develop a marine pollution control plan
Learning outcomes	<ul style="list-style-type: none"> <li>• Understanding the role of marine pollution control.</li> <li>• Distinguishing sources of marine pollution.</li> <li>• Apply professional ethics in designing solutions to prevent and control marine pollution.</li> <li>• Evaluating the marine pollution control plan</li> <li>• Demonstrate active learning capacity</li> </ul>
Student	In groups of 4-5, students should deliver:



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deliverables	<ul style="list-style-type: none"> <li>• Presentation</li> <li>• Report</li> </ul>
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### Literature

[1] Lecture of Control of marine pollution

#### Recommended:

[2] John G. Lyon, Lynn Lyon, Geospatial Information Handbook for Water Resources and Watershed Management, Volume 2: Methods and Modelling, CRC Press, 2022.

[3] Amarendra Sahoo, Assessment of Impact of Mining on Water Quality and It's Modelling [1, 1st ed.], NIT Rourkela, 2017.

[4] Luiz Bruner de Miranda, Fernando Pinheiro Andutta, Björn Kjerfve, Belmiro Mendes de Castro Filho (auth.), Fundamentals of Estuarine Physical Oceanography [1 ed.], Springer Singapore, 2017.

[5] Stanisław Ryszard Massel, Ocean Surface Waves: Their Physics and Prediction [3rd ed.], World Scientific, 2017.

[6] S.E. Jørgensen and M.J. Gromiec (Eds.), Mathematical Submodels in Water Quality Systems, Elsevier Science, 2013.

[7] Marcello Benedini, George Tsakiris, Water Quality Modelling for Rivers and Streams, Springer, 2013.

### Course workload

The table below summarizes course workload distribution:

Activities	Learning outcomes	Assessment	Estimated workload (hours)
<b>In-class activities (30 hours)</b>			
Lectures	Understanding theories, concepts, methodology and tools	Class participation	10
Moderated in-class discussions	Understanding the role of marine pollution control and various policy, management contexts and common problems in the control of marine pollution	Class participation and preparedness for discussions	5
In-class assignments, homework assignment	Understanding the role of marine pollution control and various policy, management contexts and common problems in the control of marine pollution	Class participation and preparedness for assignments	5
Reading and discussion of assigned papers for	Familiarity with and ability to critically and creatively discuss key	Class participation,	5



seminars and preparation for lectures	concepts, tools and methods as presented in the literature	creative and active contribution to discussion	
Group presentation	Ability to interpret data, to analyze audience, and to use the concepts, tools, and methods for designing solutions to prevent and control marine pollution and Evaluating the marine pollution control plan	Quality of group assignments and individual presentations	5
<b>Independent work (60 hours)</b>			
Group work: - Contribution to the group case-study projects - Contribution to the preparation and delivery of individual presentation	Ability to interpret data, to analyze audience, and to use the concepts, tools, and methods for communicating information to all participants  Plan and develop prevent and control of marine pollution plan, be aware of information visualization tools and methods	Quality of group assignments and individual presentations	25
Course group assignment	Working in group and preparing one Legal aspects of marine pollution control	Quality of developed marine pollution control plan and their presentation	15
Group presentation	Ability to interpret data, to analyze audience, and to use the concepts, tools, and methods for communicating the EDP	Quality of group assignments and individual presentations	20
<b>To to a</b>			<b>90</b>

### Course Assignments

Course assignments will constitute a multi-part project:

- Assignment #1 - (Home work): will help students understand the role of marine pollution control and various policy, management contexts and common problems in the control of marine pollution.
- Assignment #2 - (Home work): Working in group and preparing one Legal aspects of marine pollution control with a very important issue of health and hygienic regulations of air quality
- Assignment #3 - (Home work): Working in group preparing presenting the role of marine pollution control
- Assignment #4 - (Home work): Working in group preparing seminar about the topic related Plan and develop prevent and control of marine pollution plan, be aware of information visualization tools and methods



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## Grading

The students' performance will be based on the following:

<b>Assessment</b>	<ul style="list-style-type: none"><li>• Progress assessment (30%):<ul style="list-style-type: none"><li>- Exercise (10%):</li><li>- Homework (10%):</li><li>- Semi- Final examination (10%)</li></ul></li><li>• Final assessment (60%):<ul style="list-style-type: none"><li>- Group report (30%): The students will be divided into groups of 4-5 students and choose 1 topic and complete the group project report according to the specific requirements of each topic.</li><li>- Final examination (30%)</li></ul></li></ul>
<b>Evaluation</b>	<ul style="list-style-type: none"><li>A (8,5 - 10)</li><li>B (7,0 - 8,4)</li><li>C (5,5 - 6,9)</li><li>D (4,0 - 5,4)</li></ul>