

## **The Hong Kong University of Science and Technology**

### **OCES 2004 Sustainable Ocean Fall 2025**

**Time:** 12:00 – 13:20, Mondays and Wednesdays

**Venue:** G009B, CYT Bldg

**Instructor:** Charmaine Yung ([ccmyung@ust.hk](mailto:ccmyung@ust.hk))

### **Course Description**

This course explores the principles and practices of sustainability as they apply to the world's oceans. Students will learn about the impacts of human activities on marine ecosystems and how to develop strategies for sustainable use and conservation of ocean resources. The course combines aspects of marine ecology, oceanography, environmental science, and socio-economics.

### **Course Objectives**

1. Understand the complex interactions within marine ecosystems and the principles that underpin sustainable management of ocean resources.
2. Recognize and assess the effects of anthropogenic pressures on the marine environment, including pollution, overfishing, and climate change.
3. Apply critical thinking skills to identify, analyze, and propose solutions to problems related to sustainable use and conservation of ocean resources.
4. Develop research skills including data collection, analysis, and interpretation within the context of ocean sustainability.
5. Evaluate the effectiveness of existing policies and management strategies aimed at conserving marine ecosystems.
6. Enhance communication skills for conveying complex sustainability issues to diverse audiences.

### **Course Intended Learning Outcomes (CILOs)**

Upon completion of this course, students will be able to:

1. Exemplify the complex interactions within marine ecosystems and the principles that underpin sustainable management of ocean resources.
2. Recognize the effects of anthropogenic pressures on the marine environment, including pollution, overfishing, and climate change.

3. Apply critical thinking skills to identify, analyze, and propose solutions to problems related to sustainable use and conservation of ocean resources.
4. Develop the ability to conduct research, including data collection, analysis, and interpretation, within the context of ocean sustainability.
5. Evaluate the effectiveness of existing policies and management strategies aimed at conserving marine ecosystems and promoting sustainable use of ocean resources.
6. Develop a strong sense of ethical responsibility towards the conservation of marine biodiversity and the sustainable management of ocean resources.
7. Explain complex sustainability issues and proposed solutions clearly and persuasively to a variety of audiences, including scientists, policymakers, and the public.

### Competencies

- **Knowledge and Understanding (CILO-1, CILO-2):** Gain comprehensive understanding of marine ecosystems and sustainability principles.
- **Critical Analysis and Evaluation (CILO-3, CILO-4, CILO-5):** Develop skills to assess environmental challenges and evaluate solutions.
- **Communication and Reflection (CILO-6, CILO-7):** Enhance ability to communicate scientific concepts and reflect on ethical responsibilities.

### Teaching and Learning Activities

| Activity            | Weekly Scheduled Hours | Course ILOs Addressed          | Details                                                                             |
|---------------------|------------------------|--------------------------------|-------------------------------------------------------------------------------------|
| Lecture             | 2.5                    | CILO-1, CILO-2, CILO-3, CILO-5 | Interactive lectures introducing concepts, case studies, and theoretical frameworks |
| Tutorial/Discussion | 0.5                    | CILO-4, CILO-6, CILO-7         | Small group discussions, case study analysis, and presentation preparation          |
| Field Trip          | 3 hours (1 day)        | CILO-1, CILO-2, CILO-4, CILO-7 | Visit to local fish farm to observe sustainable aquaculture practices               |
| Independent Study   | 6                      | All CILOs                      | Research, reading assignments, and project preparation                              |

## Grading Type

### Assessment Tasks and Weightings

| Assessment Task                                            | Weighting (%) | Course ILOs Addressed          | Details                                                                             |
|------------------------------------------------------------|---------------|--------------------------------|-------------------------------------------------------------------------------------|
| Class Participation                                        | 10%           | CILO-6, CILO-7                 | Regular attendance and active engagement in lectures and discussions                |
| Quizzes (4)                                                | 25%           | CILO-1, CILO-2, CILO-3         | Regular assessment of understanding of key concepts                                 |
| Field Trip Worksheet                                       | 15%           | CILO-1, CILO-2, CILO-4, CILO-7 | Analysis connecting local observations to global sustainability challenges          |
| Written Assignment: Critical Policy Analysis (1,500 words) | 20%           | CILO-3, CILO-4, CILO-5         | Critical analysis of ocean-related policy effectiveness in achieving SDG 14 targets |
| Group Discussion Participation                             | 10%           | CILO-6, CILO-7                 | Contribution to in-class discussions and peer learning                              |
| Case Study Presentation: SDG Action Plan Project           | 20%           | CILO-4, CILO-5, CILO-6         | Group presentation proposing solutions for specific ocean sustainability challenges |

### Course Schedule

| Week | Date   | Lecture Topic                                 | Format               | Assessment |
|------|--------|-----------------------------------------------|----------------------|------------|
| 1    | 2 Sep  | Course Introduction                           | Lecture              |            |
|      |        |                                               |                      |            |
| 2    | 7 Sep  | Defining 'Sustainable Ocean'                  | Lecture              |            |
|      | 9 Sep  | Marine Biodiversity & Ecosystem Function (I)  | Lecture              |            |
|      |        |                                               | Lecture              |            |
| 3    | 14 Sep | Marine Biodiversity & Ecosystem Function (II) | Assessment           |            |
|      | 16 Sep | Marine Pollution (I)                          | Assessment + Lecture | Quiz 1     |

| Week | Date   | Lecture Topic                                                      | Format               | Assessment |
|------|--------|--------------------------------------------------------------------|----------------------|------------|
| 4    | 21 Sep | Marine Pollution (II)                                              | Lecture              |            |
|      | 23 Sep | Climate Change and the Oceans (I)                                  | Lecture              |            |
| 5    | 28 Sep | Climate Change and the Oceans (II)                                 | Lecture + discussion |            |
|      | 30 Sep | Overfishing                                                        | Assessment + Lecture | Quiz 2     |
| 6    | 5 Oct  | Sustainable Aquaculture (I)                                        | Lecture              |            |
|      | 7 Oct  | Sustainable Aquaculture (II)                                       | Lecture + discussion |            |
| 7    | 12 Oct | Habitat Destruction                                                | Lecture              |            |
|      | 14 Oct | Marine Protected Areas (MPAs) (I)                                  | Lecture +            |            |
| 8    | 19 Oct | No class (holiday)                                                 | Lecture              |            |
|      | 21 Oct | Marine Protected Areas (MPAs) (II)                                 | Lecture + discussion |            |
| 9    | 26 Oct | International Ocean Governance, Law, and Policy (I)                | Assessment + Lecture | Quiz 3     |
|      | 28 Oct | International Ocean Governance, Law, and Policy (II)               | Lecture              |            |
| 10   | 2 Nov  | The Blue Economy (I)                                               | Lecture              |            |
|      | 4 Nov  | The Blue Economy (II)                                              | Lecture + discussion |            |
|      | 7 Nov  | Field day (Fish farm)                                              | Field                |            |
| 11   | 9 Nov  | No class                                                           |                      |            |
|      | 11 Nov | No class                                                           |                      |            |
| 12   | 16 Nov | Innovation, Technology, and Citizen Science: Accelerating SDG 14.a | Assessment + Lecture | Quiz 4     |
|      | 18 Nov | Presentations (Groups 1-4)                                         | Presentations        |            |
| 13   | 25 Nov | Presentations (Groups 5-8)                                         | Presentations        |            |
|      | 30 Nov | Presentations (Groups 9-12)                                        | Presentations        |            |

| Week | Date  | Lecture Topic | Format | Assessment             |
|------|-------|---------------|--------|------------------------|
|      | 4 Dec |               |        | Written Assignment Due |

### Course Attendance Requirements

- **Attendance Requirements:** Regular attendance is expected. Students missing more than 20% of classes without valid reasons will receive a grade penalty.
- **Late Arrival Policy:** Students arriving more than 15 minutes late may be marked absent.
- **Medical Leave:** Must be supported by documentation and communicated to the instructor within 24 hours.
- **Submission Policy:** All assignments must be submitted by the specified deadlines. Late submissions will result in grade penalties unless prior arrangements are made.

### Course Policies

#### Academic Integrity

All work must be original. Proper citation is required for all sources. Plagiarism will not be tolerated and will result in course failure.

#### Artificial Intelligence (AI) Usage Policy

The use of AI tools (such as ChatGPT, Claude, Grammarly AI, or other generative AI platforms) is permitted in this course under the following conditions:

##### Permitted Uses:

- Grammar and writing assistance for improving clarity and language quality
- Brainstorming and initial idea generation for projects and assignments
- Help with understanding complex concepts when used as a supplementary learning tool

##### Required Acknowledgment:

- Students must clearly acknowledge any AI assistance used in their work
- Include a statement at the end of submitted assignments specifying: "AI tools were used in the preparation of this work for [specific purpose, e.g., grammar checking, initial brainstorming, etc.]"
- Specify which AI tool(s) were used and how they were employed

##### Student Responsibility:

- Students are fully responsible for the accuracy, validity, and integrity of all content in their submissions
- AI-generated content must be critically evaluated, fact-checked, and properly integrated with original analysis

- Students must ensure their work demonstrates genuine understanding and critical thinking beyond AI contributions
- Direct copying of AI-generated text without proper integration and acknowledgment is considered academic misconduct

**Prohibited Uses:**

- Having AI write entire assignments or substantial portions without significant original contribution
- Submitting AI-generated work without acknowledgment
- Using AI to generate false citations or references

**Assessment Considerations:**

- Assignments will be designed to emphasize critical thinking, original analysis, and personal reflection that cannot be easily replicated by AI
- In-class discussions and presentations will provide opportunities to demonstrate authentic understanding
- Students may be asked to explain their work and thought processes during office hours or in class

**Accommodation**

Students with special needs should contact the instructor early in the semester to arrange appropriate accommodations.