

OCES2130 Marine Biology (Fall 2025-2026)

Time/ Place: Monday and Wednesday 10:30 – 11:50 in LT-F

Course Instructors:

Course Instructors: Dr. Longjun Wu (longjunwu@ust.hk, Tel: 2358-8251, Room: CYT2013b)

Course Description:

Survey of the major marine living organisms; their habitat and community structures; trophic interactions and the marine ecosystem.

Intended Learning Outcome:

On successful completion of this course, students are expected to be able to:

1. Describe in detail of the organisms that live in the ocean.
2. Evaluate the extent to which biological adaptation, evolution and ecological processes structure marine communities.
3. Critically examine how marine biological research projects are developed, implemented and interpreted.
4. Evaluate the extent to which a variety of environmental settings may influence marine life, taking particular account of the interaction between marine organisms and the environment.
5. Identify potential resources from the seas and assess their use for and by humans.

Course Format:

There will be **Two 80-minute sessions** per week, which will include lectures and audiovisual presentations.

Course Assessment (based on the following course activities and examinations)

- In class quiz: **10%**, Based on lecture content
- Midterm Examination: **40%**, Based on lecture content
- Final Examination: **50%**, Based on lecture content

Both will be in the format of MC and essay questions.

Office hour: by appointment

Textbook:

Peter Castro & Michael E. Hubber. Marine Biology, The 11th Edition, McGraw-Hill Education (Asia)

Major Reference:

James W. Nybakken. Marine Biology: an ecological approach. Harper Collins College publishers, New York. 6th Edition.

Jan A. Pechenik. Biology of Invertebrates. 4th Edition, McGraw-Hill Book Company,

Tentative Lecture Outline and Schedule (subject to changes):

#	Date	Lecture Topic	Instructor
Part 1: Introduction to Marine Environment			
1)	1 Sep	Introduction to Marine Biology	Wu
2)	3 Sep	Marine Environment	Wu
Part 2: The Organisms of the Sea			
3)	8 Sep	Tree of life and Multicellularity	
4)	10 Sep	The simplest animals	Wu

5)	15 Sep	Cnidaria and Ctenophora (coral, jellyfish, and comb jellies)	
6)	17 Sep	Mollusca I	Wu
7)	22 Sep	Mollusca II	Wu
8)	24 Sep	Mollusca III	Wu
9)	29 Sep	Marine worms and beyond: Lophotrochozoa	
10)	1 Oct	Holiday	Wu
11)	6 Oct	The largest phylum: Arthropoda I	
12)	8 Oct	The largest phylum: Arthropoda II	Wu
13)	13 Oct	Almost vertebrates: Echinodermata, Hemichordata, Cephalochordata, and Urochordata	Wu
14)	15 Oct	Midterm exam (tentative date)	Wu
15)	20 Oct	Marine fish	Wu
16)	22 Oct	Marine mammals and reptiles	Wu

17)	27 Oct	Marine birds	Wu
18)	29 Oct	Holiday	Wu
19)	3 Nov	Marine microbes	Wu
20)	5 Nov	Marine protozoa	Wu
21)	10 Nov	Marine virus	Wu
22)	12 Nov	Multicellular producers	Wu

Part 3: Structure and Function of Marine Ecosystem

23)	17 Nov	Plankton	Wu
24)	19 Nov	The pelagic food web and nutrient cycling	Wu
25)	24 Nov	Coral reef	Wu
26)	26 Nov	Deep sea ecosystem	Wu

Mapping of Course ILOs to Assessment Task

In class quiz:

ILO1, ILO2, ILO3, ILO4, ILO5

This task assesses students' foundational knowledge and comprehension of core marine biology concepts. It will test their ability to describe marine organisms (ILO 1) and identify key marine resources (ILO 5). It will also gauge their initial understanding of how ecological and evolutionary processes structure communities (ILO 2), the basic principles of marine research (ILO 3), and the interaction between organisms and their environment (ILO 4).

Midterm exam:

ILO1, ILO2, ILO3, ILO4, ILO5

This task assesses students' ability to integrate and apply concepts from the first half of the course. It requires the evaluation of how adaptation, evolution, and ecological processes shape marine communities (ILO 2) and how environmental settings influence marine life (ILO 4). The exam will also test students' detailed knowledge of marine organisms (ILO 1) and their ability to critically examine how research is developed (ILO 3) and assess the use of marine resources by humans (ILO 5).

Final exam:

ILO1, ILO2, ILO3, ILO4, ILO5

This comprehensive examination assesses students' holistic and critical understanding of the entire course. It requires a synthesis of knowledge to evaluate the complex interplay between marine organisms, their environment, and the evolutionary and ecological processes at work (ILO 1, ILO 2, ILO 4). It places strong emphasis on the ability to critically examine the development, implementation, and interpretation of marine research projects (ILO 3) and provide a nuanced assessment of the use, management, and conservation of marine resources for humanity (ILO 5).

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve

Communication and Feedback

Assessment marks for the Midterm and Final Examinations will be released via Canvas within two weeks of submission.

Course AI Policy

The use of Generative AI is not applicable for this course as both the Midterm and Final Examinations are closed book.

Final Grade Descriptors

A: Excellent Performance

Students who achieve a Grade A demonstrate an exceptional and integrated understanding of marine biology. They can describe a wide diversity of marine organisms in detail and critically evaluate how biological adaptation, evolution, and ecological processes intricately shape marine communities. They exhibit a sophisticated ability to critically examine how marine biological research projects are developed, implemented, and interpreted. These students can expertly evaluate the complex interactions between marine life and diverse environmental settings, and provide nuanced assessments of the use, management, and conservation of marine resources by humans. Their work consistently displays superior critical thinking and analytical skills, integrating concepts from across the course.

B: Good Performance

Students who achieve a Grade B display a strong grasp of the core concepts in marine biology. They can accurately describe the major groups of marine organisms and effectively evaluate the role of adaptation and ecological processes in structuring communities. They show a good understanding of how marine research is performed and interpreted. Students can evaluate the influence of environmental settings on marine life and assess the use of marine resources by humans, but may not fully appreciate the more complex interdependencies within marine ecosystems or the full scope of human impacts.

C: Satisfactory Performance

Students who achieve a Grade C show a satisfactory understanding of the fundamental concepts of marine biology. They are able to describe major marine organisms and have an adequate knowledge of how ecological processes, adaptation, and evolution influence marine life. They demonstrate a basic awareness of how marine research is conducted and can identify key marine resources and their uses. However, their ability to evaluate and critically examine complex interactions, research, and human impacts may be limited, and they may struggle to connect different components of the marine ecosystem.

D: Marginal Pass

Students who achieve a Grade D exhibit a minimal knowledge of marine biology concepts. They can describe some marine organisms but have only a basic comprehension of key processes like adaptation, trophic interactions, and community structure. They show limited understanding of marine biological research and the assessment of marine resources. Their analyses are often simplistic, and their grasp of the course material reflects a superficial understanding that barely meets the minimum required standards.

F: Fail

Students who achieve a Grade F demonstrate a poor understanding of basic marine biology concepts. They are unable to adequately describe major marine organisms or explain fundamental concepts such as adaptation, ecological processes, or trophic interactions. They show little to no comprehension of how marine research is conducted or the role of the ocean as a resource for humans. Their performance indicates a failure to engage with the course material and does not meet the minimum required standards.

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity – HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.