

OCES3130 Marine Biology

Intended Learning Outcome:

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

- Describe in detail a diverse range of marine habitats and the organisms that inhabit them.
- 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.
- Evaluate the extent to which biological adaptation and ecological processes structure marine communities.
- Identify potential resources from the seas and assess their use for and by humans.
- Critically examine how marine ecological research projects are developed, implemented and interpreted.

Course Format:

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

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

Examinations

- Group project (5 students/group): **30%**
 - Written Commentary: **15%** (see instruction below)
 - Oral presentation: **15%**
 - Each group will submit one **5**-mins video to present their project
- Final Examination: **65%**
- Class attendance: **5%** (**unannounced check on class attendance**)

Textbook:

Peter Castro & Michael E. Hubber (2013) Marine Biology, The 9th Edition, McGraw-Hill Education (Asia)

Major Reference:

James W. Nybakken (2005). Marine Biology: an ecological approach. Harper Collins College publishers, New York. 6th Edition.

Jan A. Pechenik (2010). Biology of Invertebrates. 4th Edition, McGraw-Hill Book Company,

Group project:

- ✓ Each group can come up with its one project topic as long as it is related to marine biology (such as conservation of horseshoe crabs, mangroves, eel grass bed...; or strategies for promoting marine biology educations, novel technology development for marine biology research, commentary on government's policy or projects impacting marine biodiversity...);
- ✓ **Video of oral presentation** of group project must be uploaded onto the course website.
- ✓ **Written Commentary** shall be within **800 words** (any kind of plagiarism will be prohibited – if happens, zero mark will be given);
- ✓ **Written Commentary** must be submitted, the delayed submission will receive penalty (**at 1% per day**).

Tentative Lecture Outline and Schedule:

Lecture Topic

Part 1: Introduction to Marine Environment

- 1) History of Marine Biology Research
- 2) Introduction to Marine Environment
- 3) Chemosynthesis-based marine ecosystems

Part 2: Introduction of Marine organisms

- 4) Microbial diversity, function and processes
- 5) Primary Producers & Primary Productivity in Ocean
- 6) Harmful Algal Blooms and Possible Mechanisms
- 7) Interaction among microscopic organisms – microbial loops
- 8) Zooplankton and planktonic food webs
- 9) Biogeochemical cycles in marine ecosystems
- 10) Survey of major marine taxa
- 11) Sponges and Corals
- 12) Coral Reef Ecology
- 13) Marine Molluscs and shell formation
- 14) Arthropods & Echinoderms
- 15) Oyster and Shrimp farming
- 16) Marine Fishes & Fisheries in Hong Kong
- 17) Marine Mammals and Mammal Conservation
- 18) Indicator species of Marine Pollution
- 19) Reproductive ecology & larval biology

Part III

Typical Marine Ecosystems

- 20) Between the tides
- 21) Rocky shores

- 22) Sandy Beach & Mudflat
- 23) Estuary
- 24) Symbiosis and holobionts

- 25) Marine Bioactive Compound Research at HKUST

- 26) **Study break**