

**Course : OCES2001 - Survey of Ocean Science**

**COURSE DESCRIPTION:**

The ocean defines the features of our planet. The ultimate goal of the course is to promote and enhance ocean literacy. Ocean literacy refers to the awareness and understanding of fundamental concepts of the history, functioning, and utilization of the ocean. Students should become ocean literate individuals at the end of this class meaning that s/he understands the ocean's influence on you and your influence on the ocean. Ocean science is a highly interdisciplinary subject. We will cover a wide range of topics such as ocean physics, marine chemistry and geochemistry, geology and geophysics, biological oceanography, ocean resource, and environmental concern. At the end of the course, students will

- 1) Gain understanding of the importance of ocean processes to the functioning of our planet;
- 2) Acquire basic skills needed to describe, quantify, and understand ocean processes ;
- 3) Be able to communicate about the ocean and the science associated in meaningful way;
- 4) Better appreciate the interdisciplinary nature of ocean science; and
- 5) Experience the excitement of latest oceanographic studies.

**SUGGESTED TEXTBOOK AND OTHER REFERENCES:**

The compulsory textbook is Oceanography: An Invitation to Marine Science by Tom Garrison (8<sup>th</sup> edition).

<https://libdiscover.ust.hk/bib/991012856168803412>

**ASSESSMENTS:**

Assessment Task	% of final grade
Homework assignments	40%
Final exam	50-55%
Course participation	5-10%

Homework assignments (tentatively **4** in total) will cover the materials and discussion in respective section. Final exam will including materials of the whole course, and the format is yet to be decided. Course participation will be measured by random in-class quiz.

## Tentative syllabus

Week	Topic
1	Introducing Ocean Science
	Ocean Exploration
2	Earth history, Origin of Life
	Earth structure and Plate tectonic
3	Ocean basin and sea floor
	Ocean sediments ( <b>Assignment 1</b> )
4	Wind, pressure, and Earth's rotation
	Ocean gyres and boundary currents
5	Buoyancy fluxes and seawater properties
	Global overturning circulation
6	Gravity waves and ocean mixing
	Mesoscale eddies and climate prediction ( <b>Assignment 2</b> )
7	<b>Holiday</b>
	Ocean chemistry I: Chemical properties of seawater
8	Ocean chemistry II: Nutrient cycles and energy flow ( <b>Assignment 3</b> )
	Phytoplankton and primary production
9	Zooplankton and secondary production
	Microbial food web
10	Fisheries oceanography
	biological pump and biogeochemical cycling
11	Benthic ecology ( <b>Assignment 4</b> )
	Guest lecture (TBA)
12	Deep-sea ecology
	Marine resources and development
13	Ocean health and human impacts
	Climate change and the ocean
	Final exam