

OCES3201 Biological Oceanography

Course Instructors: Prof Hongbin Liu (liuhb@ust.hk, Tel: 2358-7341, Room: 5002 in CYT)

COURSE DESCRIPTION:

Biological oceanography is the study of life in the oceans—the distribution, abundance, and production of marine species along with the processes that govern species' spread and development. Ocean science is a highly interdisciplinary subject. We will cover a wide range of topics of biological oceanography, including key systems and processes, as well as the effects of climate change due anthropogenic and natural courses. At the end of the course, students will

- 1) Understand of the importance of ocean to our planet;
- 2) Be able to describe a diverse range of marine habitats and the organisms that inhabit them;
- 3) Evaluate the extent to which biological adaptation and ecological processes structure marine communities;
- 4) Acquire basic skills needed to describe, quantify, and understand the biological processes in ocean;
- 5) Be able to communicate about the biological processes in the ocean and the science associated in meaningful way;
- 6) Better appreciate the interdisciplinary nature of ocean science; and
- 7) Experience the excitement of latest biological and oceanographic studies.

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)

- Reading and term paper: **45%**
- Final Examination: **50%**
- Class attendance: **5%** (unannounced check on class attendance)

OCES3201 Tentative schedule

Week	Topic
1	Introduction to Physical Oceanography
	Introduction to water chemistry
2	Marine primary production (methodology)

	Marine primary production (tropical waters)
3	Marine primary production (high latitude waters)
	Zooplankton ecology I
4	Zooplankton ecology II
	Microbial food web
5	Reading paper (first assignment)
	HNLC regions and Iron hypothesis
6	Nitrogen fixation and Biological pump
	Bacteria and virus
7	Nekton
	Reading paper (second assignment)
8	BBC documentary video
	Simple ecosystem model (Dr. Liuqian Yu, HKUST-GZ)
9	Benthic ecology
	Coastal and estuarine ecology
10	Deep water communities
	Reading paper (third assignment)
11	Holiday
	Holiday
12	Fishery oceanography
	Global warming and long term variability
13	Review
	Holiday
	Final exam

SUGGESTED REFERENCES:

Most textbooks or teaching materials of the subject target to postgraduate level, so I will prepare my own teaching materials. However, the following textbooks are good references:

Biological Oceanography: An Introduction. 2nd Edition (Carol Lalli, Timothy Parsons) [Biological Oceanography: An Introduction - 2nd Edition \(elsevier.com\)](#)

Biological Oceanography, 2nd Edition (Charles B. Miller, Patricia A. Wheeler) [Biological Oceanography, 2nd Edition | Wiley](#)

Oceanography: An Invitation to Marine Science 10th Edition by Tom Garrison [Oceanography: An Invitation to Marine Science \(MindTap Course List\): Garrison, Tom S., Ellis, Robert: 9780357452752: Amazon.com: Books](#)