OCES 1001 – The Earth as a Blue Planet (3-credits)

Spring 2024-25

Mode of Delivery – Blended Learning

This course will be delivered in the Blended Learning mode where students will view the lectures online and come to the face-to-face class to apply what they have learned online. The online lectures allow you to learn at your own pace, place and space and the face-to-face meetings allow you to discuss the concepts your learned with your peers. This requires you to work independently at home and come prepared to work collaboratively in-class.

Course website: https://canvas.ust.hk/

In-Class Sessions – Timetable & Venue

12:00 nn to 1:20 pm in Room CYT-G010 on Wednesdays

Course Description

The ocean is the largest life supporting habitat on Earth, and yet, it is less explored than the surface of the moon. This survey course introduces students to the fundamental, cross-disciplinary knowledge of our ocean, ranging from the physics of ocean circulation and climate modulation to the chemistry and biology of the living systems within.

Intended Learning Outcomes (ILOs)

By the end of the course, students will be able to:

1. Describe different aspects of ocean science and identify their areas of interest from the ocean science curriculum (knowledge/ content related);
2. Recall the basics of ocean processes and their importance to the functioning of our planet (knowledge/ content related);
3. Describe the hydrology of Hong Kong and how it relates to the global ocean (knowledge/ content related, academic skills/ competencies);
4. Evaluate critically the physical, chemical and biological impacts of human activities on the ocean systems (knowledge/ content related, academic skills/ competencies)
5. Communicate relevant knowledge in oral and written formats (communication, team working).

Course Instructors & TAs

Course Coordinators: Prof. Cindy Lam (envscindy@ust.hk) and Prof. Cynthia Yau (cynthiastyau@ust.hk)

Guest Speakers:
- Prof. Julian MAK (jclmak@ust.hk)
- Prof. Charmaine YUNG (ccmyung@ust.hk)
- Prof. Jiying LI (jiyingli@ust.hk)
- Prof. Qiong ZHANG (qiongz@ust.hk)
- Prof. Longjun WU (longjunwu@ust.hk)
- Prof. Masayuki USHIO (ushio@ust.hk)
- Prof. Cynthia YAU (cynthiastyau@ust.hk)
- Prof. Cindy LAM (envscindy@ust.hk)

TAs: TBC

Course Assessment Scheme (Letter Grades)

Assessment	Percentage	Content
• **8 Case Studies (in-class)**	40%	Complete case study worksheets through group discussions within class time
• **8 Online Quizzes**	8%	Online quizzes via Canvas
• **1 Peer Evaluation**	8%	Intra-group peer evaluation for group assignments • Case Studies The Peer Rating aims to provide a chance for students to evaluate each other's contribution in the group work. Up to 7% from this category will be deducted for free-riders. Peer rating submission due Mon 12th May.
• **1 Final Examination**	44%	Based on online lectures (videos & Powerpoints)

8 Case Studies (Total: 40%; 5% per case study)

Format	Details
8 Case Studies • Case Studies (1), (2a), (2b), (3a), (3b), (4), (5a) and (5b) Reading materials will be provided • Group discussion • Worksheet (group work)	8 worksheets • To be submitted at the end of the corresponding module • Each group should submit <u>one</u> worksheet • <u>Absentees</u> without prior approval will be given <u>zero</u> mark for the corresponding case study worksheet • Students who are <u>late for >10 min</u> will be subject to a <u>deduction of at least half</u> of the case study group mark

8 Online Quizzes

There is one online quiz (10 MC questions) for each corresponding module – Quizzes (1), (2a), (2b), (3a), (3b), (4), (5a) and (5b). After going through the lecture videos and Powerpoint of each module, students are encouraged to complete the quiz to check their understanding. Questions (if any) can be raised through Canvas's Discussion Room or during the face-to-face sessions.

Summary Table

Assessment Task	Contribution to Overall Course Grade (%)	Due Date
Case Study 1	5%	05/03/2025
Case Study 2a	5%	12/03/2025
Case Study 2b	5%	19/03/2025
Case Study 3a	5%	26/03/2025
Case Study 3b	5%	09/04/2025
Case Study 4	5%	16/04/2025
Case Study 5a	5%	23/04/2025
Case Study 5b	5%	30/04/2025
Online Quiz 1	1%	03/03/2025
Online Quiz 2a	1%	10/03/2025
Online Quiz 2b	1%	17/03/2025
Online Quiz 3a	1%	24/03/2025
Online Quiz 3b	1%	07/04/2025
Online Quiz 4	1%	14/04/2025

Online Quiz 5a	1%	21/04/2025	
Online Quiz 5b	1%	28/04/2025	
Peer Evaluation	8%	12/05/2025	
Final Exam	44%	To be arranged by ARO	

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Case Studies	ILO 1, ILO 2, ILO 3, ILO 4, ILO 5	This task assesses students' ability to understand and apply ocean processes and functions (ILO 1, ILO 2), describe hydrology of Hong Kong and connect to global ocean (ILO 3), critically evaluate and analyze the impacts of human activities on the ocean system (ILO 4), and communicate relevant knowledge effectively in oral and written formats (ILO 5)
Online Quizzes	ILO 1, ILO 2, ILO 3	This task assesses students' foundation understanding of ocean processes and functioning of our planet (ILO 1, ILO 2), and apply the hydrology of Hong Kong to the global ocean (ILO 3)
Peer Evaluation	ILO 4, ILO 5	This task assesses students' ability to foster critical evaluation of group members' contributions to the project, aligning with ILO 4, and ILO 5, and promoting the development of evaluative and communicative skills
Final Exam	ILO 1, ILO 2, ILO 3	This task assesses students' ability to explain ocean processes and functioning of our planet (ILO 1, ILO 2), and articulate clearly the connection between the hydrology of Hong Kong and the global ocean systems (ILO 3)

Final Grade Descriptors

Grades	Short Description	Elaboration on Subject Grading Description
A	Excellent Performance	Students who achieve a Grade A demonstrate an exceptional understanding of ocean science concepts, including the physical, chemical, and biological processes, and articulates clearly the connection between the hydrology of Hong Kong and global ocean systems. Their critical thinking is evident in their insightful and innovative analysis of human impacts on ocean systems, consistently producing accurate and comprehensive case study worksheets. Communication is a key strength, with the student effectively conveying knowledge with clarity and precision in both oral and written formats, and making valuable contributions during group discussions and peer evaluations. Their performance in the final examination showcases a deep and thorough comprehension of the course material.
B	Good Performance	Students who achieve a Grade B display a strong grasp of ocean science concepts, with a good understanding of the physical, chemical, and biological processes, and recognizes the significance of Hong Kong's hydrology in the context of global ocean systems. Their ability to critically evaluate human impacts on ocean systems is solid, as reflected in well-reasoned and accurate case study worksheets. They communicate effectively in oral and written formats, with a clear and organized presentation, and participate actively in group discussions and peer evaluations, providing constructive feedback. Their performance in the final examination indicates a strong understanding of the course content.
C	Satisfactory Performance	Students who achieve a Grade C show a satisfactory understanding of ocean science concepts, with an adequate grasp of the physical, chemical, and biological processes, and

		understands the basic relevance of Hong Kong's hydrology to global ocean systems. They are capable of evaluating human impacts on ocean systems with reasonable analysis, though the case study worksheets may only meet the minimum accuracy standards. Communication is sufficient, although some areas may lack clarity or depth, and contributions to group discussions and peer evaluations are generally effective. Their final examination performance demonstrates a satisfactory, though not outstanding, understanding of the course material.
D	Marginal Pass	Students who achieve a Grade D exhibit a minimal understanding of ocean science concepts, with only a basic comprehension of the physical, chemical, and biological processes, and shows limited understanding of the connection between Hong Kong's hydrology and global ocean systems. Their ability to critically evaluate human impacts on ocean systems is weak, often leading to superficial or flawed analysis, and the case study worksheets may contain significant inaccuracies or be incomplete. Communication is challenging for this student, with a lack of clarity and organization in both oral and written formats, and their contributions to group discussions and peer evaluations are minimal. The final examination reflects a marginal grasp of the course material, barely meeting the minimum required standards.
F	Fail	Students who achieve a Grade F do not demonstrate an understanding of ocean science concepts, with little to no comprehension of the physical, chemical, and biological processes, and is unable to articulate the significance of Hong Kong's hydrology in the context of global ocean systems. They are unable to critically evaluate human impacts on ocean systems, with analysis that is fundamentally flawed or entirely missing, and their case study worksheets are either incomplete or incorrect. Communication is highly ineffective, with significant issues in clarity, organization, and coherence in both oral and written formats, and they fail to participate meaningfully in group discussions and peer evaluations. Their performance in the final examination indicates a lack of understanding of the course material, failing to meet the minimum required standards.

Communication and Feedback

Assessment marks for individual case studies will be released via Canvas within two weeks of submission.

Course AI Policy

The use of Generative AI may be used for this course with the understanding that although it may help in the writing of English, the case studies are very topic-specific and GenAI may not be useful. Any use of GenAI in the case studies, however, must be declared.

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.

OCES1001 Course Schedule (Spring 2024-25)   **Wed 12:00-1:20 pm, CYT-G010**

Week (Date, Wed)	Instructor	TAs	Face-to-Face Session	Online Input & Quiz Due Date
Week 1 (05 Feb)	Yau	TBC	**Visit to OCES Teaching Lab In CYT-UG002**	**Modules (1) & (2) available - lecture videos, PPTs**
Week 2 (12 Feb)	Yau		**Course Introduction**	
Week 3 (19 Feb)	Yau		**Visit to Ocean Research Facility (OCRF), HKUST**	
Week 4 (26 Feb)	Yau		**[Practice] Case Study Group Discussion**	
Week 5 (05 Mar)	Mak		**Module (1): Physical Characteristics of the Ocean** *(Mak)* • Q&A • Case Study (1) – group discussion • Worksheet (1) – group work	**Deadline of Quiz (1): 03 Mar**
Week 6 (12 Mar)	Li		**Module (2a): Chemical Characteristics of the Ocean** *(Li)* • Q&A • Case Study (2a) – group discussion • Worksheet (2a) – group work	**Deadline of Quiz (2a): 10 Mar**
Week 7 (19 Mar)	Zhang		**Module (2b): Nutrient Limitation in the Ocean** *(Zhang)* • Q&A • Case Study (2b) – group discussion • Worksheet (2b) – group work	**Modules 3 available -lecture videos, PPTs** **Deadline of Quiz (2b): 17 Mar**
Week 8 (26 Mar)	Wu		**Module (3a): Marine Biodiversity and Evolution** *(Wu)* • Q&A • Case Study (3a) – group discussion • Worksheet (3a) – group work	**Deadline of Quiz (3a): 24 Mar**
Week 9 (02 Apr)			*Midterm Break – No Class*	
Week 9 (09 Apr)	Ushio		**Module (3b): Fish Population Biology** *(Ushio)* • Q&A • Case Study (3b) – group discussion Worksheet (3b) – group work	**Modules 4 and 5 available – lecture videos and PPTs** **Deadline of Quiz (3b): 07 Apr**
Week 10 (16 Apr)	Yau		**Module (4): The Deep Sea** *(Yau)* • Q&A • Case Study (4) – group discussion • Worksheet (4) – group work	**Deadline of Quiz (4): 14 Apr**
Week 11 (23 Apr)	Lam		**Module (5a): Ocean Plastics and Microplastics** *(Lam)* • Q&A • Case Study (5a) – group discussion • Worksheet (5a) – group work	**Deadline of Quiz (5a): 21 Apr**
Week 12 (30 Apr)	Yung		**Module (5b): Human and the Sea** *(Yung)* • Q&A • Case Study (5b) – group discussion Worksheet (5b) – group work	**Deadline of Quiz (5b): 28 Apr**
Week 13 (07 May)	Yau		**Course Review**	