OCES 1030 - Environmental Science (Fall 2025-26)

Class Schedule: Monday & Wednesday, 4:30 - 5:50 pm
Venue: LT-A

Course Description

The course introduces students without a science background to the general concepts of environment, natural resources, and sustainable development. Topics include pressing global, regional and local environmental issues; renewable and non-renewable energy; life-supporting systems of our planet and its biodiversity; atmosphere, air pollution and global climate change; water resources and pollution; ocean plastics and solid waste management; environmental health and toxicology. Throughout the course, students will gain a sufficient background and a better understanding of the root causes of key environmental issues. They will also become more aware of their role, as individuals, in environmental protection and sustainable development.

Intended Learning Outcomes (ILOs)

By the end of this course, the students are expected to be able to:

1) Describe the environment as an integrated system involving air, land, water and human activities;
2) Apply basic concepts of environmental principles to real-life decision making and problem solving;
3) Identify environmental hazards and recommend technological innovations tackling environmental problems;
4) Explain the importance of harmony among humans, the natural environment, and a sustainable-living society;
5) Develop a board interest and connect the knowledge to other scientific disciplines, technology, inventions and society;
6) Evaluate the individual behaviors of human actors within their communities and describe how these behaviors may contribute to the achievement of a sustainable environment.

Course Format

Two lectures per week.

Course Coordinators and Instructors

Dr Cindy LAM (envscindy@ust.hk)
Dr Cynthia YAU (cynthiastyau@ust.hk)

Course Assessment

- Midterm Examination (45 %)
- Final Examination (45%)
- 4 X In-class Quizzes through iPRS – refer to due dates in the summary table (10%)

Summary Table

Assessment Task	Contribution to Overall Course Grade (%)	Due Date
Quiz 1	2.5 %	16/09/2024
Quiz 2	2.5 %	07/10/2024
Quiz 3	2.5 %	04/11/2024
Quiz 4	2.5 %	25/11/2024
Midterm	45 %	16/10/2024
Final Exam	45 %	To be arranged by ARO

Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Major Reference

Cunningham, W.P. and Cunningham, M.A. (2023) *Principles of Environmental Science: Inquiry and Application.* 10th Edition. McGraw-Hill Companies, Inc.

E-book version of the textbook is available at HKUST Library Reserve.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Quizzes	ILO 1, ILO 2, ILO 3	This task assesses students' ability to catch up with the lecture materials that cover basic concepts of environmental principles (ILO 1, ILO 2) and identify hazards and recommend technological innovations tackling environmental problems (ILO 3)
Midterm	ILO 1, ILO 2, ILO 3, ILO 4, ILO 5, ILO 6	This task assesses students' ability to explain and apply environmental principles to real-life decision (ILO 1, ILO 2), identify hazards and make recommendations solving environmental problems (ILO 3), evaluate the importance of sustainability (ILO 4, ILO 5), and critically analyze their role in society (ILO 6)
Final Exam	ILO 1, ILO 2, ILO 3, ILO 4, ILO 5, ILO 6	This task assesses students' ability to explain and apply environmental principles to real-life decision (ILO 1, ILO 2), identify hazards and make recommendations solving environmental problems (ILO 3), evaluate the importance of sustainability (ILO 4, ILO 5), and critically analyze their role in society (ILO 6)

Final Grade Descriptors:

Grades	Short Description	Elaboration on Subject Grading Description
A	Excellent Performance	Students demonstrate a deep and thorough understanding of environmental principles, including the ability to integrate complex concepts across various topics. They consistently apply the principles to real-life decision-making scenarios, showcasing a high level of critical thinking and problem-solving skills. These students can evaluate and recommend innovative technological solutions for environmental issues and show a profound awareness of sustainability in both personal and community contexts.
B	Good Performance	Students exhibit a strong understanding of the core environmental science concepts and are able to apply them effectively in various contexts. They still demonstrate competent analytical skills and the ability to make sound recommendations for addressing environmental challenges. They are generally consistent in connecting the course material to broader scientific and societal issues but may occasionally miss deeper insights.
C	Satisfactory Performance	Student has a satisfactory grasp of the fundamental concepts in environmental science. They can apply these principles to standard situations but may struggle with more complex or nuanced applications. Their problem-solving skills are adequate, though they may rely on basic or conventional solutions without exploring innovative approaches. These students show a reasonable awareness of environmental issues but may not fully appreciate the broader implications of sustainability or the interconnectedness of human and environmental systems.
D	Marginal Pass	Students demonstrate a minimal understanding of environmental principles. They may grasp basic concepts but have difficulty applying them effectively in real-world scenarios. Their problem-solving approaches are often simplistic and may lack depth or relevance. These students may show limited awareness of sustainability and its importance, and their ability to critically analyze environmental issues is weak. Their performance suggests a need for significant improvement in both knowledge and application.
F	Fail	Student has not met the minimum requirements for the course. They show a lack of understanding of the core concepts in environmental science and are unable to apply these concepts to even basic problems. Their performance demonstrates a failure to engage with the course material, and they are unable to provide coherent analyses or solutions to environmental challenges. These students may also lack awareness of the role of sustainability and fail to connect their learning to broader societal contexts.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission.

Course AI Policy

The use of Generative AI is not applicable to this course as all quizzes, midterm and final examination are closed book examinations.

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.

OCES 1030 Environmental Science Fall 2024-25 - Course Schedule (TENTATIVE)

		Lecture Topic	Instructor
Part 1: Introduction (Chapter 2); Biomes & Biodiversity (Chapter 5)			
1)	Sep 2 (Tue)	Course Introduction	Yau & Lam
2)	Sep 4 (Thu)	Matter and Elements of Life	Yau
3)	Sep 9 (Tue)	Earth's Major Biomes (I)	Yau
4)	Sep 11 (Thu)	Earth's Major Biomes (II)	Yau
5)	Sep 16 (Tue)	Biodiversity & Its Significance (I)*	Yau
6)	Sep 18 (Thu)	Biodiversity & Its Significance (II)	
Part 2: Human Populations & Sustainability (Chapter 4)			
7)	Sep 23 (Tue)	Human Populations & Sustainability (I)	Yau
8)	Sep 25 (Thu)	Human Populations & Sustainability (II)	Yau
Part 3: Food & Nutrition (Chapter 7)			
9)	Sep 30 (Tue)	Food Security & Nutrition	Yau
Part 4: Matter & Energy (Chapter 13)			
10)	Oct 2 (Thu)	Energy Resources (I)*	Yau
11)	Oct 7 (Tue)	*No Class – Public Holiday*	
12)	Oct 9 (Thu)	Energy Resources (II)	Yau
Part 5: Environmental Health and Toxicology (Chapter 8)			
13)	Oct 14 (Tue)	Environmental Health	Lam
14)	**Oct 16 (Thu)**	**Midterm Examination**	Yau & Lam
15)	Oct 21 (Tue)	Environmental Toxicology	Lam
Part 6: Atmosphere, Climate and Pollution (Chapter 9)			
16)	Oct 23 (Thu)	Atmosphere: Air Circulation and Climate	Lam
17)	Oct 28 (Tue)	Atmosphere: Greenhouse Gases and Global Climate Change	Lam
18)	Oct 30 (Thu)	Air Pollution: Acid Rain, Ozone, Ocean Acidification	Lam
Part 7: Water Resources and Pollution (Chapter 10)			
19)	Nov 4 (Tue)	Water Supply, Usage and Cycle*	Lam
20)	Nov 6 (Thu)	Water Conservation and Technology	Lam
21)	Nov 11 (Tue)	Aquatic Hypoxia and Eutrophication	Lam
22)	Nov 13 (Thu)	Water Pollution and Remediation	Lam
Part 8: Microplastics			
23)	Nov 18 (Tue)	Microplastics: Global and Local Impacts	Lam
24)	Nov 20 (Thu)	Microplastics: Detection and Removal	Lam
Part 9: Solid and Hazardous Wastes (Chapter 13)			
25)	Nov 25 (Tue)	Solid Wastes and Remediation (I)*	Lam
26)	Nov 27 (Thu)	Solid Wastes and Remediation (II)	Lam

* Scheduled quiz