

The Hong Kong University of Science and Technology

UG Course Syllabus

Environment and Society: Sustainable Development Goals and Carbon Neutrality

CIVL 1140

No. of Credits: 3

[Any pre-/co-requisites]: No

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Office Hours: Monday & Wednesday; 12:00-12:30 pm after lectures

Course Description

This course provides an interdisciplinary introduction to major contemporary environmental issues, exploring their scientific foundations and societal dimensions across local scales to global frameworks such as the Sustainable Development Goals (SDGs) and Carbon Neutrality. Key themes include pollution, resource management, ecosystem health, and the pursuit of sustainable development.

The course is structured to move from comprehension to application. Through a combination of lectures, case-study discussions, site visits, and a core group project, you will learn to analyze environmental problems and evaluate solutions. You will integrate principles from environmental science, engineering, technology, and social science to address real-world challenges affecting water, air, and land. The objective is to equip you with the critical awareness and practical knowledge necessary to understand, communicate, and make responsible decisions about complex environmental issues.

Intended Learning Outcomes (ILOs)

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

ILO1: Comprehend, explain, and apply the basic principles of science and methods of scientific inquiry in environmental quality control and improvement.

ILO2: Evaluate the social and philosophical implications of scientific discoveries and technological development in environmental quality control and improvement.

ILO3: Apply data collection and analysis skills in solving engineering problems related to environmental quality control and improvement.

ILO4: Communicate and present key environmental issues and their solutions effectively.

ILO5: Demonstrate ethical reasoning and a sense of responsibility in proposing decisions for environmental quality control and improvement.

Assessment and Grading

This course will be assessed using criterion-referenced grading, and grades will not be assigned on a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

Assessment Task	Contribution to Overall Course Grade (%)	Due date
Group Project 1	15%	14/10/2026
Mid-term Exam	30%	21/10/2026
Group Project 2	15%	25/11/2026
Final Exam	30%	Exam Week
Course Participation and Learning Portfolio (in-class survey/feedback)	10%	01/09/2026-25/11/2026

Detailed Assessment Descriptions:

Mid-term Exam (30%): Individual assessment. Multiple-choice questions, covering lectures in Week 1-6.

Final Exam (30%): Individual assessment. Multiple-choice questions, covering lectures in Week 8-13.

Group Project (15% + 15%): Students will work in groups (3-5 students) to conduct self-directed research on relevant topics and present their findings. Presentations (10-15 min) will be recorded in video. The topic will be released in the first 2 weeks.

Course Participation and Learning Portfolio (10%):

Course Participation: Demonstrated through consistent, high-quality contributions during the second part of each lesson (project presentations, focus studies, and group discussions). Quality is measured by the thoughtfulness, relevance, and constructiveness of your verbal and peer feedback.

Learning Portfolio: A curated collection of your in-class surveys and a culminating reflective essay. This portfolio documents your learning journey, requiring you to analyze feedback, connect class activities to core concepts, and articulate your personal growth.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Mid-term and Final Exam	ILO 1 2 3	Assesses understanding of scientific principles (ILO 1), implications of technology (ILO 2), and data/problem solving (ILO 3)
Group Project 1 and 2	ILO 3 4 5	Assesses data analysis (ILO 3), effective communication/presentation (ILO 4), and ethical application (ILO 5)
Learning Portfolio and Course Participation	ILO 4 5	Reflection on learning and peer feedback, assesses communication and engagement

Grading Rubrics

Mid-term Exam (30%) and Final Exam (30%)

Format: Individual Assessment

Type: Multiple Choice

Objective: Assess comprehensive understanding of scientific principles, data analysis skills, and critical evaluation of environmental strategies.

Criteria	Weight	Description & Competencies Assessed
Scientific Knowledge & Principles	~50%	Accuracy in identifying and explaining fundamental physical, chemical, and biological concepts. Correct recall of key definitions (e.g., SDGs, Carbon Neutrality terms).
Problem Solving & Data Analysis	~25%	Accuracy: Precision in calculations. Problem Definition: Ability to identify the correct variables from provided data sets.
Critical Evaluation Implications of Technology & Application	~25%	Analysis: Ability to evaluate social and philosophical implications of technological solutions. Argumentation: Regarding environmental ethics and policy decisions. Synthesis: Integration of concepts to propose and select valid solutions to complex environmental issues.

Group Project (15%+15%)

Format: Group Presentation (10–15 minutes) video

Team Size: 3–5 students

Objective: Conduct self-directed research on a relevant environmental topic and present findings.

Criteria	Weight	Key Questions for Evaluation
Content & Critical Thinking	50%	1. Does the project correctly use scientific concepts? 2. Is the research based on trustworthy sources? 3. Does it offer creative, well-reasoned solutions?
Communication & Delivery	30%	1. Is the language clear and academic? 2. Are visuals, speaking, and pacing effective? 3. Are complex ideas explained clearly for the audience?
Social Responsibility & Ethics	20%	1. Does the project address ethical or social impacts? 2. Does it show awareness of real-world consequences? 3. Is there clear evidence that the team worked well together?

Learning Portfolio + Course Participation (10%)

Learning Portfolio

Format: This should synthesize insights from in-class surveys and peer interactions.

Objective: Reflect on personal growth.

Criteria	Weight	Description
Engagement & Constructive Contribution	40%	Demonstrates consistent and high-quality participation in class discussions, group work, and peer feedback sessions. Contributions are thoughtful and relevant, advancing the collective learning environment.
Reflective Depth & Self-Awareness	20%	The portfolio and essay show honest, critical self-analysis of personal learning challenges, growth, and future goals. Demonstrates strong metacognitive awareness of one's evolving perspective on environmental leadership.
Integration of Feedback & Perspectives	20%	Analyzes and synthesizes how peer feedback, group interactions, and exposure to diverse viewpoints during the course shaped the student's understanding and approach to environmental issues and solutions.
Application & Connection to Course Content	10%	Uses specific evidence from lectures, projects, readings, or case studies to ground reflections and demonstrate integration of scientific, ethical, and societal concepts from the course.
Professionalism & Clarity	10%	All submitted work is well-organized, clear, and professional. The final portfolio is polished; in-class conduct and peer feedback are respectful and constructive.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration.
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking.
D	Marginal Pass	Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic judgments.
F	Fail	Demonstrates insufficient understanding of the subject matter and lacks necessary problem-solving skills.

Course AI Policy

HKUST recognizes the evolving role of Generative AI (GenAI) in education. For this course, the following policy applies to ensure academic integrity while allowing for the responsible use of technology.

1. Permissible Uses:

Students are permitted to use GenAI tools for the following specific purposes only regarding the Group Project and Learning Portfolio:

Brainstorming: Generating initial ideas for research topics or project structures.

Language Refinement: Improving the grammar, flow, or clarity of your original writing.

Summarization: Summarizing long technical papers to aid in comprehension (students must still read the original source to verify accuracy).

2. Prohibited Uses

Content Generation: You may not use AI to generate the core content, arguments, or analysis of your assignments. The final output must be your own original work.

Direct Copy-Pasting: Copying text directly from an AI tool into your assignment without quotation or attribution is considered plagiarism.

In-Class Assessments: The use of AI tools is strictly prohibited during the Mid-term and Final Exam.

3. Declaration and Transparency

If you utilize GenAI tools in your Group Project or Learning Portfolio, you must include a brief "AI Declaration Statement" at the end of your submission. Failure to declare substantial use of AI may be treated as a violation of academic integrity

Communication and Feedback

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

Students with questions about feedback should consult the instructor within five working days after receipt.

Resubmission Policy

N/A

Required Texts and Materials

N/A

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 for academic misconduct. Please refer to [Academic Integrity | HKUST – Academic Registry](#) for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Additional Resources

N/A

Week	Topics	Brief Outline
1	Sustainable development	Concerns and approaches related to sustainable urban development
2	Soil health	Importance of soil health and strategies to safeguard food security and food safety
3	Water resources	Overview of global water resources and different geographical issues
4	Climate change	Impacts of climate change and mitigation strategies/policies
5	Carbon footprints and decarbonization	Concepts of carbon footprints and strategies for long-term decarbonization
6	Land contamination	Global land contamination and impacts on SDGs
7-1 12 th Oct	Water pollution	Water pollution and impacts on SDGs
7-2 14 th Oct	Group Project 1	Students will conduct self-directed research on topics relevant to Weeks 1-6 and present their findings for a group project
8-1 19 th Oct	Holiday	
8-2 21 st Oct	Mid-term Exam	Individual assessment covering Weeks 1-6
9	Water purification	Water and wastewater purification processes, and their contribution to SDGs
10	Clean air	Clean air action strategies and technologies, and their contribution to SDGs
11	Resources circularity	Resources circularity and sustainable waste management, and their contribution to SDGs
12	Green products	Concepts of eco-designs and practical concerns of green products, and their contribution to SDGs
13-1 23 rd Nov	Green products	Concepts of eco-designs and practical concerns of green products, and their contribution to SDGs
13-2 25 th Nov	Group Project 2	Students will conduct self-directed research on topics relevant to Weeks 7-13 and present their findings for a group project
Exam Week	Final Exam	Individual assessment covering Weeks 7-13
	Site Visit (to be confirmed)	Water/wastewater treatment facilities; Resource recovery treatment facilities