

City University of Hong Kong
Course Syllabus

offered by School of Energy and Environment
with effect from Semester A 2021/22

Part I Course Overview

Course Title: Climate Change and Adaptation Strategies

Course Code: SEE3003

Course Duration: 1 semester

Credit Units: 3 credits

Level: B3

Arts and Humanities

Proposed Area: Study of Societies, Social and Business Organisations

(for GE courses only)

Science and Technology

Medium of Instruction: English

Medium of Assessment: English

PHY1201 General Physics I;
MA1200 Calculus and Basic Linear Algebra I or
MA1300 Enhanced Calculus and Linear Algebra I; AND
MA1201 Calculus and Basic Linear Algebra II or
MA1301 Enhanced Calculus and Linear Algebra II

Prerequisites: MA1201 Calculus and Basic Linear Algebra II or
MA1301 Enhanced Calculus and Linear Algebra II
(Course Code and Title)

Precursors: Nil
(Course Code and Title)

Equivalent Courses: Nil
(Course Code and Title)

Exclusive Courses: Nil
(Course Code and Title)

Part II Course Details

1. Abstract

(A 150-word description about the course)

This course aims to develop a fundamental appreciation and understanding of climate change and adaptations to climate change issues. Upon completion, students are expected to be able to present a balanced perspective on climate change and adaptations. The course will various meteorological and geological topics including, Earth's climate system, Weathering and soils, Groundwater and wetlands, Oceans and coastlines, Climate Change and greenhouse gas emission trends, Mitigation and adaptation to climate change.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs [#]	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Explain the scale and process of climate system, climate change and greenhouse gas emission trends	20%	✓		✓
2.	Relate physical and chemical principles to the process of weathering and soils, groundwater and wetlands, oceans and coastlines, and greenhouse gas emission	30%		✓	✓
3.	Apply strategies to solve weathering and soils, groundwater and wetlands, oceans and coastlines problems, and greenhouse gas emission	35%		✓	✓
4.	Demonstrate critical thinking skills in global environmental change and societal adaption strategies	15%	✓	✓	✓
		100%			

* If weighting is assigned to CILOs, they should add up to 100%.

Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.				Hours/week (if applicable)
		1	2	3	4	
1	Lecture and Tutorial explain key concepts, such as physical and chemical principles to the process of soil erosion and conservation, approaches to flood control, sea level rise	✓	✓	✓	✓	
2	Group project requires students to find a solution to a climate change-related issue, such as soil erosion and conservation, approaches to flood control, and/or sea level rise		✓	✓	✓	

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.				Weighting*	Remarks
	1	2	3	4		
Continuous Assessment: 60 %						
Homework Assignment There will be 6-8 assignments throughout the semester. Students will complete the assignments to demonstrate their ability to apply their knowledge in topics related to climate change and adaptation strategies.	✓	✓	✓	✓	18%	Approximately 6-8 problem sets
In-Class Tutorial Exercise There will be 3-4 assignments throughout the semester. Students will complete the tutorial as a group in class to strengthen their understanding on the topics related to climate change and adaptation strategies	✓	✓	✓	✓	2%	Approximately 3-4 In-class tutorial exercises
Group Project There will be 1 group project for students to demonstrate their self-directed learning to study the principles of climate change and climate adaptation	✓	✓	✓	✓	20%	1 group project
Midterm Quiz There will be 1 midterm quiz for instructor to assess students' learning progress on the concepts as outlined in TLA 1.	✓	✓			20%	1 midterm quiz

Examination: 40 % (duration: 2 hrs , if applicable)						
* <i>The weightings should add up to 100%.</i>					100%	

Examination duration: 2 hrs

Percentage of coursework, examination, etc.: 60% by coursework, 40% by exam

To pass a course, a student must do ALL of the following:

- 1) obtain at least 30% of the total marks allocated towards coursework (combination of assignments, pop quizzes, term paper, lab reports and/ or quiz, if applicable);
- 2) obtain at least 30% of the total marks allocated towards final examination (if applicable);
and
- 3) meet the criteria listed in the section on Assessment Rubrics.

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Homework Assignment	Ability to explain in detail and with accuracy method	Excellent analysis and problem-solving skills to demonstrate in-depth understanding of climate change and adaptation strategies	Good analysis and problem-solving skills to demonstrate in-depth understanding of climate change and adaptation strategies	Moderate analysis and problem-solving skills to demonstrate in-depth understanding of climate change and adaptation strategies	Basic analysis and problem-solving skills to demonstrate in-depth understanding of climate change and adaptation strategies	Poor analysis and problem-solving skills to demonstrate in-depth understanding of climate change and adaptation strategies
2. Group Project	Capacity for self-directed learning to study the principles of climate change and climate adaptation	Demonstrate excellent self-directed learning capacity to study the principles of climate change and climate adaptation	Demonstrate good self-directed learning capacity to study the principles of climate change and climate adaptation	Demonstrate moderate self-directed learning capacity to study the principles of climate change and climate adaptation	Demonstrate basic self-directed learning capacity to study the principles of climate change and climate adaptation	Demonstrate poor self-directed learning capacity to study the principles of climate change and climate adaptation
3. Midterm Quiz	Ability to explain the key concepts as outlined in TLA 1.	Demonstrate excellent ability to explain the key concepts as outlined in TLA 1.	Demonstrate good ability to explain the key concepts as outlined in TLA 1.	Demonstrate moderate ability to explain the key concepts as outlined in TLA 1.	Demonstrate basic ability to explain the key concepts as outlined in TLA 1.	Demonstrate poor ability to explain the key concepts as outlined in TLA 1.
4. Examination	Ability to explain key concepts, such as physical and chemical principles to the process of soil erosion and conservation, sea	Demonstrate excellent ability to explain key concepts, such as physical and chemical principles to the	Demonstrate significant ability to explain key concepts, such as physical and chemical principles to the process of	Demonstrate moderate ability to explain key concepts, such as physical and chemical principles to the process of	Demonstrate basic ability to explain key concepts, such as physical and chemical principles to the process of soil erosion and conservation, sea	Demonstrate poor ability to explain key concepts, such as physical and chemical principles to the process of soil erosion and conservation, sea

	level rise	process of soil erosion and conservation, sea level rise	soil erosion and conservation, sea level rise	soil erosion and conservation, sea level rise	level rise	level rise
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Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

- Earth’s climate system
Global air pollution, Global climate region, Extreme climate environment
- Weathering and soils
Physical weathering, Chemical weathering, Biological weathering and decay, Erosion by water and wind, Effects of land use practise on Erosion, Soil erosion and conservation.
- Groundwater and wetlands
Aquifer, Natural groundwater budget, Groundwater quality, Characteristics of wetlands
- Oceans and coastlines
The dynamics of oceans and coastlines, Wave active and coastal processes, Sea level rise, Erosion Prevention strategies, Erosion adjustment strategies
- Climate Change and greenhouse gas emission trends
Ozone and the stratosphere, CFCs and Ozone depletion, Greenhouse gases and global change, The global carbon cycle, Reducing greenhouse gas emission
- Mitigation and adaptations to climate change
Adaptations of species to global warming, The relationship between adaptation and disaster reduction, Strategies for reducing the impact of global warming, Urban heat island, Renewable energy, Sector-specific adaptive responses

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

Nil

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	McConnell, Steer, Knight, Owens, The good earth. 2010, 2nd edition. McGrawHill. ISBN 978-0-07-336936-5