City University of Hong Kong
Course Syllabus

offered by School of Energy and Environment
with effect from Semester A 2020/21

Part I Course Overview

Course Title:	Introduction to Sustainable Energy and Environmental Engineering
Course Code:	SEE1003
Course Duration:	1 semester
Credit Units:	3 credits
Level:	B1
Proposed Area: *(for GE courses only)*	☐ Arts and Humanities ☐ Study of Societies, Social and Business Organisations ☐ Science and Technology
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	Nil
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	Nil
Exclusive Courses: *(Course Code and Title)*	GE1355 Sustainable Energy and Environmental Engineering

Part II Course Details

1. Abstract

(A 150-word description about the course)

This course introduces students to concepts related to energy and environmental science and engineering. Current and future energy resources, energy systems, and conversion technologies as well as energy conservation and management systems will be introduced. Key principles related to air, water and waste treatment technologies and the management of environmental systems and the ecosystems will be addressed. Noise measurements and controls and solids waste treatment will be emphasized. Sustainable development will be emphasized throughout the course, and the role of policy and economic strategies will be discussed. A quantitative framework will be adopted to aid the analysis of energy and environmental systems and technologies. This course intends to lay the foundation for students to pursue advanced courses in their subsequent study.

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.	Demonstrate an understanding on key energy and environmental issues in the 21st century and the importance of sustainable development	10%		√	
2.	Apply fundamental principles in energy and environmental science and engineering	40%		√	
3.	Analyze the current and future energy and environmental technologies	40%	√	√	
4.	Explain the role of policy and economic strategies in the energy and environmental sectors	10%		√	
		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			
Lecture	Explain key concepts and principles related to energy and	√	√	√	√			2.5 hrs/wk

	environmental science and engineering							
Tutorial	Solidify students' concepts and understanding with practice	√	√	√	√			0.5 hr/wk

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: 50%								
In-class test	√	√	√	√			25%	
Assignment	√	√	√	√			25%	
Examination: 50% (duration: 2 hours, if applicable)								
** The weightings should add up to 100%.*							100%	

Examination duration: 2 hrs
Percentage of coursework, examination, etc.: 50% by coursework; 50% 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. In-class test	Ability to explain concepts, analyze and solve problems related to energy and environmental science and engineering	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Assignment	Ability to explain concepts, analyze and solve problems related to energy and environmental science and engineering	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Final exam	Ability to explain concepts, analyze and solve problems related to energy and environmental science and engineering	High	Significant	Moderate	Basic	Not even reaching marginal levels

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.)

- Local and global energy and environmental issues (e.g. Climate change, clean water)
- Sustainable development
- Basic energy and environmental science and engineering concepts and principles (e.g. conservation laws, unit operations)
- Basic policy and economic strategies in the energy and environmental sectors
- Fossil fuels processes
- Renewable energy technologies
- Energy conservation and management technologies
- Water and air quality
- Noise and waste management
- Environmental technologies
- Ecosystem and environmental management

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.)

1.	Tester, Jefferson W., Elisabeth M. Drake, Michael J. Driscoll, Michael W. Golay, and William A. Peters. Sustainable Energy: Choosing Among Options. 2nd edition. MIT Press, 2012. ISBN: 9780262017473.
2.	Nazaroff, W.W. and L. Alvarez-Cohen. 2000. Environmental Engineering Science. John Wiley & Sons, Inc.

2.2 Additional Readings

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

Current and important scientific articles will be provided to supplement lecture materials