

# GE1355: INTRODUCTION TO SUSTAINABLE ENERGY AND ENVIRONMENT

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## Effective Term

Semester A 2025/26

## Part I Course Overview

### Course Title

Introduction to Sustainable Energy and Environment

### Subject Code

GE - Gateway Education

### Course Number

1355

### Academic Unit

School of Energy and Environment (E2)

### College/School

School of Energy and Environment (E2)

### Course Duration

One Semester

### Credit Units

3

### Level

B1, B2, B3, B4 - Bachelor's Degree

### GE Area (Primary)

Area 3 - Science and Technology

### Medium of Instruction

English

### Medium of Assessment

English

### Prerequisites

Nil

### Precursors

Nil

### Equivalent Courses

Nil

### Exclusive Courses

SEE1003 Introduction to Sustainable Energy and Environmental Engineering

## Part II Course Details

### Abstract

Students will learn concepts related to energy and environmental science, technologies and management. Key principles related to air, water, and waste management, and environmental systems and ecosystems will be addressed. Current and future energy resources, energy systems, and conversion technologies as well as energy conservation and management systems will be discussed. The role of policy and economic strategies will be analyzed. Sustainable development will be emphasized throughout the course, and a quantitative framework will be adopted to aid the sustainability analysis of energy and environmental systems and technologies.

### Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Demonstrate an understanding on key energy and environmental issues in the 21st century and the importance of sustainable development	10		x	
2	Apply fundamental principles in energy and environmental science and management	40	x	x	
3	Analyze the current and future energy and environmental technologies	40	x	x	
4	Appreciate the role of policy and economic strategies in the energy and environmental sectors	10		x	

#### 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 real-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.

### Learning and Teaching Activities (LTAs)

LTAs	Brief Description	CILO No.	Hours/week (if applicable)	
1	Lecture	Students will develop an understanding of key concepts and principles related to energy and environmental science, technologies and management	1, 2, 3, 4	2

2	Tutorial	Students will apply the knowledge gained in solving problems related to sustainable energy and environmental management.	1, 2, 3, 4	1
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**Assessment Tasks / Activities (ATs)**

	ATs	CILO No.	Weighting (%)	Remarks ("- " for nil entry)	Allow Use of GenAI?
1	In-class Quiz Students will demonstrate their understanding of basic concepts of the sustainable development in the context of energy and environmental science, technologies and management.	1, 2, 3, 4	20	-	No
2	Assignment Several assignments will be given throughout the semester. Through the assignments, students will demonstrate their understanding of the underlying concepts of sustainable energy and environmental issues and the importance of sustainable development.	1, 2, 3, 4	30	-	Yes

**Continuous Assessment (%)**

50

**Examination (%)**

50

**Examination Duration (Hours)**

2

**Minimum Continuous Assessment Passing Requirement (%)**

30

**Minimum Examination Passing Requirement (%)**

30

### **Additional Information for ATs**

Final exam will test students' ability to integrate knowledge learned throughout the course to analyze and solve problems related to sustainable energy and environmental science, technologies and management.

Examination duration: 2 hrs

Percentage of continuous assessment, examination, etc.: 50% by continuous assessment; 50% by exam

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

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

### **Assessment Rubrics (AR)**

#### **Assessment Task**

1. In-class quiz

#### **Criterion**

Ability to explain concepts related to energy and environmental science, technologies and management

#### **Excellent (A+, A, A-)**

Excellent in-depth understanding of sustainable energy and environmental science, technologies and management

#### **Good (B+, B, B-)**

Good understanding of sustainable energy and environmental science, technologies and management

#### **Fair (C+, C, C-)**

Acceptable understanding of sustainable energy and environmental science, technologies and management

#### **Marginal (D)**

Marginal understanding of sustainable energy and environmental science, technologies and management

#### **Failure (F)**

Poor understanding of sustainable energy and environmental science, technologies and management

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#### **Assessment Task**

2. Assignment

#### **Criterion**

Ability to explain concepts, analyze and solve problems related to sustainable energy and environmental science, technologies and management

#### **Excellent (A+, A, A-)**

Excellent understanding of and problem-solving skills in sustainable energy science, technologies and management

#### **Good (B+, B, B-)**

Good understanding of and problem-solving skills in sustainable energy science, technologies and management

#### **Fair (C+, C, C-)**

Acceptable understanding of and problem-solving skills in sustainable energy science, technologies and management

#### **Marginal (D)**

Marginal understanding of and problem-solving skills in sustainable energy science, technologies and management

**Failure (F)**

Poor understanding of and problem-solving skills in sustainable energy science, technologies and management

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**Assessment Task**

3. Final exam

**Criterion**

Ability to explain concepts and analyze problems related to sustainable energy and environmental science, technologies and management

**Excellent (A+, A, A-)**

Excellent in-depth understanding of sustainable energy and environmental science, technologies and management

**Good (B+, B, B-)**

Good understanding of sustainable energy and environmental science, technologies and management

**Fair (C+, C, C-)**

Acceptable understanding of sustainable energy and environmental science, technologies and management

**Marginal (D)**

Marginal understanding of sustainable energy and environmental science, technologies and management

**Failure (F)**

Poor understanding of sustainable energy and environmental science, technologies and management

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## Part III Other Information

**Keyword Syllabus**

- Local and global energy and environmental issues (e.g. Climate change, clean water)
- Planetary boundaries, sustainability, and sustainable development
- Water, air and soil environments and management
- Municipal solid waste management
- The environmental impact of agriculture
- Basic energy and environmental science and engineering concepts and principles (e.g. four laws of thermodynamics)
- Fossil fuels, their conversion processes and environmental impact
- Renewable energy sources, their conversion and storage technologies and environmental impact
- Basic policy and economic strategies in the energy and environmental sectors
- Ecosystem and environmental management

**Reading List**

**Compulsory Readings**

Title	
1	Nil

**Additional Readings**

Title	
1	Current and important scientific articles will be provided to supplement lecture materials
2	Principles of environmental science : inquiry and applications Cunningham, William P., Cunningham, Mary Ann. Edition Ninth, international student edition. Published New York, New York : McGraw-Hill Education, [2020] ©2020 Language: English Identifier ISBN : 9781260568660 (ebk) ISBN : 1-260-56866-0. Available as an on-line resource at CityU Library
3	Ecology of a changing planet Bush, Mark B. Edition 3rd ed. Published Upper Saddle River, N.J. : Prentice Hall, [2002], c2003. Language English Identifier ISBN : 0130662577 Hardcopies are available at CityU library

## Annex (for GE courses only)

**A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:**

Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO)

**PILO 1: Demonstrate the capacity for self-directed learning**

2

**PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology**

1

**PILO 3: Demonstrate critical thinking skills**

3

**PILO 4: Interpret information and numerical data**

2, 3

**PILO 7: Demonstrate an ability to work effectively in a team**

2

**PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation**

3

**B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.**

**Selected Assessment Task**

Group project