

SEE2204: PRINCIPLES OF SUSTAINABILITY

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

Principles of Sustainability

Subject Code

SEE - School of Energy and Environment

Course Number

2204

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

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

The course aims to introduce students from a science and engineering background to the discipline of Sustainability. This course gives students an understanding of sustainability investigating the complexity and links between the environment

as investigated by the physical sciences and sustainable development as understood through the study of social systems. Students learn about the different ways in which “sustainability” is defined and understood, by different disciplines and professionals. The notion of sustainability is the subject of intense debate. The historical context and background of environmental protection, values and thought is presented.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if DEC-A1 app.)		DEC-A2	DEC-A3
1	Discuss the evolution of sustainability as a concept that can be applied to the field of environmental engineering and science.		x		x
2	Analyse why environmental decision making requires more than just scientific information but is influenced by society, values, culture and economics.		x	x	
3	Critically evaluate and communicate different views on sustainable practice.		x	x	
4	Critically reflect on professional practice strategies that support sustainable development.			x	x
5	Apply principles of Sustainability.				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	Explain key theories and concepts of Sustainability	1, 2, 3, 4, 5	2
2	Tutorial	Learn through case studies the application of theory to real world examples of environmental science	1, 2, 3, 4, 5	1

3	Analysis	Apply the taught environmental system analytical tools to analyse the comprehensive economic, environmental and societal benefits and trade-offs derived from an environmental issue or policy makings. Apply case studies and real world examples to illustrate and verify the arguments and analysis.	1, 2, 3, 4, 5	3
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Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignment	1, 2, 3, 4, 5	60
			a) Three individual assignments on analytical tools application, with calculation (5, 5 and 15 marks, respectively). b) One individual assignment on using the analytical tools for sustainability policies assessment (10 marks). c) Two individual and integrated assignments (comprehensive tasks with combining calculation, policies and case studies), 10 and 15 marks, respectively.

Continuous Assessment (%)

60

Examination (%)

40

Examination Duration (Hours)

2

Additional Information for ATs

Examination duration: 2 hrs

*Examinations will be in the format of a number of quantitative and qualitative questions & quizzes. The former will test the ability of applying taught analytical tools for calculation and analysis, on certain sustainability issue; the later will test the understanding and critical thinking on the principles of sustainability, why and how environmental decision making requires more than just scientific information but is influenced by society, values, culture and economics, by applying theories, case studies and arguments.

Percentage of continuous assessment, examination, etc.: 60% by continuous assessment; 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 continuous assessment (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.

Assessment Rubrics (AR)

Assessment Task

Assignment

Criterion

Capacity to apply the principles of sustainability to discuss and analyse social, environmental and economic issues

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal level

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Examination

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Part III Other Information

Keyword Syllabus

Sustainability; Environmental Science and Engineering; Defining Sustainability; Sustainable Development; Metrics of Sustainability; Ethics and Values in Sustainability Thought; Corporate Sustainability Reporting; Sustainability Management.

Reading List

Compulsory Readings

Title	
1	Environmental Science: Earth as a Living Planet, 9th Edition. Daniel B. Botkin, Edward A. Keller. February 2014
2	Principles of Sustainability, Editor: Lerner Media Group, SALEM PRESS, December 2017
3	Handbook of Sustainability Science and Research, Editors: Walter Leal Filho. Springer Cham, 2018. DOI: https://doi.org/10.1007/978-3-319-63007-6

Additional Readings

Title	
1	Nil