

SEE8220: ENVIRONMENTAL POLLUTION: THEORIES, MEASUREMENT AND MITIGATION

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Environmental Pollution: Theories, Measurement and Mitigation

Subject Code

SEE - School of Energy and Environment

Course Number

8220

Academic Unit

School of Energy and Environment (E2)

College/School

School of Energy and Environment (E2)

Course Duration

One Semester

Credit Units

3

Level

R8 - Research Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

SEE5212 Environmental Pollution: Theories, Measurement and Mitigation

Exclusive Courses

Nil

Part II Course Details

Abstract

The course aims to provide students the fundamental theories of environmental pollution, including key aspects of the pollution of air, water and soils, with a particular focus on both indoor and outdoor air. Additionally it will examine the application of measurement techniques and how underlying theory and monitoring creates a firm basis creating policy. Holistic training, which includes the cultural context of pollution, will equip the students with knowledge of theories and their application to solve complicated environmental pollution issues innovatively and independently.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Explain the nature of environmental pollution	20		x	
2	Explain the drivers, principles and methods of environmental analysis;	15		x	
3	Explain some key methods and techniques for pollution measurement;	15		x	
4	Relate the theories and measured pollution data to the development of environmental regulations;	30		x	
5	Apply the different pollution measurement techniques and create the methodologies to analyze the data to solve the environmental problems independently and innovatively	20	x		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 concepts of environmental pollution and its management	1, 2, 3, 4	2.25
2	Assignment		5	0.25
3	Presentations		1, 2, 3	0.25
4	Report		1, 2, 3, 4	0.25

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks ("- " for nil entry)	Allow Use of GenAI?
1	Project	1, 2, 3, 4, 5	50	-	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

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

- 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);
- obtain at least 30% of the total marks allocated towards final examination (if applicable); and
- meet the criteria listed in the section on Assessment Rubrics.

Assessment Rubrics (AR)

Assessment Task

Group Project (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to develop a specific pollution topic and explain it to others.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Final Exam (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to analyse and solve practical problems related to environmental pollution and its mitigation.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Group Project (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Ability to develop a specific pollution topic and explain it to others.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Moderate to Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Final Exam (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Ability to analyse and solve practical problems related to environmental pollution and its mitigation.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Moderate to Basic

Failure

(F) Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Nil

Reading List

Compulsory Readings

Title	
1	Nil

Additional Readings

Title	
1	Mark L Brusseau, Ian L Pepper, Charles P Gerba, Environmental and Pollution Science, 3rd Edition, Academic Press, 2019.
2	Marquita K Hill, Understanding Environmental Pollution, 4th Edition, Cambridge University Press, 2020.
3	James Girard, Principles of Environmental Chemistry, Jones & Bartlett Learning, 3rd Edition, 2013.