

**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: Air Pollution and Atmospheric Chemistry

Course Code: SEE5201

Course Duration: One semester

Credit Units: 3

Level: P5

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) Nil

Part II Course Details

1. Abstract

This course aims to provide a working knowledge of air quality issues. It will emphasize on a multidisciplinary approach to investigating the emission sources, atmospheric chemistry and removal processes, meteorological phenomena and their impact on pollution at local to global scales. Regional and global issues such as acid rain, ozone depletion and air quality connections to climate change will also be discussed.

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.	Describe the compositions and structure of the atmosphere and their relationships with air pollution and global atmospheric change	25%	✓		
2.	Demonstrate an understanding of atmospheric chemistry	50%		✓	
3.	Demonstrate critical thinking skills in current challenges of air pollution and global atmospheric change	25%	✓	✓	✓
		100%			

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	
Lectures	Explain key concepts of atmospheric chemistry	✓	✓	✓	
Tutorials	Solidify students' and understandings with practical examples, real cases, class assignments and discussions.	✓	✓	✓	

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		
Continuous Assessment: 100%					
Assignments	✓	✓	✓	40%	
Midterm	✓	✓		35%	
Term paper and presentation	✓	✓	✓	25%	
				100%	

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 Grading of Student Achievement.

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-)	Adequate (C+, C, C-)	Marginal (D)	Failure (F)
1. Assignments	Ability to solve problems related to lecture material	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Midterm	Ability to explain key concepts and solve problems	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Term paper and presentation	Ability to propose and present an air pollution-related project	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.)

- Chemistry concepts
- Air pollution regulations and health effects
- Atmospheric composition, meteorology, pressure, and transport
- Biogeochemical cycles
- Radiation, greenhouse effects, and climate forcing
- Stratospheric chemistry and pole ozone hole
- Tropospheric chemistry, ozone smog, and urban air quality
- Aerosols, clouds, aqueous phase chemistry, and acid rain
- Air Pollution control and indoor air quality

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.	Daniel Jacob, Introduction to Atmospheric Chemistry, Princeton University Press, 1999.
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2.2 Additional Readings

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

1.	John H. Seinfeld and Spyros N. Pandis: Atmospheric Chemistry and Physics: From Air Pollution to Climate Change, 3rd Edition, Wiley, 2016.
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