

Annexe A: New/Revised Course Content in OBTL+ Format

Course Overview

The sections shown on this interface are based on the templates [UG OBTL+](#) or [PG OBTL+](#)

If you are revising/duplicating an existing course and do not see the pre-filled contents you expect in the subsequent sections e.g. Course Aims, Intended Learning Outcomes etc. please refer to [Data Transformation Status](#) for more information.

Expected Implementation in Academic Year	AY2017-2018
Semester/Trimester/Others (specify approx. Start/End date)	Semester 1
Course Author * Faculty proposing/revising the course	Lee-Chua Lee Hong
Course Author Email	clhlee@ntu.edu.sg
Course Title	Air Quality Management
Course Code	EM5104
Academic Units	3
Contact Hours	39
Research Experience Components	Not Applicable

Course Requisites (if applicable)

Pre-requisites	Year 3 Standing
Co-requisites	
Pre-requisite to	
Mutually exclusive to	
Replacement course to	
Remarks (if any)	

Course Aims

This course aims to provide you with a general understanding of the air quality assessment and the background for management with respect to the problems of air pollution. It offers you the opportunity to assess air quality monitoring and to understand policy-making in response to air quality issues as well as to provide an overview on the selection of air pollution control technology.

Course's Intended Learning Outcomes (ILOs)

Upon the successful completion of this course, you (student) would be able to:

ILO 1	Explain air quality issues and challenges
ILO 2	Apply basic knowledge of the atmospheric processes
ILO 3	Describe the impact of air pollution on health, welfare and economics
ILO 4	Assess various legislative and regulatory approaches to air quality management
ILO 5	Explain the working principle of various air pollution control technology and propose appropriate approaches/control technologies to reduce air pollution.

Course Content

S/N	Topic
1.	Introduction to Air Pollution – Emission, Effect and Standard
2.	Air Pollution Control Regulation and Monitoring
3.	The Atmosphere & Meteorology, Atmospheric Stability
4.	Air Quality Modeling & Plume Dispersion Model
5.	Green House Gases, Global Climate Issues
6.	Indoor Air Quality
7.	Air Pollution Issues from Combustion Processes including 1 hour quiz
8.	General Approaches to Air Pollution Control
9.	Particulates - Characteristics and Control

Reading and References (if applicable)

Textbooks :

1. "Air Pollution Control Engineering" Noel De Nevers, McGraw Hill International, 2nd or 3rd Edition.

References :

1. "Air Pollution: Its Origin and Control" by Wark, Warner, Davis, Addison Wesley Longmann, 3rd Ed, 1998
2. "Air Pollution Engineering Manual" by Wayne T. Davis (Editor), Air & Waste Management Association, 2nd Ed, 2000
3. US Environment Protection Agency: www.epa.gov
4. UN Intergovernmental Panel on Climate Change (IPCC): www.ipcc.ch

Planned Schedule

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
1	Introduction to Air Pollution – Emission, Effect and Standard	1, 2 and 3	Reading ppt slides		
2	Air Pollution Control Regulation and Monitoring	1, 3 and 4	Reading ppt slides Tutorial		
3	The Atmosphere & Meteorology, Atmospheric Stability	2 and 3	Reading ppt slides		
4	Air Quality Modeling & Plume Dispersion Model	2	Reading ppt slides		
5	Green House Gases, Global Climate Issues	1, 3, 4 and 5	Reading ppt slides		Tutorial
6	Indoor Air Quality	1, 3, 4 and 5	Reading ppt slides		Tutorial
7	Air Pollution Issues from Combustion Processes including 1 hour quiz	2, 3 & 5	Reading ppt slides		Quiz
8	General Approaches to Air Pollution Control	1, 3 & 5	Reading ppt slides		

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
9	Particulates - Characteristics and Control	2, 3 & 5	Reading ppt slides		Tutorial
10	VOCs and HCs - Characteristic & Control	2, 3 & 5	Reading ppt slides		Tutorial
11	Oxides of Sulfur and Nitrogen - Characteristic & Control	2, 3 & 5	Reading ppt slides		Tutorial
12	Control of Mobile Source Pollutions	2, 3 & 5	Reading ppt slides		
13	Case studies including 1 hour quiz	2, 3 & 5	Reading ppt slides		Quiz

Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Lecture	Formal lectures on topics with in-class discussions
Tutorials	This helps you to understand the concept taught during lectures as well as promote life-long learning
Quiz	This helps you to achieve one or more of the outcomes as you need to do self-study and research.

Assessment Structure

Assessment Components (includes both continuous and summative assessment)

No.	Component	ILO	Related PLO or Accreditation	Weightage	Team/Individual	Rubrics	Level of Understanding
1	Summative Assessment (EXAM): Final exam(Final Examination)	1, 2, 3, 4, 5	EAB SLOs c, e, f, g, l	60	Individual	Holistic	Relational
2	Continuous Assessment (CA): Test/Quiz(Quiz 1)	1, 2, 3, 4, 5	EAB SLOs c, e, f, g, l	20	Individual	Analytic	Multistructural
3	Continuous Assessment (CA): Test/Quiz(Quiz 2)	1, 2, 3, 4, 5	EAB SLOs c, e, f, g, l	20	Individual	Analytic	Multistructural

Description of Assessment Components (if applicable)

Part A - Continual Assessment (40%) consist of,

2 quizzes (40%)

- Will be conducted in the first half of the teaching week before semester break and at the last week of the teaching semester and to evaluate learning outcomes. Questions are designed to test students' understanding of basic concepts and principles as well as their ability in applying them in real application scenarios.

Part B - Examination (60%)

- Examination covers topics taught in all 13 Teaching Weeks. Questions are designed to test students' ability in understanding and applying basic concepts and principles in air quality management.

Formative Feedback

You will be able to view your individual quiz results through Blackboard Grade Centre. You can also opt to meet the lecturer in office to view and discuss your quiz questions and results.

NTU Graduate Attributes/Competency Mapping

This course intends to develop the following graduate attributes and competencies (maximum 5 most relevant)

Attributes/Competency	Level
Care for Environment	Basic
Care for Society	Basic
Information Literacy	Basic
Design Thinking	Basic
Embrace Challenge	Basic

Course Policy

Policy (Academic Integrity)

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values. As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. On the use of technological tools (such as Generative AI tools), different courses / assignments have different intended learning outcomes. Students should refer to the specific assignment instructions on their use and requirements and/or consult your instructors on how you can use these tools to help your learning. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Policy (General)

(1) General

Students are expected to take all scheduled assignments and tests by due dates. Students are expected to take responsibility to follow up with course notes, assignments and course related announcements. Students are expected to participate in all group project discussions and activities.

Policy (Absenteeism)

(2) Absenteeism

Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies. There will be no make-up opportunities for in-class activities.

Policy (Others, if applicable)

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