

## PROPOSED COURSE OUTLINE TEMPLATE FOR STUDENTS AT NTU

<b>Academic Year</b>	2017-2018	<b>Semester</b>	1
<b>Course Coordinator</b>	Tuti Mariana Lim		
<b>Course Code</b>	EM5104		
<b>Course Title</b>	Air Quality Management		
<b>Pre-requisites</b>	Year 3 Standing		
<b>No of AUs</b>	3		
<b>Contact Hours</b>	Lecture: 36 hrs; Tutorial: 3 hr		
<b>Proposal Date</b>	1 November 2017		

### **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.

### **Intended Learning Outcomes (ILO)**

At the end of this module, the students should be able to:

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

### **Course Content :**

This introductory course provides an overview of air quality management. Topics include background of air quality monitoring, types of air pollutants, pollutant sampling and measurement devices, pollutant distributions and dispersal modes as well available methods to control the pollutants. Control technique include improve dispersion, pollution prevention and end-of-the-pipe pollution control devices.

### **Course Outline :**

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

10.	VOCs and HCs – Characteristic & Control	3	1
11.	Oxides of Sulfur and Nitrogen – Characteristic & Control	3	1
12.	Control of Mobile Source Pollutions including 1 hour quiz	3	
Total:		33	6

**Assessment (includes both continuous and summative assessment)**

Component	Course LO Tested	Related Programme LO or Graduate Attributes	Weighting	Team / Individual	Assessment rubrics
1. Final Examination	1, 2, 3, 4, 5	EAB SLOs c, e, f, g, l	60%	Individual	
2. Quiz 1	1, 2, 3, 4, 5	EAB SLOs c, e, f, g, l	20%	Individual	
3. Quiz 2	1, 2, 3, 4, 5	EAB SLOs c, e, f, g, l	20%	Individual	
Total			100%		

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.

## Learning and Teaching approach

Class meets once per week over 3 hours in lecture and tutorials format

Approach	How does this approach support students 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.

### **Textbooks :**

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

### **References :**

1. "Air Pollution: Its Origin and Control" by Wark, Warner, Davis, Addison Wesley Longmann, 3<sup>rd</sup> 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](http://www.epa.gov)
4. UN Intergovernmental Panel on Climate Change (IPCC): [www.ipcc.ch](http://www.ipcc.ch)

## **Course Policies and Student Responsibilities**

### **(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.

### **(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.

### **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. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

### Course Instructors

Instructor	Office Location	Phone	Email
Tuti Lim	N1-1b-39	6790-5269	tlim@ntu.edu.sg
Guest Lecturer			

### Planned Weekly Schedule

S/N	Topic	Course LO	Readings/ 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
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 including 1 hour quiz	2, 3 & 5	Reading ppt slides Quiz