

# Course Syllabus

1. **Course Title:** Experiments on Air pollution Treatment

2. **Course Code:** EAPT326910

3. **Credit Units:** 2 credits (0/2/6) (0 units of theory/ 2 unit of practice/ 6 units of self-study)

Duration: 6 weeks (0 hours of theory+10 hours of practice, and 20 hours of self-study per week)

4. **Course Instructors:**

1 / MS.c Hoang Thi Tuyet Nhung

2 / Dr. Tran Thi Kim Anh

5. **Course Requirements:**

Prerequisite courses: None

Previous courses: Experiments on Environmental Chemical Engineering

Parallel courses: Air and Noise pollution control techniques

6. **Course Description:**

The subjects help students to acquire the ambient air sampling skills, TSP, PM10, PM2.5, NO<sub>2</sub>, NH<sub>3</sub>, CO<sub>2</sub>, SO<sub>2</sub>, noise, CO. In addition, the course aims to understand the basics of the processing and operation of dust and gas treatment systems such as dust settling, cyclone, adsorption tower, etc.

7. **Course goals**

Goals	Goal description	Programme Expect learning outcomes ELOs
G1	The specialized knowledge in the field of air pollution treatment.	ELO3
G2	Practise calculation, present, plot, explain the results and the phenomenon in the experiment.	ELO5, ELO8
G3	Practise team-work skill.	ELO9
G4	Deploy the design and operation of air pollution treatment systems in reality.	ELO15

8. **Course Learning Outcomes (CLOs)**

CLOs	CLO Description	Programme ELOs
G1 CLO1	Describe the principles and technical process of chemicals and equipment using in wastewater treatment.	ELO3

	CLO2	Illustrate the theory of air pollution treatment methods	
<b>G2</b>	CLO3	Operate several air pollution treatment models.	ELO5
	CLO4	Make assessment, evaluate, conclusion the experiments's result.	
	CLO5	Demonstrate honesty in experiments's reporting as well as in scientific research.	ELO8
<b>G3</b>	CLO6	Work in group	ELO9
<b>G4</b>	CLO7	Deploy the design and operation of wastewater treatment systems in reality.	ELO15

## 9. Learning Resources

- Textbooks:

1. Textbook of experiments on Air pollution treatment, Environmental technology Department, HCMC University of Technology and Education.

- References:

## 10. Student assessment:

- Grading scale: **10**

- Assessment plan:

Type	Content	Timeline	Assessment method	CLOs	Rate (%)
<b>Subtest</b>					<b>20</b>
BT#1	Present the method of sampling, measurement and testing of air pollution and noise indicators	Weeks 2-4	Small questions in class	CLO1 CLO2	10
BT#2	Demonstrate the operation of dust and air pollution treatment model	Week 5-6	Small questions in class	CLO3 CLO4	10
<b>Essay - Report</b>					<b>30</b>
BL #1	Report process of experiments, results, all exercises of experiments.	Week 6	Report	CLO5 CLO6 CLO7	30
<b>Final exam</b>					<b>50</b>
	The content covers all		Wtiting / practical	CLO1	50

	of course outcomes.		test	CLO2 CLO3 CLO4 CLO7	
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### 11. Course Content:

Week	Contents	CLOs
1 -4	<b>Part 1: SAMPLING AND INSPECTION OF QUALITY AIR QUALITY STANDARDS (0/40/80)</b>	
	<b>A/ Teaching content in classroom (40)</b> Chapter 1: Sampling and Analysis of Dust (TSP, PM10, PM2.5) 1.1 Basic theory 1.2. Practice Chapter 2: Sampling and analysis of NO <sub>2</sub> , NH <sub>3</sub> 2.1. Basic theory 2.2. Practice Chapter 3: Sampling and analysis of CO <sub>2</sub> , SO <sub>2</sub> 3.1. Basic theory 3.2. Practice Chapter 4: Practice Noise 4.1. Basic theory 4.2. Practice <b>Summary of teaching methodology:</b> <ul style="list-style-type: none"> <li>+ Presentation of lecture</li> <li>+ Group discussion</li> <li>+ Guide to how to manual experiments, do the report</li> </ul>	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6 CLO7
	<b>B/ Self-study content (80)</b> The contents of home self-study <ul style="list-style-type: none"> <li>+ Compare the optimal pH and the effectiveness of treatment with different coagulants.</li> <li>+ Do the report</li> <li>+ Prepare the test lesson for the next class.</li> </ul>	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6 CLO7
5	<b>Part 2: OPERATION OF DUST TREATMENT EQUIPMENT (0/10/20)</b>	

	<p><b>A/ Teaching content in classroom (10)</b></p> <p><b>Content</b></p> <p>Chapter 1: Operation and Evaluating the Effectiveness of the Sedimentation Chamber Model</p> <p>1.1 Model operating instructions</p> <p>1.2. Operate</p> <p>1.3. Evaluate the effectiveness</p> <p>Chapter 2: Operation and evaluation of the efficiency of the partition wall sedimentation model</p> <p>2.1. Model operating instructions</p> <p>2.2. Operate</p> <p>2.3. Evaluate the effectiveness</p> <p>Chapter 3: Operation and evaluation of cyclone model efficiency</p> <p>3.1. Model operating instructions</p> <p>3.2. Operate</p> <p>3.3. Evaluate the effectiveness</p> <p>Chapter 4: Operation and evaluation of the dust bag model</p> <p>4.1. Model operating instructions</p> <p>4.2. Operate</p> <p>4.3. Evaluate the effectiveness</p> <p><b>Summary of teaching methodology:</b></p> <ul style="list-style-type: none"> <li>+ Presentation of lecture</li> <li>+ Group discussion</li> <li>+ Guide to how to manual experiments, do the report</li> </ul>	<p>CLO1</p> <p>CLO2</p> <p>CLO3</p> <p>CLO4</p> <p>CLO5</p> <p>CLO6</p> <p>CLO7</p>
	<p><b>B/ Self-study content (20)</b></p> <ul style="list-style-type: none"> <li>+ Compare the effectiveness of adsorption level 1 and level n</li> <li>+ Do the report</li> <li>+ Prepare the test lesson for the next class.</li> </ul>	<p>CLO1</p> <p>CLO2</p> <p>CLO3</p> <p>CLO4</p> <p>CLO5</p> <p>CLO6</p> <p>CLO7</p>
6	<p><b>Part 3: OPERATING AIR POLLUTION TREATMENT MODELS (0/10/20)</b></p>	
	<p><b>A/ Teaching content in classroom (10)</b></p> <p><b>Content</b></p> <p>Operate and evaluate the efficiency of the adsorption tower model</p> <p>3.1. Model operating instructions</p> <p>3.2. Operate 3.3. Evaluate the effectiveness</p> <p><b>Summary of teaching methodology:</b></p> <ul style="list-style-type: none"> <li>+ Presentation of lecture</li> </ul>	<p>CLO1</p> <p>CLO2</p> <p>CLO3</p> <p>CLO4</p> <p>CLO5</p> <p>CLO6</p> <p>CLO7</p>

	<ul style="list-style-type: none"> <li>+ Group discussion</li> <li>+ Guide to how to manual experiments, do the report</li> </ul>	
	<b>B/ Self-study content (20)</b> <ul style="list-style-type: none"> <li>+ Compare the effectiveness of the treatment by homogeneous and heterogeneous Fenton system</li> <li>+ Do the report</li> <li>+ Prepare the test lesson for the next class.</li> </ul>	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6 CLO7

### 12. Learning Ethics:

- Students study seriously and follow the instructions of experiments.
- Strictly implement the rules laboratories.
- Students who do not complete the task, banned exam.
- In case of the detection of students who replace the others in the exam, all of them will be suspended or leaved the learning program.

**13. Date of first approval:** August 1st, 2012

**14. Approved by:**

**Dean**

**Head of Department**

**Compiler**

**A/Prof. Nguyen Van Suc**

**MSc Nguyen Thi Minh Nguyet**

**Dr. Nguyen My Linh**

### 15. Date and Up-to-date content

<b>1<sup>st</sup> time:</b> Date: 2015 - Update content and structure of the programme adjusted in: Updated content of Experiments on Air pollution Treatment	Instructor:      <b>Head of Department:</b>
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