

Course Syllabus

1. **Course Title:** Experiments on Environmental Microbiology

2. **Course Code:** EEMI327010

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 / Dr. Nguyen My Linh

2 / Dr. Trinh Khanh Son

5. **Course Requirements:**

Prerequisite courses: None

Previous courses: Experiments on Environmental Analytical Chemistry.

Parallel courses: Environmental Microbiology

6. **Course Description:**

The course provides students the knowledge and skills, culture and the differentiate of organisms in the environment: E. coli. Coliform, Aerobic bacteria...

7. **Course goals**

Goals	Goal description	Programme ELOs
G1	Professional knowledge in environmental microorganism	ELO2
G2	Practise calculation, present, explain the results and the phenomenon in the experiment.	ELO5 ELO8
G3	Practise team-work skill; Communicate though written report	ELO9 ELO10

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

CLOs	CLO Description	Programme ELOs
G1	CLO1	Use tools, equipment and chemical in culture bacteria.
	CLO2	Describe the principles of culturing and separating the bacteria.

G2	CLO3	Evaluate the experiments's result.	ELO5
	CLO4	Perform a precise, meticulous manual in experiments.	
	CLO5	Demonstrate honesty in experiments's reporting as well as in scientific research.	ELO8
G3	CLO6	Work in team	ELO9
	CLO7	Communicate effectively though report.	ELO10

9. Learning Resources

- Textbooks:

1. Textbook of experiments on environmental microbiology, 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 (%)
Subtest					15
BT#1	Summarize and present of document of experiments on environmental engineering chemistry before class.	Weeks 2-10	Small questions in class	CLO1 CLO2	15
Essay - Report					35
BL #1	Report process of experiments, results, all exercises of experiments.	Week 10	Report	CLO3 CLO4 CLO5 CLO6 CLO7	35
Final exam					50
	The content covers all of course outcomes.	School calendar	Wtiting / practical test	CLO1 CLO2 CLO3 CLO4 CLO5	50

11. Course Content:

Week	Contents	CLOs
1	Unit 1: Safety rules in the microbiology laboratory Unit 2: Microbiological laboratory equipment and disinfection Unit 3: Prepare the nutrient medium for culture microorganisms (0/10/20)	
	A/ Teaching content in classroom (10) + Safety rule while doing experiment in microbiology lab + Operate the equipment in the lab + Prepare the nutrient medium Summary of teaching methodology: + Presentation of lecture + Group discussion + Guide to how to manual experiments, do the report	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6
	B/ Self-study content (20) The contents of home self-study + Do the report + Prepare the test lesson for the next class.	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6
2	Unit 4: Methods of Microbial Isolation Unit 5: Microbial Culture Techniques (0/10/20)	
	A/ Teaching content in classroom (10) 4.1 Definition 4.2 Methods of microbial isolation 5. Microbial culture techniques Summary of teaching methodology: + Presentation of lecture + Group discussion + Guide to how to manual experiments, do the report	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6
	B/ Self-study content (20) + Do the report + Prepare the test lesson for the next class.	

3	Unit 6: Colorimetric Methods and Microbial Morphometry (0/10/20)	
	A/ Teaching content in classroom (10) 6.1. Preparation temporary sample method 6.2 Preparation permanent sample method Summary of teaching methodology: <ul style="list-style-type: none"> + Presentation of lecture + Group discussion + Guide to how to manual experiments, do the report 	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6
	B/ Self-study content (20) <ul style="list-style-type: none"> + Do the report + Prepare the test lesson for the next class. 	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6
4	Unit 7: Total aerobic microorganism (0/10/20)	
	A/ Teaching content in classroom (10) 7.1 Theory 7.2 Practice: Summary of teaching methodology: <ul style="list-style-type: none"> + Presentation of lecture + Group discussion + Guide to how to manual experiments, do the report 	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6 CLO7
	B/ Self-study content (20) <ul style="list-style-type: none"> + Do the report + Compare the effectiveness of models 	CLO1 CLO2 CLO3 CLO4 CLO5 CLO6 CLO7
	Unit 8 : Total coliform test in wastewater (0/10/20)	

5	<p>A/ Teaching content in classroom (10)</p> <p>8.1 Theory</p> <p>8.2 Practice</p> <p>Summary of teaching methodology:</p> <ul style="list-style-type: none"> + Presentation of lecture + Group discussion + Guide to how to manual experiments, do the report 	<p>CLO1</p> <p>CLO2</p> <p>CLO3</p> <p>CLO4</p> <p>CLO5</p> <p>CLO6</p> <p>CLO7</p>
	<p>B/ Self-study content (20)</p> <ul style="list-style-type: none"> + Do the report + Prepare the test lesson for the next class. 	<p>CLO1</p> <p>CLO2</p> <p>CLO3</p> <p>CLO4</p> <p>CLO5</p> <p>CLO6</p> <p>CLO7</p>
	<p>Unit 9: Testing Methods for E.Coli in Waste Water (0/10/20)</p>	
6	<p>A/ Teaching content in classroom (10)</p> <p>9.1 BasicTheory</p> <ul style="list-style-type: none"> + Definition + Environmental significance + Analytic principles <p>9.2 Practice:</p> <ul style="list-style-type: none"> + Do the experiment <p>Summary of teaching methodology:</p> <ul style="list-style-type: none"> + Presentation of lecture + Group discussion + Guide to how to manual experiments, do the report 	<p>CLO1</p> <p>CLO2</p> <p>CLO3</p> <p>CLO4</p> <p>CLO5</p> <p>CLO6</p> <p>CLO7</p>
	<p>B/ Self-study content (20)</p> <ul style="list-style-type: none"> + Do the report + Prepare the test lesson for the next class. 	<p>CLO1</p> <p>CLO2</p> <p>CLO3</p> <p>CLO4</p> <p>CLO5</p> <p>CLO6</p> <p>CLO7</p>

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

<p>1st time: Date: 2015</p> <p>- Update content and structure of the programme adjusted in: Updated content of Experiments on environmental microbiology.</p>	<p>Instructor:</p> <p>Head of Department:</p>
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