Course Syllabus

1. **Name of Curriculum** Bachelor of Science Program in Environment

   Faculty/Institute/College Mahidol University International College, Faculty of Science, Faculty of Environment and Resource Studies (FERS), Mahidol University
2. **Course Code** ICEN 311 **Course Title** Environmental Analysis Laboratory
3. **Number of Credits** 4 **(Lecture/Lab)** 4 (2-4)
4. **Pre-requisite** None
5. **Type of Course** Required
6. **Trimester / Academic Year**

   First / 2004
7. **Course Description**

   The analysis of environmental samples as water, air and soil consist of physical, chemical and biological parameter analysis. This course is studied from the acquisition of representative samples through sample handling, sample storage, analytical method and data interpretation
8. **Course Objectives**

   The objectives of this course are as follows:

   1. To introduce the student to a basic knowledge of analytical technique to environmental samples including water, air, and soil.
   2. To illustrate the analyses of the major physical, chemical, and biological parameters for each of these environmental samples.
   3. To provide the student with a knowledge of data interpretation.

9. Course Outline

Week	Topic			Instructor
	Lecture/Lab	Hour	Lab Hour	
1	Introduction to environmental analysis/Major equipment available in environmental analysis laboratory	2	4	Asst.Prof.Dr.Patana Thavipoke
2	Guidelines for handling and storage of water sample/Water analysis (physical parameter): colour, odour, temperature, turbidity, suspended solid	2	4	Asst.Prof.Dr. Chumlong Arunlertaree
3	Pretreatment and extraction technique for contaminants in water sample/Water analysis (chemical parameter): pH, DO, conductivity, hardness, acidity and alkalinity	2 2	4 4	Asst.Prof.Dr. Chumlong Arunlertaree
4	Analytical methods /Water analysis (chemical parameter, continues): BOD, COD	2	4	Asst.Prof.Dr. Chumlong Arunlertaree
5	Data interpretation/Water analysis (biological parameter): Determination of the coliform bacteria by MPN method	2	4	Benjaphorn Prapagdee
6	Guidelines for handling and storage of soil sample/Soil analysis (physical parameter): pH, texture	2	4	Asst.Prof. Pakorn Suwanich
7	Pretreatment and extraction technique for contaminants in soil/Soil analysis (chemical parameter): organic matter, CEC, N, P, K	2	4	Asst.Prof. Pakorn Suwanich
8	Analytical methods and data interpretation/Soil analysis (biological parameter): Enumeration of bacteria and actinomycetes in soil	2	4	Benjaphorn Prapagdee
9	Guideline for sampling, storage, and	2	4	Asst.Prof.Dr. Winai

	handling of air sample/Air analysis (physical parameter): particulate matter			Nutmagul
10	Analytical methods/Air analysis (chemical parameter): SOx, NOx	2	4	Asst.Prof.Dr. Winai Nutmagul
11	Data interpretation/Air analysis (biological parameter): Enumeration of microbial population in air			Benjaphorn Prapagdee
	Total	**22**	**44**	

10. Teaching Method

1. Lecture
2. Practical

11. Teaching Media

1. Texts and Teaching Materials
2. Transparencies

12. Course Achievement

Assessment made from the set-forward criteria. Student who gets 80% up, will have Grade A.

13. Course Evaluation

1. Exercises and Lab reports 50%
2. Final Examination 50%

14. References

1. N.R. Roger, and D.B. John (eds.). Environmental Analysis: Analytical Chemistry by Open Learning, John wiley&Sons, 1994.
2. J.B. Haroid. Microbiological Application: Laboratory Manual in General Microbiology. 7th edition. McGraw Hill, 1994.
3. H.H. Rump and H.Krist. Laboratory Manual for the Examination of Water, Wastewater and Soil. 2nd edition. VCH Germany, 1992.
4. I.L. Pepper, C.P. Gerba, and J.W. Brendecke. Environmental Microbiology: A Laboratory Manual. 1st edition, Academic Press, 1995.

15. Instructors

Asst.Prof. Dr. Patana Thavipoke
Benjaphorn Prapagdee
Asst.Prof.Dr. Chumlong Arunlertaree
Asst.Prof. Pakorn Suwanich

16. Course Coordinator

Asst.Prof. Dr. Kobkaew Manomaipiboon