COURSE SYLABUS
INSTRUMENTAL ANALYSIS
Credits: 02 (Lectures 01 – Practices 01 – Self-study 06)
Code: MT02004

Expected learning outcomes

Indicator	Upon the completion of the course, student able to	Expected learning outcomes of program
Knowledge		
CELO1	Reinforce some concepts and principles in instrumental analysis. Summarize the advantages and disadvantages of the methods.Analysis of some basic indicators by spectroscopic and electrochemical methods. chromatographic method	ELO1: Apply the knowledge of natural science, politics, social science and humanities, law, economics, and awareness of contemporary issues in the field of environmental sciences.
	Reinforce some concepts and principles in instrumental analysis. Summarize the advantages and disadvantages of the methods.Analysis of some basic indicators by spectroscopic and electrochemical methods. chromatographic method	ELO2: Analyze environmental quality including designing and conducting experiments, collecting data, and interpreting results
Skills		
CELO2	Using the suitabe analytical methods for the specific samples	ELO 9: Apply appropriate approaches, suitable methods, and techniques to investigate, survey, and study environmental problems
CELO3	Know how to handle experimental data, use learned knowledge to find the cause of a problem in practice	ELO10: Use modern technology, equipment, and techniques in the management and protection of the environment and natural resources
Attitute		
CELO4	Be proactive and positive in learning and research	ELO11: Define a clear career orientation; possess a passion for one's career and a sense of lifelong learning. .

Brief descriptions

Chapter 1. General issues - Errors and statistical processing

Chapter 2. Spectroscopy methods

Chapter 3. Electrochemitry methods

Chapter 4. Chromatography methods

Learning methods

- Self-study: reading documents, doing exercises, studying materials
- Group learning: discuss issues related to subject
- Practice the analysis experiments at labratory and write reports
- Group working and offline discussion
- E - learning: Online discussion

Assessment methods

- Grading scale: 10
- Evaluation:

Attendance 10%	Practice 20%	Semi-examination 20%	Final examination : 50%

Student tasks

- Attendance: Students must attend at least 12 lessons doing exercises and participate 5 analytic practices.
- Presentation and Discussion: Students must participate teamwork to make presentations; Preparing the practices
- Self-study: through E-learing system, conducting group discussions under lecturer's control.

Key academic staffs

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