COURSE SYLABUS

INSTRUMENTAL ANALYSIS

Credits: 02 (Lectures 01 – Practices 01 – Self-study 06)

Code: MT 02004

Expected learning outcomes

Indicator	Upon the completion of the course, student able to	Expected learning outcomes of program
Knowledge		
CELO1	Analyze the concept and principal in instrumental analysis; Summary the methods advantages and disadvantages	ELO1: Applying the knowledge of natural sciences, politics, society, humanities, law, economics and the understanding of contemporary issues into environmental sciences.
CELO2	Classify of analytic methods: Potential analysis, conductivity and polarized analysis and doing samples analysis	
CELO3	Understanding the spectroscopy methods: Molecular absorption, atomic emission spectroscopy, atomic absorption spectroscopy and application to sample analysis.	ELO2: Analyse environmental quality including the design and implementation of environmental tests, as well as data collection and interpretation.
CELO4	Calculate the analytical results and evaluate and compare the obtained results with the current standards and regulations in the field of environment.	ELO3: Evaluate the impact of resource use and emissions on environmental quality
CELO5	Summary of chromatography methods: Gas chromatography, liquid chromatography and its application in sample analysis	
Skills		
CELO6	Using the suitabe analytical methods for the specific samples	ELO 6: Applying system-level thinking, critical thinking and creative thinking in solving problems of the environmental industry and related fields.
CELO7	Group working	ELO7: Team working and team leader.
CELO8	Understanding the how to calculate analysis results, discuss results, write reports.	ELO10: Use modern technology, equipment and techniques in natural resources and environmental management and protection activities.
Attitute		
CELO9	Be proactive and positive in learning and research	ELO11: Determine a clear future orientation, career passion and a sense of lifelong learning.
CELO10	Honestly in the results report	ELO12: Demonstrate professional ethical standards, fulfill the responsibility to protect the environment and serve the sustainable development of Vietnam and the globe.

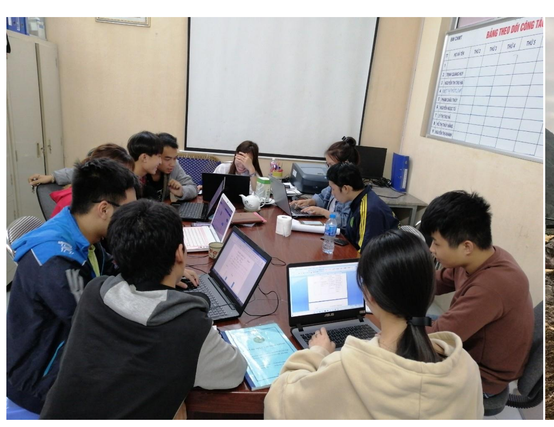
Brief descriptions

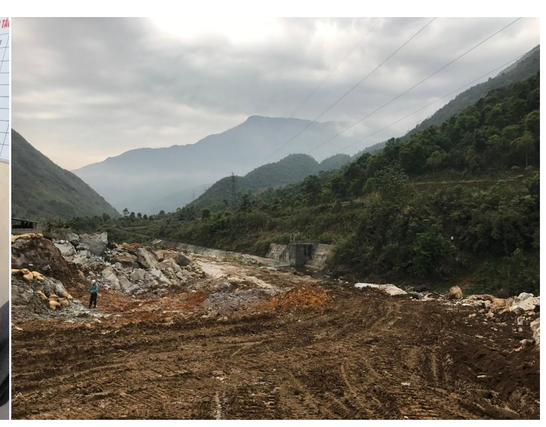
Chapter 1. General issues - Errors and statistical processing

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: 50% in-possess 50% final examination

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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