



UNIVERSIDAD SAN FRANCISCO DE QUITO
SCHOOL: CIENCIAS E INGENIERÍAS
COURSE: INA 3001E - Environm Characterization +lab

COURSE DETAILS:

Credits: 0

Prerequisites: Verify prerequisites in Banner academic system.

Co requirements: The course does not have Co requirements

COURSE DESCRIPTION:

The characterization of solid waste and wastewater is of great importance within Environmental Engineering, as it allows us to determine the degree of contamination and thus design control and treatment processes. The characterization of solid waste and wastewater is complex and requires the application of analytical techniques. The course will cover today's main environmental analytical techniques used in order to identify and quantify contaminants in waste and wastewater.

COURSE LEARNING OUTCOMES:

#	Learning Outcomes	Level
1	Acquire basic concepts in environmental analytical chemistry, about physical-chemical and biological parameters for the characterization of waste and wastewater.	Medio
2	Evaluate the potential of the different analytical techniques available for the characterization of solid waste and wastewater.	Medio
3	Formulate, design and implement protocols for the determination of pollutants in environmental matrices at the local level.	Medio
4	Develop skills to be able to participate in projects related to the characterization of solid waste and wastewater at a local and international level.	Medio

COURSE CONTENTS:

- The analytical process, Measurements, Experimental errors, Statistics
- Calibration methods. Gravimetric analysis
- Electrochemistry
- Electrodes and potentiometry
- Spectrophotometry. Spectroscopy
- Mass Spectrometry
- Chromatography
- Preparation of environmental samples



METHODOLOGY FOR THE INTEGRATION OF THEORETICAL AND PRACTICAL CONTENTS:

The teaching methodology used to teach all the course at USFQ follow the liberal arts philosophy: encourage dialogue and enable the learning construction through providing opportunities for ideas exchange among teachers and students. It is expected that all the theoretical content courses explore potential applications to the professional practice and work context where students are anticipated to perform through the integration of diverse activities and simulations that foster the contextualized understanding of concepts using reality and professional practice as frames of reference.

HOURS DESCRIPTION OF APPLIED PRACTICE

If this course has declared applied practice hours (laboratories, exercises, field trips, practicums, etc.); the instructor for the theoretical element is responsible for describing how the applied practices hours will be fulfilled and assessed during the semester.

Students must pass or fail both the theoretical and application practice components simultaneously.

All courses with declared applied practice hours must provide students with a written guide detailing the requirements for fulfilling the application practice component.

COURSE ASSESSMENT:

Each instructor is responsible for creating an evaluation scheme that corresponds to the learning outcomes declared for each course. The assessment scheme should be presented in a clear and direct manner, such as a chart that indicates the assessment categories and the elements included in each category; it must indicate the total weight that each category will have on the final grade. Category weights may vary, but under no circumstance can an individual element weigh more than 25% of the final grade. For example, it is acceptable for a "Homework" category to weigh 30% if it includes three tasks that weight 10% each. However, a "Final Exam" category that weighs 30% and only includes one element would be unacceptable.

Some academic areas or specific courses have pre-established assessment parameters. In these cases, all instructors assigned to these courses must follow the pre-determined scheme.

If this course has declared applied practice hours (laboratories, exercises, field trips, practicums, etc.) the assessment of these hours must be incorporated within the course's general assessment scheme.

#	Category	Description	Percentage of final grade



MAIN BIBLIOGRAPHY:

[The main bibliography must be in library in physical or digital format]

- Harris, Daniel C., 1948-, Quantitative chemical analysis /, New York : W.H. Freeman and Company, c2016.

COMPLEMENTARY BIBLIOGRAPHY:

[The complementary bibliography can be digital format]

POLICIES:

All students taking courses at USFQ must follow the ethics of learning, ethics of research and ethics of behavior rules detailed in the [USFQ's Code of Honor and Coexistence](#). All the general policies for the courses offered at USFQ are detailed in the Student's Manual, it can be downloaded in [Manual del Estudiante](#).

This syllabus (Syllabus) was reviewed and approved by the coordination of the academic area or department responsible, so all the parallels that are dictated must be governed by this program. If changes / adjustments to the study program are necessary, you should To the coordination of the academic area or department responsible so that the approved changes / adjustments are reflected in the system of Curricular design.'