

Course Unit: 15714 – Sampling and Processing of Samples

Year 2 Semester 3 ISCED Code: 531 ECTS: 3,0

Type of Course Unit: Compulsory Delivery Mode: Face-to-face

Language of Instruction: Portuguese

COURSE COORDINATOR: Anabela Cândida Ramalho Durão

HOURS OF WORK

TOTAL HOURS	Contact Hours								Hours in autonomous work
	Theory	Theory and practice	Practical and laboratory work	Field work	Seminar	Internship	Tutorial guidance	Other	
125		45							80

Prerequisites (if applicable):

LEARNING OUTCOMES (knowledge, skills and competence)

Study of different sampling techniques

Direct contact with different techniques of processing samples in different matrices.

Knowledge of sampling equipment

At the end, the student should be able to design and implement a sampling plan and identify the most appropriate procedure for their processing, possible storage and disposal. It should also acquire the skills to identify the best procedure for extracting and concentrating the analytes from the samples collected. You should also know the legal requirements for sampling

CONTENTS

Main steps in the analytical process: Sampling; Sample Pre-Treatment and Storage; Treatment of the Sample; Analyze; Results.

Sampling: Importance of sampling, types of sampling, conservation and elimination of samples.

Classical and recent methods of treatment of organic, inorganic and biological samples including isolation, concentration and fractionation of analytes.

Elaboration of a quality control plan for sampling

Standards, regulations and guides recommended by the official bodies with competence in the different domains.

DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT'S LEARNING OUTCOMES

The syllabus contents were defined according to the objectives and competences to be acquired by the students. It is expected that the approach to the different topics will allow students to understand the concepts taught.

The programmatic contents allow:

- show that the reliability of the analytical results depends largely on the harvest and that sampling quality is essential;
- acquire knowledge of a complete analytical process;
- acquire knowledge of standards and regulations in the area of sampling

TEACHING METHODOLOGIES

Lectures (using audiovisual media), literature research. Carrying out laboratory work to apply the concepts taught. Field trip

Assessment: reports of the laboratory work performed, laboratory performance of the student; examination.

The final grade will be calculated with a calculation formula in which each of the components will have a weighting to be agreed between the teacher and the students.

DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES

The lectures allow the conciseness of the necessary information to the students, which can and should be completed / complemented by an individual research by the student, guided by the teacher.

The laboratory classes allow the application of the concepts taught in theoretical classes

With the study visits it is intended to show students different labs.

With this perspective, it is intended a new dynamics in the classes, making them more creative and motivating for the students.

EVALUATION METHODS

Avaliação contínua - 2 frequências e trabalho em grupo

Avaliação por exame e trabalho de grupo

A nota final será calculada com base na seguinte equação para avaliação contínua:

$$NF=0,4*Média dos TP+0,6 (F1+F2)/2$$

Ou para avaliação por exame:

$$NF=0,4*Média dos TP + 0,6 E$$

Onde:

TP- Trabalho prático

F – Frequência

E - Exame

MAIN BIBLIOGRAPHY

Alguns elementos de estudo serão disponibilizados na página de elearning da UC (Moodle)

E. Rice, R. Baird, A Eaton, L Clesceri. Standard Methods for the examination of water and wastewater, 22nd edition, APHA, AWWA, WEF, 2012.

Técnicas de colheita de amostras, Instituto Nacional de Saúde Drº Ricardo Jorge (file:///C:/Users/anap/Downloads/i009046.pdf) • Qualidade do Ar em Espaços Interiores - Um Guia Técnico. APA, Amadora, 2009

Field Sampling Procedures Manual, Department of Environmental Protection, Jerry R. Schoenleber, Technical Editor, New Jersey, 2005 •

Legislação e normas ISOJanusz Pawliszyn, Sampling and sample preparation for field and laboratory, Elsevier, 2002

Somenstha Mitra, Sample preparation techniques in analytical chemistry, ElsevierInterscience, 2003

E. Rice, R. Baird, A Eaton, L Clesceri. Standard Methods for the examination of water and wastewater, 22nd edition, APHA, AWWA, WEF, 2012.

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