



Course Unit: 93501 - Food Analysis

Year 2 Semester 3 ISCED Code: 721 ECTS: 5.5

Type of Course Unit: Compulsory **Delivery Mode:** Face-to-face **Language of Instruction:** Portuguese

COURSE COORDINATOR: Silvina dos Anjos Pimenta Marques Maia Ferro Palma

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 | |
| 137.5 | 36 | | 45 | | | | | | 62.5 |

Prerequisites (if applicable): Not applicable.

LEARNING OUTCOMES (knowledge, skills and competence)

- (1) The student should understand the importance of sampling and (2) knowledge of laboratory methodologies.
- (3) Highlighting the importance of instrumental analysis in food products.
- (4) Being able to run for an analytical process and controls on food.

CONTENTS

I - Introduction to food Laboratory methodology

Importance of chemical analysis. Analytical and data processing errors. Accuracy and precision of a method and its validation. Significant figures.

Sampling and its importance. Sampling in food products.

II - Physicochemical Methods of Analysis.

Electroanalytic Methods-Potentiometry and Voltammetry, Conductimetry.

Optical Methods-Spectrophotometry, electromagnetic spectrum, Lick-Beer law, Quantitative methods.

Molecular absorption spectrophotometry in the V. and U.V. and IR.

Atomic absorption spectrophotometry and flame emission. Fundamentals and basic components. Flame function, interference and its correction. Fundamental request and instrumental applications.

III - Extractive and separative instrumental techniques in food products

Extraction by organic solvents and super critical and distillation. Electrophoresis and chromatography. Thin layer chromatography, column chromatography (liquid and gaseous-HPLC).

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

The points (I) to reply to the 1st goal

Points (II) and (III) respond to the 2nd goal, to 3rd and 4th goal.

TEACHING METHODOLOGIES

Lectures, laboratory practices, reports and research papers.

DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING

OUTCOMES

The theoretical and practical complete the different sections of the programme. In theoretical lectures are exposed to the concepts, fundamentals, methods and standards to understand and apply in laboratory analysis in practical lessons.

EVALUATION METHODS

75% of practical lessons ensure the frequency practice syllabus.

The frequency of practical lessons when obtained is valid for 2 years.

Midterm quizzes or final quiz and resource quiz.

Final grade = 60%Theoretical + 40% practical-theoretical.

MAIN BIBLIOGRAPHY

Chaves H. I., das Neves A., Costa Freitas M. (2001) Introdução à Cromatografia Gás-Líquido de Alta Resolução, Dias de Sousa Lda

Gonçalves M.L. (2001) Métodos Instrumentais para Análise de Soluções, Fundação Calouste Gullbenkian/Lisboa.

Pearson D. (1986) Técnicas de laboratório para el análisis de alimentos, Ed. Acribia.

Pombeiro Armando L. (1991) Técnicas e Operações Unitárias em Química Laboratorial, Fundação Calouste Gullbenkian/Lisboa.

Pomeranz Y., Meloan C.E. (1990) Food Analysis, Chapman&Hall.

Skoog D.A., Holler F.J., Nieman T.A. (2002) Princípios de Análise Instrumental, Ed.Bookman.

Steiner G., Schnepl F.M., Matissek R. (2002) Análises de los Alimentos.Ed. Acribia.

Willard H., Merritt L. (1974) Análise Instrumental, F. Calouste Gullbenkian/Lisboa

Stanley & Manahan (1995) Toxicological Chemistry, Lewis.

Year of implementation: 2014/2015 | Date of approval by the Technical-Scientific Board: 2012-10-10