27220 - Laboratory Methods and Quality Control

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	452 - Degree in Chemistry
ECTS	6.0
Course	4
Period	First semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

5.2.Learning activities

Activity 1: Quality Control and validatition of analytical methods (2 ECTS)

- Participatory lectures: 20 h
- Self-assessment work: 25h
- Examination: 3h

Activity 2 : Learn the use of the addequate software and spreadsheets for quality control and validation of analytical methods (1 ECTS).

- Documentation and problem solving in computer lab sessions: 10h.

- Self-assessment work: 15h
- Examination: 2h

Activity 3 : Implementation and validation of analytical methods in the laboratory (3.0 ECTS).

- Laboratory work: 30h
- Data treatment and repport of the results : 40h of self-assessment work.
- Presententation and defense of the results: 5h

5.3.Program

Chapter 1: Introduction to the Quality.

i-Quality and Quality Management Systems. Ii- Q Components. Iii- Historical stages in Quality. Iv- Implementation and support of a Q Management System.

Chapter 2: Quality in Chemical laboratories.

i- Quality and labs types.Ii- Q and analytical properties.

Iii-Activities in the Analytical laboratory.iv- Examples of Q and not Q.v- Principal elements in Q. vi- Keystones: Q assurance and Q control. Vii-Metrology: primary standard and certified reference materials. Viii- Traceability ix-Documentation.

Chapter 3- Quality Standards

i-Q structure. Ii- Q Management system in the labs: standardization-accreditation-certification. Iii- Accreditation: iso 17025: overview. Iv- Good laboratory practices-:GLP model. V- QA unity in GLP. Vi- Scope in QA programs in GLP.

Chapter 4. Statistic tools for Q.

i-Analytical data and results. Ii- Analysis of Variance. Iii- Uncertainty iv-Control Charts.

Chapter 5- Selection and design of the analytical method.

i-Analytical information: data bases. ii-Analytical method selection. Iii- Parameters of the analytical methods. Iv-Optimization and experimental designs.

Chapter 6- Analytical method validation.

i-Q assessment in the analytical lab.ii- Analytical method validation iii- Robustness iv- QC and QA. Iv- Internal and external assessments. V- Interlaboratory tests.

5.4.Planning and scheduling

Lectures: 2h por week during the first semester to complete the total 20h.
Problems: 5 computer lab sessions of 2h during the first semester.

Practical sessions: the schedule and the work group will be available for students at the beginning of the course in the Moodle platform.

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5.5.Bibliography and recomended resources

BB	Compañó Beltrán, Ramon. Garantía de la calidad en los laboratorios analíticos / Ramón Compañó Beltrán, Ángel Ríos Castro Madrid : Síntesis, 2002
BC	Funk, W.; Dammann, V.; Donnevert, G.. Quality Assurance in Analytical Chemistry. Wiley-Blackwell. 2006
BC	Miller, James N.. Estadística y Quimiometría para química analítica / James N. Miller, Jane C. Miller ; traducción, Carlos Maté Jiménez, Roberto Izquierdo Hornillos . - 1ª ed. en español Madrid : Prentice Hall, 2002

Online resources:

AENOR - [http://www.aenor.es]

Entidad Nacional de Acreditación (ENAC) - [http://www.enac.es]

ISO - [http://www.iso.org]