27228 - Fast-response Anatytical Methods

Información del Plan Docente

Academic Year	2018/19
Subject	27228 - Fast-response Anatytical Methods
Faculty / School	100 - Facultad de Ciencias
Degree	452 - Degree in Chemistry
ECTS	5.0
Year	4
Semester	Second semester
Subject Type	Optional
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objetives. A wide range of teaching and learning tasks are implemented, such as: (Lectures, Practice Laboratory sessions, external visit)

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials, including a discussion forum

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Further information regarding the course will be provided on the first day of class

4.2.Learning tasks

This is a 5 ECTS course organized as follows:

- External visits (0,5 ECTS: 5 horas)

4.3.Syllabus

The course will address the following tasks:

- Topic 1: Introduction. Definitions. Quick methods of analysis. Advantages and disadvantages of the MARR. Quality of the analytical signal obtained. Screening methods: basis, types, analytical possibilities, treatment Mathematical results, interpretation of results. Curves Roc.
- Topic 2: Rapid Response Analyzers: Definitions. Classification. Advantages and disadvantages. Dry chemistry (test-kits): definitions, types, possibilities. Strips Types of strips. Building. Measure: color analyzers, optical, electrical, other analyzers (HGF, NIR). Examples of rapid response analyzers in the world of: Health (clinical analysis, forensics, drugs of abuse). Environment. Pharmaceutical industry. Industry agri-food Etc.
- Topic 3: Sensors: Definitions. Classification: physical, chemical, biosensors. Parts of a sensor: elements of recognition (enzymatic, immunosensors, aptameter, biological, others), transduction: optical, electroanalytics, others. Quality factors, Applications: Multisensors (nose and electronic tongue), Treatment of results (neural networks), Smart sensors. Examples in the world of: Health (clinical analysis, forensics, drugs of abuse), Environment. Pharmaceutical industry. Agri-food industry. Etc.
- Topic 4: Remote analysis: definition, characteristics, remote sensing, lasers in remote analysis, spectrometry X-ray fluorescence, other rapid response analytical methods. Examples from the world of: Health (analysis clinical, forensic, drugs of abuse), Environment. Pharmaceutical industry. Agri-food industry. Etc.

Practices sessions.

- In laboratory related to: analytical analyzers, dry chemistry, sensors and remote analysis.
- Outside (visits).

4.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Analitycal Department, Science website. (http://ciencias.unizar.es/web/orarios.do)

The controls will be developed throughout the semester on the dates agreed upon in class and announced in the ADD of the subject and bulletin board of the Department of Analytical Chemistry

The start and date of delivery of the exercises and questions will be announced in the ADD of the subject

The dates and times of the visits will be decided in class and will be announced in the ADD

4.5.Bibliography and recommended resources