

27228 - Fast-response Analytical Methods

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	452 - Degree in Chemistry
ECTS	5.0
Course	4
Period	Second semester
Subject Type	Optional
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

5.3. Program

Theme 1. Introduction. Definitions. Rapid methods of analysis. Advantages and disadvantages of the MARR. Quality of the analytical signal obtained. Methods of screening: rationale, types, analytical possibilities, mathematical treatment of the results, interpretation of the results. Roc curves. Real examples of rapid response in the world of analytical methods.

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Theme 2: Rapid response Analyzers: definitions. Classification. Advantages and disadvantages. Dry chemical (test-kits): definitions, types and possibilities. Strips. Types of strips. Construction. Measurement: colour analysers, optical, electrical, other Analyzers (HGF, NIR). Real examples of rapid response in the world of analytical methods.

Theme 3: Sensors: definitions. Classification: physical, chemical biosensors. Parts of a sensor: elements of recognition (enzyme, immunosensors, aptamers, biological, other), signal transduction: optical, electroanalytical, other. Factors of quality, applications: Multisensor (electronic nose and tongue), treatment of results (neural networks), intelligent sensors (Smart sensors). Real examples of rapid response in the world of analytical methods.

Theme 4: Remote analysis: definition, characteristics, remote sensing, lasers in remote scanning, x-ray fluorescence spectrometry other analytical methods of rapid response. Real examples of rapid response in the world of analytical methods.

5.4.Planning and scheduling

5.5.Bibliography and recommended resources

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|-----------|---|
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| BB | Kellner, R.. Analytical Chemistry. Wiley-Blackwell . 2004 |
| BC | Cunningham, Alice J.. Introduction to Bioanalytical Sensors. Wiley-Blackwell. 1998 |
| BC | Janata, J.. Principles of chemical sensors . Plenum, c1989 |
| BC | M. Butler, P. Vansek, N. Yamazoe (Eds.). Chemical and Biological Sensors and Analytical Methods II . ElectroChemical Society. 2001 |
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- BC** Shah, Vishu. Handbook of Plastics Testing and Failure Analysis. Wiley-Interscience [2007]
- BC** Valcárcel, Miguel. Automatización y miniaturización en Química Analítica / M. Valcárcel, M. S. Cárdenas . - [1a. ed.] Barcelona [etc.] : Springer, D. L. 2000
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