

Module Title:
Molecular Spectroscopy
Module Code:
AM0907
Maximum Number of Students:
30
Total ECTS Credits
2
Notional Learning Hours
(a) Contact Time - 10 h (b) Private Study - 40 h
Format of Teaching:
Lectures 10 h Laboratories or Practicals 0 h Other 0 h
Teaching Strategy:
10 h of formal lectures in 60-120 min timetable.
Convener:
Martí Rosés
University / Department:
Universitat de Barcelona / Departament de Química Analítica
Language of Tuition:
English
Module Description - The Purpose or Aims:
To introduce the fundamentals of molecular spectroscopy techniques To understand the bases of the equipment used in molecular spectroscopy techniques To go deeply into the fundamentals, instrumentation and applicability of UV/vis molecular absorption and fluorescence spectroscopy analytical techniques
Specific Learning Outcomes for this module: (contributing to general learning outcomes GLO 1 – GLO 10)
At the end of the module, the learner is expected to be able To understand, at theoretical and practical level, some analytical techniques based on molecular spectroscopy (GLO3) To understand the fundamentals of research, developing and validation of some methods of analysis based on molecular spectroscopy techniques (GLO4) To identify critical aspects in given methods of analysis based on molecular spectroscopy techniques (GLO6)
Summary of Course Content:
This module will discuss the fundamentals and applicability of some analytical techniques based on molecular spectroscopy. The theory implied in transmission, absorption and emission of electromagnetic radiation at the molecular level will be analyzed. The basis of the most common instrument components in the design of instrumentation for optical spectroscopy will be discussed. The module will focus on the theory, instrumentation and practice of molecular absorption (UV/vis.) and fluorescence spectroscopy analytical techniques.

Transferable Skills Taught:

Ability to solve problems
Ability to take decisions

Assessment Methods:

All outcomes (GLO3, GLO4 and GLO6):

1. Written examination (80%)
2. Written assignment (20%)

Assessment Criteria:Threshold:

To know the fundamentals, basic equipment and most common applications of molecular spectroscopy techniques

Good:

To be able to set up a plan for the application of a molecular spectroscopy technique to a specific analytical problem

Excellent:

To describe in detail UV/vis molecular absorption and fluorescence spectroscopy analytical techniques. Fully understand the theoretical principles that support them. Describe their application, in which fields and what type of samples can be analyzed, and their limitations. Describe the equipment in detail and their variations. Describe how the calibration of the equipment is performed. Identify the most critical steps in the analysis and special cares that must be taken when using these techniques.

Resource Implications of Proposal and Proposed Solutions:

Lecture notes will be available to students

Recommended reading:

- D.A. Skoog, D.M. West and F.J. Holler: "Fundamentals of Analytical Chemistry". 7th ed. Chapters 22-25, Saunders College, 1996.

Pre-Requisites: