Module Title:
Fundamentals of Biochemical Analysis

Module Code:
AM0309

Maximum Number of Students:
20

Total ECTS Credits
2

Notional Learning Hours
(a) Contact Time - 10 h
(b) Private Study – 40 h

Format of Teaching:
Lectures 10h

Teaching Strategy:
Formal lectures in 60/90 min timetable.

Convener:
Vera Ribeiro

University / Department:
University of Algarve/Department of Chemistry, Biochemistry and Pharmacy

Language of Tuition:
English

Module Description - The Purpose or Aims:

1. To provide the basis and practical aspects of the methodologies which are commonly used in a biochemistry and molecular biology laboratory for the preparation and characterisation of macromolecules and the study of their interactions.
2. To present specific examples of application, focusing on clinical correlations and significance of results.

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:
1. correctly describe the principles underlying the most commonly used methods in biochemical analysis
2. propose strategies for the isolation, characterization or quantification of a biomolecule in a specific tissue or clinical setting

Summary of Course Content:

Overview of the most commonly used methods of macromolecule purification (centrifugation, chromatography, electrophoresis), characterization (eg. sequencing, tryptic digest, mass spectrometry, prediction of protein sequence from DNA, prediction/determination of structure), quantification (enzymatic and immunological techniques) and cellular localization (eg. immunohistochemistry, in situ hybridization, fluorescent fusion proteins).

Transferable Skills Taught:

Communication:
Writing literature-based reports
Information Technology:
Use of Web resources for database search (literature, sequences, structure)

Assessment Methods:
1. LO1 and LO2 – Written Examination (format to be decided - either a test or an essay about one specific topic)

Assessment Criteria:

Threshold
LO1 – to correctly describe the principles of a given biochemical technique
LO2 – to identify the information that can be obtained from each technique

Good
LO1 – to describe the advantages and limitations of each method
LO2 – to be able to choose the most adequate technique to solve a specific biological/clinical problem

Excellent
LO1 – to understand the most recent and emergent technological developments in biochemistry/molecular biology
LO2 – to be able to design complex experimental approaches to analyse biological molecules *in vivo* or *in vitro*

Resource Implications of Proposal and Proposed Solutions:

Lecture notes and selected papers will be available for students.

Recommended reading:

Burtis,CA, Ashwood, ER, Bruns, DE, Tietz Fundamentals of Clinical Chemistry, Saunders 2007, ISBN 0721638651
Wilson, K, Walker, JM, Principles and techniques of practical biochemistry, Cambridge University Press1994, ISBN 0-521-42809-2
Plummer, D, Introduction to practical biochemistry, McGraw-Hill 1987, ISBN 0-07-084165-9