

## Liverpool John Moores University

Title: Drug analysis and spectroscopic interpretation  
Status: Definitive  
Code: **5006CHACAP** (117492)  
Version Start Date: 01-08-2019

Owning School/Faculty: Pharmacy & Biomolecular Sciences  
Teaching School/Faculty: Pharmacy & Biomolecular Sciences

Team	Leader
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**Academic Level:** FHEQ5      **Credit Value:** 24      **Total Delivered Hours:** 63  
**Total Learning Hours:** 240      **Private Study:** 177

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	40
Practical	9
Seminar	3
Tutorial	3
Workshop	5

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Exam	60	3
Practice	Separation	Practical Separation	20	
Portfolio	Interpret	Interpretation	20	

### Aims

*To develop knowledge, practical experience and the interpretation skills necessary*

*for the quantitative and qualitative analysis of drugs and pharmaceutical compounds. This will be achieved using a wide range of techniques including chromatography and spectroscopy.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Understand the principles and applications of a range of spectroscopic and chromatographic techniques, together with their advantages and limitations.
- 2 Select an appropriate analytical technique for a particular analyte/matrix separation
- 3 Evaluate the quality of analytical data produced by separative methods
- 4 Select an appropriate method, and devise appropriate procedures for structural elucidation
- 5 Obtain chromatograms from GC and HPLC instrumentation
- 6 Identify, and determine the structure of unknown organic molecules via the interpretation of spectra

## **Learning Outcomes of Assessments**

The assessment item list is assessed via the learning outcomes listed:

Exam	1	2	3	4	5	6
Practical Separation	1	2	3	5		
Interpretation	4	6				

## **Outline Syllabus**

- *Sample preparation: Liquid/liquid, and liquid/solid extraction.*
- *Thin Layer Chromatography (TLC) and spot testing: Detection systems (UV/Visible, spray reagents, mobile and stationary phases)*
- *High Performance Liquid Chromatography (HPLC): Theory, instrumentation and application of HPLC and UPLC in drugs and forensic samples.*
- *Gas Chromatography (GC): Theory, instrumentation and application of GC and GCMS in drugs and forensic samples.*
- *UV/Visible Spectrophotometry and Infrared Spectroscopy: Interpretation of UV/Visible and IR spectra, and the identification of functional groups.*
- *NMR Spectroscopy: Theory, application, and structure elucidation. <sup>1</sup>H, <sup>13</sup>C NMR, DEPT, and COSY. Chemical shifts, shielding and deshielding effects.*
- *Mass Spectrometry: Theory, application, and interpretation of spectral data of mass spectrometry. Interpretation of fragmentation patterns for structural elucidation*

## **Learning Activities**

The module is taught through a series of Lectures, Practicals, Tutorials, Seminars and Wrokshops

### **Notes**

Drugs Analysis and Spectroscopic Interpretation (Level 2) is a combination of 2 previous modules covering all of the analytical techniques used at Level 2. The module has been updated and reformatted to suit the current content demand