

# The University of Jordan

Faculty: Pharmacy  
Program: Pharmacy

Department: Pharmaceutical Sciences  
2014-2014 / First Semester

## Pharmaceutical Instrumental Analysis (1202315)

<b>Credit hours</b>	<b>1</b>	<b>Level</b>	<b>Third year</b>	<b>Pre-requisite</b>	<b>Pharmaceutical Organic Chemistry II (1201213)</b>
<b>Coordinator/ Lecturer</b>	<b>Ruba Tarawneh</b>	<b>Office number</b>	<b>107</b>	<b>Office phone</b>	
<b>Course website</b>		<b>E-mail</b>	<b>r.tarawneh@ju.edu.jo</b>	<b>Place</b>	<b>Lab</b>

<b>Office hours</b>					
<b>Day/Time</b>	<b>Sunday</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>
	10-11			10-11	8-11

### Course Description

This lab trains students on methods of instrumental analysis. The lab includes spectral methods of analysis including UV-Visible, Infra-Red (IR) and Nuclear Magnetic Resonance (NMR). The lab also introduces the students to chromatographic techniques such as thin layer chromatography (TLC), High Pressure Liquid Chromatography (HPLC) and Gas Chromatography (GC). These methods are used in lab along with other analytical procedures in applications for analysis of pharmaceutical preparations.

## **Learning Objectives**

Give students background information of different methods of analysis especially those related to pharmaceutical analysis.

## **Intended Learning Outcomes (ILOs):**

Successful completion of the course should lead to the following outcomes:

### **A. Knowledge and Understanding:** Student is expected to

A1- Obtain background information of different methods of analysis especially those related to pharmaceutical analysis.

A2- To choose the appropriate method of analysis for specific cases

A3- Understand the practical aspects of UV-Visible spectrophotometer and be able to solve problems using this instrument

A4- Understand chromatographic techniques and how to use thin layer chromatography (TLC) in mixture separation and identification

### **B. Intellectual Analytical and Cognitive Skills:** Student is expected to

B1- Be trained on the interpretation of instrumental analysis results and applications of these methods in the elucidation of their structures and concentration determination of the studied samples.

### **C. Subject-Specific Skills:** Student is expected to

C1- Analyze HPLC and GC Charts and to be able to calculate important parameters using these charts

C2- Enable the student to identify unknown organic compounds from their combined IR and NMR spectra

### **D. Transferable Key Skills:** Students is expected to

D1- Work in a team as a work-group and discuss results with other colleagues.

**ILOs: Learning and Evaluation Methods**

<b>ILO/s</b>	<b>Learning Methods</b>	<b>Evaluation Methods</b>
<b>Objectives shown above</b>	<b>Practical sessions and Discussions</b>	<b>Quizzes and practical exams</b>

## Course Contents

<b>Content</b>	<b>Reference</b>	<b>Week</b>	<b>ILO/s</b>
<b>Effect of Solvent ,pH and Structure on UV spectroscopy</b>	Lab Manual	28/9-1/10/2014	A1-A3, D1
<b>Assay of Paracetamol Raw Material</b>	Lab Manual	12-15/10/2014	A1-A3, D1
<b>Assay of Paracetamol in a Dosage Form (BP)</b>	Lab Manual	19-22/10/2014	A1-A3, D1
<b>Determination of Aspirin and Caffiene mixture using UV-Visible Spectroscopy</b>	Lab Manual	26-29/10/2014	A1-A3, D1
<b>Colorimetric Determination of Iron using UV Spectroscopy</b>	Lab Manual	9-12/11/2014	A1-A3, D1
<b>Thin Layer Chromatography (TLC)</b>	Lab Manual	16-19/11/2014	A1, A2, A4 and D1
<b>High Pressure Liquid chromatography (HPLC)</b>	Lab Manual	23-26/11/2014	B, C1, D1
<b>Gas Chromatography (GC)</b>	Lab Manual	30/11-3/12/2014	B, C1, D1
<b>Infra Red Spectroscopy (IR)</b>	Lab Manual	1-4/12/2013	B, C2, D1
<b>Nuclear Magnetic Resonance (NMR)</b>	Lab Manual	7-10/12/2014	B, C2, D1
<b>Interpretation of IR and NMR Spectra</b>	Lab Manual	14-17/12/2014	B, C2, D1
<b>Final Examination</b>		21-24/12/2014	

## Evaluation

<b>Evaluation</b>	<b>Point %</b>	<b>Date</b>
<b>Midterm Exam</b>	<b>30</b>	9-12/11/2014
<b>Reports</b>	<b>10</b>	<b>weekly</b>
<b>Quizzes</b>	<b>10</b>	3-4 quizzes throughout the semester
<b>Evaluation</b>	<b>10</b>	<b>weekly</b>
<b>Final Exam</b>	<b>40</b>	21-24/12/2014

## References:

- 1. Principles of instrumental analysis 5<sup>th</sup> edition by Skoog, Holier and Nieman.**
- 2. Undergraduate Instrumental Analysis 5<sup>th</sup> edition by Robinson**
- 3. Introduction to Spectroscopy, 2<sup>nd</sup> edition by Pavia, Lampman and Kriz.**