



Quality Assurance Unit

Department of Pharmaceutical  
Analytical Chemistry



Course Specification



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## Course Specification

### 1-Basic Information

Title: **Pharmaceutical Analysis**

Code: MAC-023

Level: Year 2 (Master Students) (Pharmaceutical Medicinal Chemistry)

Department: Pharmaceutical analytical Chemistry

Unit: 2 units

Lecture: 2 hr/week

Tutorial: --- Practical: ---

Total: 2 hr/week

Year: 2012-2013

### 2- Aims of Course

To provide the Master student with sufficient information on the different methods of pharmaceutical analysis and various procedures used to analyse drugs in pure, in their dosage forms or in biological fluids.

### 3- Intended Learning Outcomes of Course(ILOs)

#### **a- Knowledge and Understanding:**

- a1- Study different functional group analysis methods focusing mainly on advanced instrumental techniques.
- a2- Focusing on the reactions of the following functional groups: hydroxyl, amine, carbonyl, carboxyl, thiol and sulfide.
- a3- Study the degradation and metabolic pathways of various drug groups.
- a4- comprehend the concept and role of biomarkers and the applications of biosensors in early diagnosis.

#### **b- Intellectual Skills:**

- b1- Design suitable analytical methodology for determination of a single drug or a mixture of drugs in a certain dosage form or biological fluid while avoiding possible interferences.
- b2- Assessment of the possible application of biosensors for measuring a certain chemical moiety.

**c- Professional and practical Skills:**

- c1- Analysis of drugs in different dosage forms.
- c2- Analysis of drugs in various biological fluids.
- c3- identification and quantification of different biomarkers in biological fluids.

**d- General and Transferable Skills:**

- d1- Communication with other colleagues .
- d2- Working in a team through the different steps of analytical procedures.

**Course Contents**

Topic	No. of hours	Lecture	Tutorial / Practical
Functional group analysis	10	10	
Derivative and derivative ratio	4	4	
Multivariate analysis (CLs, ILs,PLs,PCR)	10	10	

**4- Teaching and Learning Methods**

- 4.1- Lectures using power point
- 4.2- Writing a review paper from reference books and periodicals.
- 4.3- Carrying out a net search.

**5- Teaching and learning methods for disables:** The same as above**6- student Assessment****a- Student Assessment methods**

- 6.1- Written Exam to assess the theoretical background

**b- Student Assessment Schedule**

No.	Assessment	week
1.	Written Exam	At the end of course

**c- Weighting of Assessments**

No.	Exam.	Mark	%
1.	Mid-Term Examination		
2.	Final-Term Examination	100	100
3.	Oral Examination		
4.	Practical Examination		
5.	Semester Work		
6-	<u>Other types of assessment</u>		
	<u>Total</u>	100	100%

## **7- List of References**

### **a-Course Notes**

Students are encouraged to read reference books and periodicals and not to depend on course notes

### **b- Essential Books (Text Books)**

- 1- Analysis of Drugs in Biological Fluids, Joseph Chamberlain (1985)  
Crc press, Inc. Boca Raton, Florida.
- 2- Instrumental analysis via functional group analysis, Sidney Siggia, ph.D.(1972), John Wiley and Sons, Inc., New York.
- 3- Quantitative Organic Analysis Via functional group analysis, Sidney Siggia, ph.D.(1963), John Wiley and Sons, Inc., New York.
- 4- Colorimetric and Fluorimetric Analysis of Organic Compounds and Drugs, M.Pesez and J. Bartos .(1974), Marcel Dekker, Inc., New York.
- 5- United states Pharmacopeia 31 and Nf 26, American Pharmaceutical Association, Washington, DC, 2008.
- 6- British Pharmacopoeia, Her Majest's Stationary Office, London, UK, 2009.
- 7- D.C. Garratt, Text book Quantitative Analysis of Drugs, 3<sup>rd</sup> Ed.S.K. Jain, Inia (2001)
- 8- L.G. Chatten, Textbook of Pharmaceutical Chemistry, M.D. Ltd, London and New York (1969).
- 9- G. D. Christian " Analytical Chemistry "4<sup>th</sup> Ed., John Wiley & Sons, New York, Toronto (1994).
- 10- L.F. Hamilton, S.G. Sympson and D. W. Ellis Calculations of analytical Chemistry, 7<sup>th</sup> Ed., New york, London, (1969).

### **c-Recommended Books**

- G. D. Christian " Analytical chemistry ", 6<sup>th</sup> Ed., John wiley & sons, N. Y., 2003.
- A.A. Siddiqui " pharmaceutical Analysis ", vol.1, CBS publishers & Distributors, New Delhi, 2006.
- D.G. Watson, " Pharmaceutical Analysis ", 2<sup>nd</sup> Ed., Elsevier, N. Y. 2005

- Sethi, P.D. “Quantitative analysis of drugs in pharmaceutical formulations” 2<sup>nd</sup> edition CBS publishers & Distributors, New Delhi, 1993.
- Pier A. Serra “Biosensors - Emerging Materials and Applications” ISBN 978-953-307-328-6, InTech, USA.
- Keith E. Herold “Biosensors and Molecular Technologies for Cancer Diagnostics” CRC press Taylor & Francis, USA.

**d- Periodicals, Web Sites, .... etc**

Analyst-J. pharmaceutical and Biomedical Analysis, Analytical Letters-  
Talanta- J. pharm. Sci.- J. chromatography. J. Biomarkers. J. Trends in  
Analytical Chemistry.

**8- Facilities Required for Teaching and Learning**

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**Course Coordinator:** Prof. Dr. Pakinaz Khashaba

**Head of Department:** Prof.Dr. Hanaa M. Abdel-Wadoud

**Date:** 30-11-2014

**University** Assiut **Course Title** Pharmaceutical Analysis  
**Faculty** Pharmacy **Course Code.** MAC-023  
**Department** Pharm. Anal. Chem.

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**Matrix of the Intended Learning Outcomes (ILOs) of the Course**

<b>Week</b>	<b>Topic</b>	<b>Knowledge and Understanding</b>	<b>Intellectual Skills</b>	<b>Professional and Practical Skills</b>	<b>General and Transferable Skills</b>
1-5	Functional group analysis	a1, a2			d1, d2
6-8	Derivative and derivative ratio	a1,a4	b1,b2	c1,c3	d1, d2
9-10	Multivariate analysis	a3	b1	c2	d1, d2

**Course Coordinator:** Prof. Dr. Pakinaz Khashaba

**Head of Department:** Prof.Dr. Hanaa M. Abdel-Wadoud

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