بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2020/2021

Course name: Pharmaceutical analytical chemistry 3	**اسم المقرر :** كيمياء تحليلية صيدلية 3
Academic Level: Second	**المستوى الأكاديمي : الثانى**
Scientific department: Pharmaceutical analytical chemistry	**القسم العلمي :** الكيمياء التحليلية الصيدلية
Head of Department: Prof. Dr. Nahed Mahmoud El-Enany	**رئيس القسم : أد/** ناهد محمود العنانى
Course Coordinator: Prof. Dr. Mohamed Elsayed Metwally	**منسق المقرر : أد/** محمد السيد متولى

Course Specification
2020- 2021
Pharm D Program
Faculty of Pharmacy
Mansoura University

University	Mansoura
Faculty	Pharmacy
Department offering the course	Pharmaceutical analytical chemistry
Department supervising the course	Pharmaceutical analytical chemistry
Program on which the course is given	Bachelor in Pharmacy Pharm D
Academic Level	Second
Date of course specification approval	

1- Basic Information : Course data :

Course Title	Pharmaceutical analytical chemistry 3
Course Code	PA213
Prerequisite	**Registration**
Teaching Hours: Lecture	2
Practical:	2
Total Credit Hours	3

2- Course Aims:

1- The course provides the basic concepts of quantitative chemical methods of analysis, including oxidation reduction titration and electrochemical analysis (potentiometry, conductomertry, polarography) and covers the application of these methods to pharmaceutical compounds.

2- The course also describes the basic principles of applying different analytical methods to environmental analysis such as water analysis including physical and chemical examination of water.

3- Course Learning Outcomes

Upon completing the course, the student will be able to dominate the following key elements

DOMAIN 1- FUNDAMENTAL KNOWLEDGE

(1.1.1)	**Clarify the theory and principles of reduction oxidation titration and electrochemical methods of analysis.**

(1.1.3)	**Combine the principles of different analytical techniques for the estimation of pharmaceutical compounds and analysis of water.**

DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE

(2.2.1)	**Select and apply redox or electrochemical analytical methods to analyze pharmaceutical materials and water resources.**
(2.2.3)	**Demonstrate the principles of various analytical instruments used for the analysis of different raw materials and water resources.**
(2.2.4)	**Explain the principles of pharmaceutical calculations and their applications to pharmaceutical and environmental analysis.**
(2.3.1)	**Select appropriate methods for handling and disposal of materials used in pharmaceutical analysis.**

DOMAIN 4: PERSONAL PRACTICE

(4.1.2)	**Retrieve and analyze information to solve problems, and work individually or effectively in a team.**
(4.3.2)	**Practice self-learning needed to improve professional skills**

4- Course Contents

Week No.	Topics	Hours
1	Introduction to redox titrations.	2
2	Nernest equation and factors affecting redox potential.	2
3	Applications of redox reactions	2
4	Introduction to water analysis, physical and chemical examination of water.	2
5	Chemical examination of water (Continued), water treatment (self-learning).	2
6	Potentiometry principles and instrumentation.	2
7	Midterm exam	
8	Potentiometric titration and its pharmaceutical applications.	2

9	Conductometry principles and instrumentation, application of conductometry	2
10	Introduction to polarography and instrumentation	2
11	Polarography applications.	1
Week No.	**Practical topics**	**hours**
1	**Determination of H_2O_2, oxalic acid**	2
2	**Determination of Iodine/Iodide mixture, ascorbic acid.**	2
3	**Determination of Ferrous/Ferric mixture, lead acetate.**	2
4	**Determination of Potassium persulphate, oxygen absorbed from $KMnO_4$.**	2
5	**Determination of oxalic acid/acetic acid mixtur , Potentiometric titration and problems.**	2
6	**Conductometric titration and problems, Determination of Water acidity and alkalinity.**	2
7	**Midterm exam**	
8	**Determination of Water hardness by EDTA method, Copper in water by nesslerization.**	2
9	**Determination of Water hardness by Soda reagent method, lead, ammonia in water by nesslerization.**	2
10	**Determination of Chlorine in Water, Chloride in water Iron, zinc in water by nesslerization.**	2
11	**Practical Exam**	2
12	**Practical Exam**	2

5- Teaching and Learning Methods:

5.1	**Lectures using power point (PPT) presentations**
5.2	**Lectures using whiteboard**
5.3	**Practical Training / Laboratory**
5.5	**Tutorial / Interactive Sessions**

6- Student Assessment:

a- Assessment Methods:

1-Written exam	**To assess understanding, professional skills**

2-Practical exam	**To assess professional and practical skills**
3-Oral	**To assess Knowledge, understanding, intellectual skills, Personal skills**
Other Assessment, Quiz	**To assess understanding, professional skills**

a- Assessment schedule

Assessment 1	**Mid-term**	**7th week**
Assessment 2	**Practical**	**11th week**
Assessment 3	**Written**	**15th week**
Assessment 4	**Oral**	**15th week**
Other assessment		

b- Weighing of assessments

1	**Mid-term examination**	**15%**
2	**Practical examination & Semester work**	**25%**
3	**Final-term examination**	**50%**
4	**Oral examination**	**10%**
5	**Other types of assessment**	
Total		**100%**

7- Facilities required for teaching and learning

-Class room	**Data show- Computers.**
- Laboratory facilities	**Laboratory equipment, instruments.**
- Library	**Faculty library**
Others	**Internet**

8- Matrix of knowledge and skills of the course

No.	Course contents	Study Week	Outcomes Domains / K elements						
			Domain: 1		Domain: 2				Domain: 4
1.	Introduction to redox titrations.	1	1.1.1						
2.	Nernest equation and factors affecting redox potential.	2	1.1.1				2.2.4		4.1.2
3.	Applications of redox reactions	3		1.1.3	2.2.1		2.2.4	2.3.1	4.1.2

4.	Introduction to water analysis, physical and chemical examination of water.	4		1.1.3	2.2.1	2.2.3	2.2.4	2.3.1	
5.	Chemical examination of water (Continued), water treatment (self-learning).	5		1.1.3	2.2.1	2.2.3			4.3.2
6.	Potentiometry principles and instrumentation.	6	1.1.1			2.2.3	2.2.4		4.1.2
7.	Potentiometric titration and its pharmaceutical applications.	7	1.1.1	1.1.3	2.2.1		2.2.4	2.3.1	4.1.2
8.	Conductometry principles and instrumentation, application of Conductometry	8	1.1.1	1.1.3	2.2.1	2.2.3	2.2.4		4.1.2
9.	Introduction to polarography and instrumentation	9	1.1.1			2.2.3	2.2.4	2.3.1	4.1.2
10.	Polarography applications.	10		1.1.3	2.2.1				

9- List of References

No	Reference	Type
1.	Lectures notes, prepared by Staff Members of the Department	Course notes
2.	Practical notes, prepared by Staff Members of the Department	Course notes
3.	Principles of Instrumrntal Analysis, Skoog, D. A. Holler, F. J. and Crouch, S.R. 6th ed., Thomson، Belmont, USA(2007)	Essential Book
4.	Pharmaceutical Analytical Chemistry، Quantitative Analysis, Amer, M.M. Faculty of Pharmacy, Cairo University	Essential Book
5.	Fundamentals of Analytical Chemistry , Douglas A.; Skoog ; Donald M., West, F. James Holler،Stanely, R.Crouch Thomson, Australia , 9th Edition (2013).	Essential Book
6.	Analytical Chemistry, Gary D. Christian, 6th ed. John Wiely and Sons, New York (2004)	Essential Book
7.	Quantitative Chemical Analysis, Daniel C .Books Harris, 8th ed., W.H. Freeman and Company،New York (2011)	Essential Book
8.	Vogel,s Textbook of Quanitative Chemical Analysis, J. Mendham, M.A, MSc, C. Chem, M. RSC, 6th ed., India (2004)	Supplementary Textbooks
9.	Anual of methods of analysis of foods(water) food safety and standards authority of india ministry of health and family welfare government of India New Delhi 2016	Web
10.	Techniques of Water-Resources Investigations of the United States Geological Survey.	Web

Course Coordinator	Prof. Dr. Mohamed Elsayed Metwally
Head of Department	Prof. Dr. Nahed Mahmoud El-Enany

Date: / / 2020