



Course Specifications
(2016 –2017)

Pharmaceutical analytical chemistry III

2604





Course Specifications
(2016 –2017)

Name of Department: Pharmaceutical Analytical Chemistry

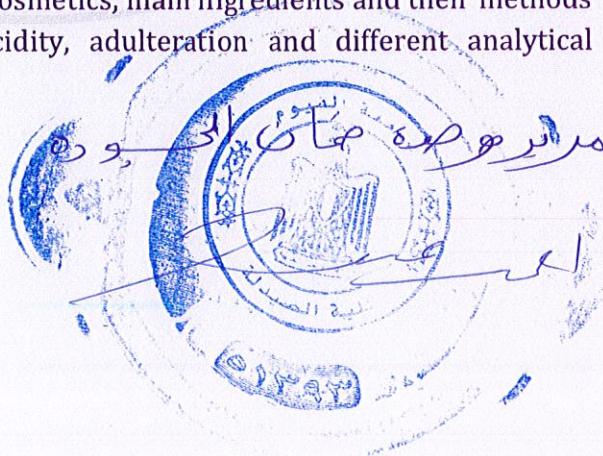
A. Basic Information

Program(s) on which the course is given:	Bachelor of pharmacy (General)
Department offering the course:	Pharmaceutical Analytical Chemistry department
Faculty offering the program:	Faculty of pharmacy, Fayoum University
Dept. responsible for teaching the course:	Pharmaceutical Analytical Chemistry department
Academic year / level:	Second level, semester 3
Course title:	Pharmaceutical Analytical Chemistry III
Course code:	2604
Contact hours (credit hours)	Lecture 2 (2) + Practical 2 (1): Total 4 (3)
Pre-requisite of the course:	Pharmaceutical Analytical Chemistry II
Course coordinator:	Dr. Abobakr Abdel Wahab
Major or Minor element of program:	Major
Date of specification approval:	17/9/2016

B. Professional Information

1. Overall Aims of Course

The course aims to provide students with the fundamentals of oxidation-reduction titrations and to develop the basic knowledge of potentiometry, conductometry, as analytical techniques as well as explaining their application in the pharmaceutical analysis of drug substances. In addition to develop the basic knowledge of water pollution, water quality control; types of cosmetics, main ingredients and their methods of analysis; oils and fats and its rancidity, adulteration and different analytical techniques of analysis .





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2- Intended Learning Outcomes of Course (ILOs)

After successful finishing the course, students should be able to

a- Knowledge and Understanding:

By the end of the course, the students should be able to:

a1- mention and describe the principles of pharmaceutical sciences concerning redox and electrochemical analytical methods.

a2- explain different redox and electrochemical methods as well as instruments and the need for their use in pharmaceutical analysis.

a3- Give knowledge about applications of these different analytical techniques for the estimation of medicinal agents and water analysis.

b- Intellectual skill:

b1- choose appropriate analytical methods for qualitative and quantitative analysis of a material of pharmaceutical relevance and water analysis.

b2- assess drug interaction through evaluating the validity of the electrochemical and redox methods in the analysis of target compound in complex matrices.

C- Professional and practical skills:

c1- Operate different instrumentation as pH meter, potentiometer, conductmeter, in the identification and quantitation of pharmaceutical compounds

c2- Handle properly chemicals in the laboratory and be aware of the rules of good laboratory practice (GLP) .

d -General and transferable skills:

d1- Apply information technology skills, including word processing, database use, archiving data and information retrieval through online computer searches and internet communication.

d2- Participate in a research team or any analytical group for the development of analytical method for analysis of pharmaceutical compounds by electrochemical methods

d3- manage the time in an analytical work effectively..

d4- Solve analytical problems in potentiometry and conductometry.



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3. Contents

Teaching week	TOPIC	No. of lecture hours	No. of practical hours	Assessment of ILOs
1	Introduction to REDOX	2		a1, b1, d1
	Lab safety		2	
2	Quantitative analysis methods	2		a1, a2,b1,b2, c1, c2, d2
	Standerdization		2	
3	Oxidation number	2		a1, a2,b1,b2, c1, c2, d2
	Assay of oxalate		2	
4	Standards used in REDOX	2		a1,b1,b2, c1, c2, d1,d2
	Assay of ferrous		2	
5	Application-1 of REDOX	2		a1, a2,a3,b1,b2, c1, c2, d2, d3
	Assay of hydrogen peroxide		2	
6	Application-2 of REDOX- Quiz 1	2		a1, a2,b1,b2, c1, c2, d1,d3
	Assay of nitrite		2	
7	Fundamentals of electrochemistry	2		a1, a2,a3,b1,b2, c1, c2, d2, d3
	Electro problems I		2	
8	Potentiometry	2		a1, a2,a3,b2, c1, c2, d1
	Electro problems II		2	
9	Reference Electrodes	2		a2,a3,b1, c1, c2, d1,d4
	Electro problems III		2	
10	Application of electro Quiz 2	2		a1, a3, b1,b2, c1, c2, d2
	Revision		2	
11	Conductometry	2		a2,a3, b1, c1, c2, d1, d4
	Final practical exam			
Total no of hours		22	20	
11 & 12	FINAL Exam			



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4. Teaching and Learning Methods

4.1- Lectures (board, data show, power point)	√
4.2- Interactive learning (Discussions, brain storming)	√
4.3- Self-study (Tutorials)	-
4.4- Practical (labs, tools, chemicals, glassware, equipment and instruments)	√
4.5- Other methods (Assignments)	√

5. Student Assessment Methods

- a) Written mid-term exam to assess ILO's a1, a2, a3 and b1, b2
- b) Practical exam to assess ILO's c1 and c2
- c) Final exam to assess ILO's a and b1, b2
- d) Oral exam to assess ILO's a1, d1 and d2
- e) Review article to assess ILO's d1

Assessment Schedule

Quiz 1	4 th or 5 th week
Quiz 2	8 th or 9 th week
Practical exam	11 th week
Final exam	12 ^h week
Oral exam	12 ^h week

Weighting of Assessments

Periodical	15%
Practical	25%
Final exam	50%
Oral exam	10%
Total	100%



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6-List of references:

a- Course notes

Lecture notes prepared by staff members of pharmaceutical analytical chemistry department, 2011-2012.

b- Essential books (Text books):

1- Christian G.D., Analytical Chemistry, 5th Ed., John-Wiley and sons, Inc New York (1994).

2- " Principles of instrumental analysis 6 th Ed, D.A. Skoog and F.J. Holler and S.R. Crouch, Canada, (2007).

3- "Modern Chemical Analysis and Instrumentation ", H. F. Walton & J. Reyes, (1980).

4. "Quantitative Analysis", 4th. Ed., Prentice-Hall, R. A. Day and Jr./A. L. Underwood, Inc., Newjersey, 1980,

5. "Vogel's Textbook of Quantitative Chemical Analysis", 6th. Ed. J. Bassell, R. C. Denney, G. H. Jeffery and J. Menham, (2000)

c- Recommended books

1- "Quantitative Analytical Chemistry", 4th. Ed. Allyn and Bacon, Inc., . J. S. Fritz and G. H. Schenk, Boston, 1979,

2. "Instrumental Methods of Chemical Analysis", 5th. Ed., G. W. Ewing, McGraw-Hill book Company, New York, 1985,

3. "Instrumental Methods of Analysis", 6th. Ed., H. H. Willard, L. L. Merritt, J. A. Dean and F. A. Settle, D. Van Nostrand Co., New York, 1981,

4. "Atomic Absorption Catalogue", T. C. Dymott, Published by PyeUnicam Ltd., 2nd. Ed., 1981.

5. Principles and Practice of Analytical Chemistry". F. W. Fiffeld and D. Kealey, " International Textbook Co. Ltd., 1975,

6. "Chemistry Experiments for Experimental Methods", D. T. Sawyer, W. R. Heineman and J. M. Beebe, John Wiley & Sons, Newyork, 1984.

5

d-Periodicals, Web sites..etc

1- J. Pharm. Biomed. Anal.

2- J. Assocoff.anal.Chem.

3-.Anal.Chem

4-.Talanta

5. <http://www.britannica.com/EBchecked/topic/183000/electrochemical-analysis>

6- <http://www.chm.davidson.edu/vce/Spectrophotometry/index.html>

7. Facilities required for teaching and learning

1. Lecture rooms with data show

2. Procurement of latest edition of the above-mentioned texts and others to update the education process

Course Coordinator: Dr. Abobakr Abdel Wahab

Head of Department: Prof./ Mona Hetta

Date: 18/10/2020

Course specifications

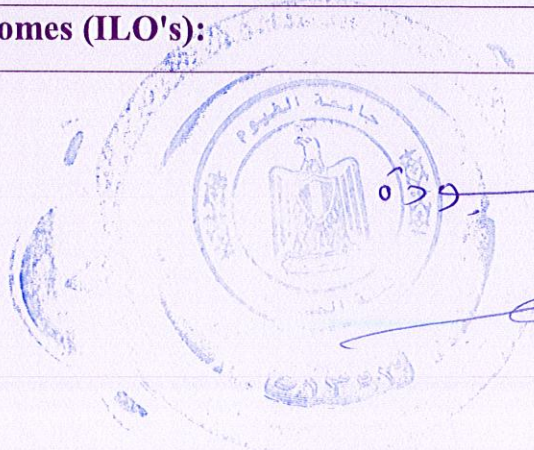
A-Basic Information	
Course code	2504
Course name	Pharmaceutical organic Chemistry III
Credit hours of the course	Lecture: 2 Practical: 1 Total: 3
Pre-requisite of the course	Pharmaceutical organic Chemistry II
Department teaching the course	Pharmaceutical Medicinal Chemistry Department
Program for which the course is given	General Pharmacy Program
Course coordinator	Dr. Mohammed Ibrahim Abd El Latif Hamed
Head of the department	Prof / Mona Hetta
Date of specifications approval	09/9/2015

B-Professional Information

1-Overall aims of the course:

The aim of the course is to provide students with the fundamental principles of stereochemistry, in addition to chemistry of heterocyclic compounds with particular reference to heterocyclic of biological interest. The laboratory work involves purification of organic compounds by different methods. In addition to synthesis of some selected examples of heterocyclic organic compounds

2-Intended learning outcomes (ILO's):



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a-Knowledge and Understanding:

By the end of this course, the student should be able to:

al- Recognize the nomenclature, structure, and physical properties of the different classes of The theoretical basis of chemistry of heterocyclic compounds

a2-Know the methods of purification and preparation of some heterocyclic organic compounds._

b-Intellectual Skills:

By the end of this course, the student should be able to:

B1. Sketch the structure and name the heterocyclic compounds

B2 .Apply the reaction mechanisms and employ the effect of condition on the type of products

B3. Synthesize more complex classes of organic compounds._

c-Professional and Practical Skills:

By the end of this course , the student should be able to:

.cl. Synthesize preliminary heterocyclic compounds of different drug categories

.c2. Purify and identify the newly synthesized chemical compounds or drugs

.c3. Use spectral data to confirm the synthesized organic compounds

d-General Skills:

By the end of this course, the student should be able to:

D1. Communicate clearly by verbal and written means

.D2- Demonstrate self-learning needed for continuous professional development

3. Course content

Topics	lecturer	lecture	practical	total
Introduction of stereochemistry and types of isomers	Dr/Farag Farouk	2	1	3
Introduction and safety. Calculation				

the nos of moles of reactions and the 5 yields				
Molecular representation and chirality Purification of organic compounds by crystallization and sublimation and determination of its m.p	Dr/Farag Farouk	2	1	3
Types of stereochemistry reactions Preparation of some alcohol derivatives and addition to carbonyl compounds	Dr/Farag Farouk	2	1	3
Stereochemistry of cyclohexane ring Preparation of some aldehydes and ketons	Dr/Farag Farouk	2	1	3
Nomenclature, Synthesis, preparation and chemical reactions of aromatic aldehyde and ketone.	Dr/Farag Farouk	2	1	3
Nomenclature of heterocyclic compounds Preparation of some phenols derivatives	Dr/Farag Farouk	2	1	3
Nomenclature of fused heterocyclic rings	Dr/Mohammed Ibrahim	2	1	3

Preparation of acids and amides derivatives				
Reaction and biological activity of 5-membered rings contain one heteroatom Preparation of some pyridine derivatives	Dr/Mohammed Ibrahim	2	1	3
Synthesis, reaction and biological activity of derivative of 5-membered rings Preparation of some diazine derivatives	Dr/Mohammed Ibrahim	2	1	3
Synthesis, reaction and biological activity of 5-membered rings contain more than one heteroatom Preparation of some imidazole derivatives	Dr/Mohammed Ibrahim	2	1	3
Synthesis, reaction and biological activity of 6-membered rings Preparation of some coumarin derivatives	Dr/Mohammed Ibrahim	2	1	3

Synthesis fused five membered heterocycles (indole)	Dr/Mohammed Ibrahim	2	1	3
Revision and practical schemes				
Synthesis fused six membered heterocycles(quinolone)	Dr/Mohammed Ibrahim	2	1	3
Practical exam				

4-Teaching and Learning Methods (lectures, open discussion, role plays . etc.):-

- 4.1-Lectures (board, overhead projector, molecular models ,software chemistry programs and data show)
- 4.2- tutorial and discussion sessions
- 4.3- practical sessions

5- Student Assessment:

a. Assessment methods and weighing :

- 5.1-Quiz to assess the knowledge, understanding and intellectual skills of the course.
- 5.2- mid-term written exam to assess the knowledge, understanding and intellectual skills of the previously studied sections of the course.
- 5.3-Practical exam to assess the practical and professional skills gained by the students.
- 5.-Final written exam to assess all the knowledge and understanding of the different sections of the course.
- 5.5-Oral examination to assess all the intellectual skills and knowledge of the different sections of the course. -
- 1. Class participation: 20% .
- 2. Practical exam: 30% .

3.Oral exam: 20% .

4.Final exam: 80% .

b-Assessment Schedule:

Class participation: Quiz 1: Week 4-5

Quiz 2: Week 8-9

Other activities: throughout the semester

Practical exam :Week 13-14

Oral exam : According to semester timetable

Final exam : According to semester timetable

6-list of references

Course notes

On ELS

Required books

Essential organic chemistry, paula YurkanisBruice.

Recommended books

- Fundamental of organic chemistry, J .
McMurry and E.simanek , 6th edition
 - Organic chemistry , R.T Morrison and
R,N. Boyd, 6th edition
 - Chemistry of pharmacy students ,
satyajit D, sarker
 - Mechanisms in advanced organic
chemistry ,R.P narain (2008)
- Stereochemistry , V.M POTAPOV (1979)
- Organic stereochemistry , micheal J.T
Robinson (1999)
- **VOGEL** 'S 'textbook of practical organic





General pharmacy program

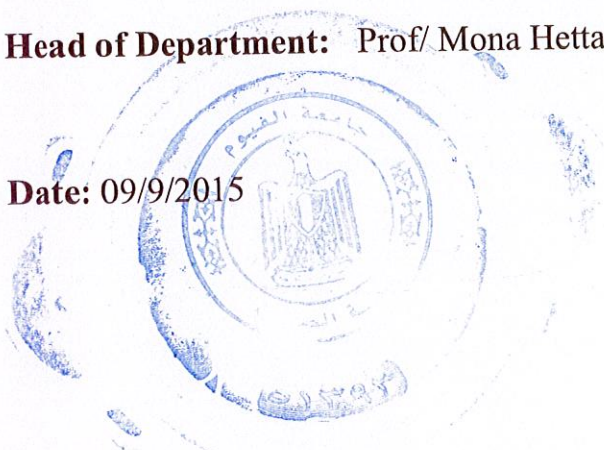


	chemistry ' brian S, furniss 5 th edition .
Periodicals	Different pharmacopoeias (Egyptian & British).
Web sites	- Journal of organic chemistry - http://www.pubmed.com

Course Coordinator: Dr/Mohammed Ibrahim Abd El Latif Hamed

Head of Department: Prof/ Mona Hetta

Date: 09/9/2015



Course Specifications

**Pharmaceutics-1
(2103)**

**Level 2
Semester 3**

Course Specification

A-Basic Information	
Course code:	2103
Course name:	Pharmaceutics-1
Credit hours of the course:	Lecture: 2 Practical: 1 Total: 3
Pre-requisite of the course:	Physical Pharmacy
Department teaching the course:	Pharmaceutics
Program for which the course is given:	General Pharmacy Program
Course Co-coordinator:	Dr. Doaa Helal
Head of the Department:	Prof Dr. Mona Hetta
Date of specifications approval:	17/1/2016

B-Professional Information
1- Overall aims of the course: By the end of this course the students should be able to recognize : study of the system of weights, measures, mathematical expertise and pharmaceutical calculations requisite to the compounding, dispensing, and utilization of drugs in Pharmacy practice. It is also concerned with all manufacturing formulations aspects, packaging , storage and stability of liquid dosage forms including solutions (aqueous and non-aqueous suspensions, emulsions and colloids with emphasis on the technology and pharmaceutical rational Fundamental to their design and development.
2-intended learning outcomes (ILO'S)
a- knowledge and understanding by the end of this course, the student should be able to :

General Pharmacy Program

A1. Understand and apply the fundamental systems of weights and measures used in pharmacy practice (e.g., metric, apothecary, and avoirdupois systems).

A2. Solve problems involving mathematical expertise, such as calculating dose conversions, preparation of solutions, and scaling formulations.

A3. Understand the different types of liquid dosage forms (aqueous solutions, non-aqueous solutions, suspensions, emulsions, and colloidal systems) and their respective applications in pharmacy.

A4. Recognize the factors influencing the selection of liquid dosage forms based on the physicochemical properties of the drug and the intended therapeutic effect.

B. intellectual Skills

By the end of this course, the student should be able to:

B1- Compare between different techniques used in production of liquid dosage forms

B2- Critically analyze the properties of different liquid dosage forms (solutions, suspensions, emulsions, and colloids) and synthesize information to determine the most suitable formulation for a given drug or patient condition.

.b3- assess the selection of excipients based on their role in the stability, bioavailability, and patient acceptability of liquid formulations.

.b4- Analyze and predict the stability of liquid dosage forms by considering factors such as temperature, pH, light, and microbial contamination.

c-Professional and Practical Skills

By the end of this course, the student should be able to:

C1. Prepare liquid formulations accurately by following standard operating procedures (SOPs) for mixing, dissolving, and homogenizing active ingredients and excipients.

C2. Perform calculations related to formulation preparation, including weight-to-volume, volume-to-volume, and concentration adjustments.

d-General Skills:

By the end of this course, the student should be able to:

d1. Use internet in research and communications.

d2. Work effectively in a team during applications of instrumental analysis of different pharmaceutical preparations.

General Pharmacy Program

3- Course contents:

Topic	No. of hours		
	Lecture	Practical	Total
Systems of measurements and inter-systems conversions	2	1	3
Density, specific gravity, specific volume and temperature conversion.	2	1	3
Percentage preparations, ratio strength, and Dilution and concentration.	2	2	4
IV admixture and dose calculation	2	2	4
Pharmaceutical solutions	2	2	4
Colloids	2	2	4
Suspensions	2	2	4
Emulsions	2	2	4
Total	16	14	30

4- Teaching and Learning Methods (lectures, open discussion, role plays...etc.):

- Lectures, using Power point presentation
- Open discussion
- Practical labs.....

a- Assessment Methods and Weighing

- Class participation: 20%
- Practical Exam: 30%
- Oral Exam: 20%
- Final Exam: 80%

b- Assessment Schedule:

- Class participation: Quiz 1: Week 4-5
Quiz 2: Week 8-9
Other activities: throughout the semester
- Practical Exam: Week 13-14
- Oral Exam: According to semester timetable
- Final Exam: According to semester timetable

Course Coordinator: Dr. Doaa Helal

Head of Department: Prof. Dr. Mona Hetta

Date: 17/01/2016





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**General Pharmacy Program
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Course Specifications

A-Basic Information	
Course code:	2313
Course name:	Histology
Credit hours of the course:	Lecture: 2 Practical: 1 Total: 2
Pre-requisite of the course:	No
Department teaching the course:	Faculty of Medicine, Anatomy and Histology Department
Program for which the course is given:	General Pharmacy Program
Course Co-ordinator:	
Head of the Department:	Prof. Mona Hetta
Date of specifications approval:	09/09/2015

B-Professional Information
1-Overall aims of the course:
The course aims to enhance the student's knowledge about various tissues (epithelial, connective, muscular and nervous), heart, blood vessels, lymphatic organs, skin and its appendages, systems (digestive and associated glands, respiratory, urinary, reproductive, central nervous system), endocrine glands and eye histology.
2-Intended learning outcomes (ILO's):
a- Knowledge and Understanding:

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Faculty of Pharmacy

**General Pharmacy Program
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By the end of this course, the student should be able to:

- a1- Define histology, types of microscopes and the principles of staining with hematoxylin and eosin
- a2- Describe light microscopic and electron microscopic features and the function of cell organelles, cell inclusions, and the nucleus
- a3- Discuss the general characteristics of epithelium, its types, sites and the structure of each type.
- a4. Describe the general characteristics of connective tissue (CT), types of CT cells, the structure and types of CT fibers, and types and sites of CT proper.
- a5. Describe the structure and function of red blood corpuscles, white blood cells and platelets.
- a6. Discuss the general characteristics of cartilage, types of cartilage cells and the structure and sites of different types of cartilage.
- a7. Describe the general characteristics of bone, types of bone cells, the structure and sites of different types of bone, and types of ossification.
- a8. Describe the different types of muscle (skeletal, cardiac and smooth muscle)
- a9. Describe the neuron , types of nerve fibers & types of ganglia.
- a10. Describe the histological structure and function of Gastrointestinal tract.
- a.11 Describe the histological structure and function of Endocrine system [suprarenal gland, thyroid gland, pituitary gland]
- a.12 Describe the histological structure and function of Respiratory system [trachea, lung].
- a13. Describe the structure and function of each type of lymphatic organs (lymph node, spleen and tonsil).
- a.14 Describe the structure and function of skin

b-Intellectual Skills:

By the end of this course, the student should be able to:

- b1. Analyze the ultrastructural details of the cell & correlate between the predominance of a certain cell organelle & the function of its cell.
- b2. Correlate between the structure & function of every organ according to its type of cells.
- b3. Compare between the different types of tissues according to their structure, function and distribution in the human body.



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c-Professional and Practical Skills:

By the end of this course, the student should be able to:

- c1. Differentiate between different tissues and organs in histological slides using light microscope.
- c2. Apply different types of stains specific for different types of cells and tissues.
- c3. Identify the ultrastructural details of cells through electron microscopic pictures.

d-General Skills:

By the end of this course, the student should be able to:

- d1- Apply how to work effectively in a team.
- d2- Express himself freely and adequately by improving his descriptive capabilities & enhancing his communication skills
- d3- Maintain professional image in manner, dress speech and interpersonal relationships that is consistent with the medical profession's accepted contemporary standards in the community.

3-Course contents:

	No of hours		
	Lecture	Practical	Total
Introduction to Histology	2	1	3
The cell structure and function [cell membrane- mitochondria- SER- RER- Secretory vesicles]	2	1	3
The cell structure and function [lysosomes- ribosomes- cytoskeleton- nucleus]	2	1	3
Epithelium (general characters- surface epithelium- glandular epithelium. – myoepithelium. – neuroepithelium)	2	1	3



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Connective tissue [general characters- free and fixed CT cells - fibers and matrix & types of C.T]	2	1	3
Blood (Erythrocytes leukocytes, blood platelets)	2	1	3
Cartilage [General characters of cartilage – structure of cartilage - types and sites of cartilage] and Bone [General characters of bone – structure of bone - types and sites of bone – bone ossification]	2	1	3
Lymphatic organs (structure & function of thymus, lymph nodes, spleen and tonsils)	2	1	3
Muscular tissue [general characters, structural details of skeletal, cardiac, and smooth muscles]	2	1	3
Nervous tissue [structural details of the neuron, types of neurons, myelination, structure and function of neuroglial cells]	2	1	3
Gastrointestinal tract [oral cavity, salivary gland, liver, pancreas] and Skin	2	1	3
Endocrine system [suprarenal gland, thyroid gland, pituitary gland] and Respiratory system [trachea, lung]	2	1	3
Total	24		36

4-Teaching and Learning Methods (lectures, open discussion, role plays, ..etc):

- Lectures.
- Practical sections mainly using light microscope.
- Open discussion.
- Assignments.
- Role plays.

5- Student Assessment:

a-Assessment Methods and Weighing:

- Written exams evaluate the levels of knowledge and understanding and Intellectual Skills.
- Periodic exams evaluate the levels knowledge and understanding and Intellectual Skills.
- Practical exams evaluate the levels of the practical Skills.
- Class participation: 15 %
- Practical exam: 25 %
- Final exam: 60 %

b-Assessment Schedule:



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- Class participation: Quiz 1: Week 4-5
Quiz 2: Week 8-9
Other activities: throughout the semester
- Practical exam: Week 12
- Final exam: According to semester timetable

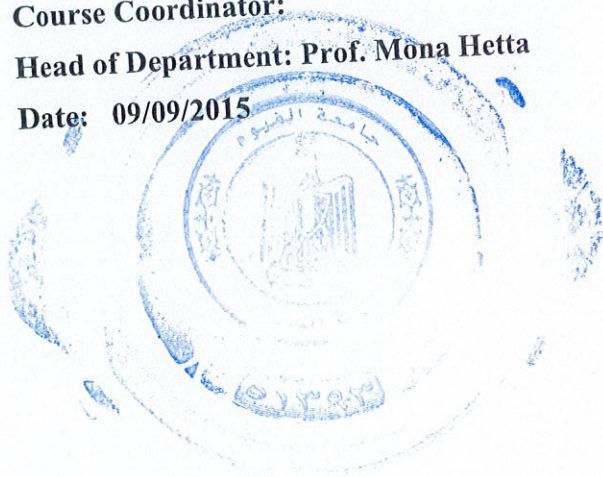
6-List of References:

Course Notes	- Human Anatomy and Histology department Book - Practical book of Histology for medical students' course
Recommended Books	- Histology: the Big Picture by John F. Ash; David A. Morton; Sheryl A. Scott
Web Sites	- https://www.ncbi.com

Course Coordinator:

Head of Department: Prof. Mona Hetta

Date: 09/09/2015





Course Specifications
(2015 – 2016)

Course: Physiology

Course code: 2314





Course Specifications **(2015 – 2016)**

A. Basic Information

Course title	Physiology
Course code	2314
Dept. responsible for teaching the course	Pharmacology & Toxicology
Credit hours of the course:	Lecture: 2 Practical: 1 Total: 3
Program(s) on which the course is given:	General Pharmacy program
Pre-requisite of the course:	Registration
Course coordinator	Dr. Mohamed Hamzawy
Head of the Department	Prof. Mona Hetta
Date of specification approval	09/9/2015

B. Professional Information

1. Overall Aims of Course

The course aims to ensure that students have the necessary knowledge regarding homeostasis, body functions, and regulations.

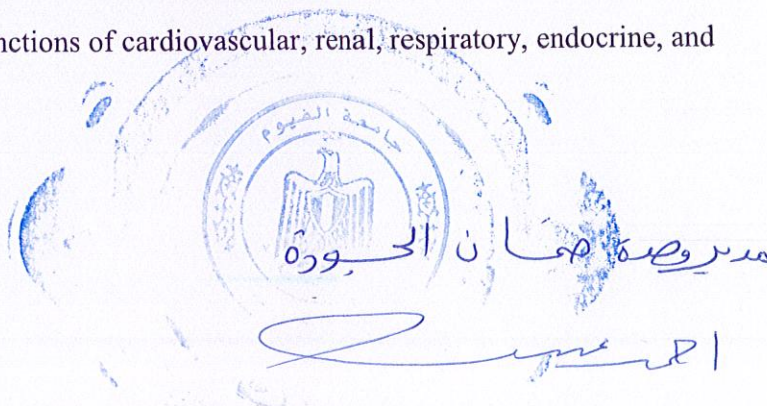
2. Intended Learning Outcomes of Course (ILOs)

a- Knowledge and Understanding:

By the end of the course, the students should be able to:

- a1. Know homeostasis
- a2. Know blood composition and functions.
- a3. Understand physiological functions of cardiovascular, renal, respiratory, endocrine, and other systems.

b- Intellectual Skills





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By the end of this course, the student should be able to:

- b1. Solve problems related to changes of homeostasis.
- b2. Design the proper approach for maintaining the normal body functions.
- b3. Evaluate the importance of the different functions of the body components.

c- Professional and Practical Skills

By the end of the course, the student should be able to:

- c1. Apply the proper techniques for evaluation of body functions.
- c2. Select suitable tools for assessment of different physiological functions.
- c3. Estimate the credibility of evidence based on knowledge of physiology.

c- General and Transferable Skills

By the end of the course, the student should be able to:

- d1. Have the power to work in team spirit condition.
- d2. Show and practice critical thinking, problem solving.

3. Contents

Topic	No. of hours		
	Lecture	Practical	Total
Homeostasis	3	1	4
Cell membrane and structure	3	1	4
Nervous system	6	2	8
blood	3	1	4
Cardiovascular	6	2	8
Respiratory	3	1	4



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Endocrinology	3	1	4
Renal system	3	1	4
Reproductive system	6	2	8
Total	39	12	48

4. Teaching and Learning Methods

4.1- Lectures.

4.2- Practical sections.

4.3- Open discussion.

4.4- Assignments.

4.5- Role plays.

Student Assessment Methods

5.1. Written exams evaluate the levels of knowledge, understanding and intellectual skills.

5.2. Practical exams evaluate the levels of practical skills.

5.3. Periodic exams evaluate the levels of knowledge, understanding, and intellectual skills.

Assessment Schedule

Class participation: Quiz 1: week 4-5

Quiz 2: week 8-9

Practical Exam: week 12

Practical exam: week 13-14

Oral exam: according to semester timetable

Final exam: according to semester timetable

Weighting of Assessments

Class participation: 10%

Oral exam: 10%



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Practical exam: 50%

Final exam: 80%

Total: 150%

5. List of References

6.1- Course Notes: Course note prepared by staff members of the department.

6.2- Required Books: Essentials of Human physiology for pharmacy.

6.3- Recommended Books:

Guyton and Hall. (2016).

Textbook of Medical Physiology, 13th edition. Philadelphia, PA, El Sevier.

6.4- periodicals: Clinical and Experimental pharmacology and physiology.

6.5- Web sites: www.pubmed.com

Facilities required for teaching and learning

1. Lecture rooms with data show
2. Procurement of latest edition of the above-mentioned texts and others to update the education process

Course Coordinator: Dr. Mohamed Hamzawy

Head of Department: Prof. Mona Hetta

Date: 09/9/2015



Course Specifications
(2015 –2016)

Pharmacognosy 2

2203





Course Specifications

(2015 –2016)

Pharmacognosy Department

A. Basic Information

Program(s) on which the course is given	Bachelor of pharmacy (General)
Department offering the course	Pharmacognosy department
Faculty offering the program	Faculty of Pharmacy, Fayoum University
Dept. responsible for teaching the course	Pharmacognosy department
Academic year / level	Second level, semester 3
Course title	Pharmacognosy 2
Course code	2203
Contact hours (credit hours)	Lecture 2 (2) + Practical 2 (1): Total 4 (3)
Pre-requisite of the course:	Pharmacognosy 1
Course coordinator	Prof. Mona Hetta
Major or Minor element of program	Major
Date of specification approval	09/09/2015

B. Professional Information

1. Overall Aims of Course

Based on the Egyptian flora and other floras of wild and cultivated medicinal plants that are used in the pharmaceutical, cosmetic and food industries in the global & Egyptian market. The course introduces students to some botanical drugs of subterranean, herbs, and unorganized drugs of marine and animal origin. During the lectures and practical sessions, students learn to identify examples of these drugs in their entire and powdered forms. Student will learn about the major constituents, folk uses, clinically proven uses, benefits, precautions of those medicinal plants. Possible herbal-drug interactions of selected examples of these drugs.

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Course Specifications **(2015 –2016)**

2.Intended Learning Outcomes of Course (ILOs)

a- Knowledge and Understanding:

By the end of this course, the student should be able to:

a1-Describe the histological structure of the different medicinal plant parts, subterranean and herbs

a2-Give an account on the biologically active principles in each plant part subterranean, herbs, and unorganized drugs of marine and animal origin as well as their biological activity.

a3-Define Complementary therapies, including herbal therapies.

a4-Explain the concepts of medicinal drugs from plant kingdom; their identification as well as, their proper collection, storage and marketing.

b- Intellectual Skills

By the end of this course, the student should be able to:

b1-Determine unknown drugs subterranean, herbs, and unorganized drugs of marine and animal origins (morphologically, microscopically and phytochemically)

b2-Judge whatever the powdered drug is related to subterranean, herbs, and unorganized drugs of marine and animal origin

c- Professional and Practical Skills

By the end of the course, the student should be able to:

c1-Use the microscope to decide a given unknown plant powder and investigate its characteristic elements.

c2-Identify unknown powdered drug sample of subterranean, herbs, and unorganized drugs of marine and animal origin(morphologically, microscopically and phytochemically)

c3-Design and perform experiments for detection of adulteration

d- General and Transferable Skills

By the end of the course, the student should be able to:

d1-Work effectively in team.



Course Specifications **(2015 –2016)**

d2-Demonstrate written and oral communication skills.

d3-Performing online computer search to develop information technology skills and knowing how to retrieve information from a variety of sources.

d4-Keeping up with the pharmaceutical literature and with new developments of the pharmacy profession and pharmaceutical industry and appreciating the need for independent life-long continuing education, starting the day after the student graduates.

3. Contents

Teaching week	TOPIC	No. of lecture credit hours	No. of practical credit hours
1	Introduction to Herb, Mentha, Thyme and Lobelia	2	1
2	Herb: Cannabis, Datura, Hyoscymus, Belladonna	2	1
3	Herb: Vinca, Ephedra, Cymbopogon, Fucus, Carrageen and Ergot	2	1
4	-Unorganized drugs: Introduction, Opium, Aloes, Catechu, Agar, Gelatin and Gums, -(quiz. 1)	2	1
5	Unorganized drugs: Colophony, Asafoetida, Myrrh, Benzoin, Cod-liver oil, Beeswax, Honey, Royal jelly, Musk and Ambergris	2	1
6	Introduction Subterranean organs – Rhubarb	2	1
7	Liquorice, Ginger and Curcuma	2	1
8	Ipeca. Senega, Sarsaparilla, Colchicum and Jalap	2	1
9	Rawolfia, Calumba, , Echinacea Squill -(quiz. 2)	2	1
10	Animal drugs	2	1
11	Practical Exam		1
12	Final Exam		
	Total	20	11

4. Teaching and Learning Methods]



Course Specifications **(2015 –2016)**

- 4.1- Lectures (Tools: board, overhead projector, data show, online teaching).
- 4.2- Assignments: open discussion, seminars, researches and posters.
- 4.3- Practical Session (Tools: labs., boards, instruments, chemicals, glass wares, equipments).

5. Student Assessment Methods

- 5.1. Written exams to assess knowledge and understanding as well as intellectual skills.
- 5.2. Oral exams to assess all types of skills and mainly general, understanding and transferrable skills.
- 5.3. Practical examsto assess practical skills.
- 5.4. Periodic exam(s) to assess understanding and intellectual skills.

Assessment Schedule

Quiz 1	4 th or 5 th week
Quiz 2	8 th or 9 th week
Practical exam	11 th week
Final exam	12 th week
Oral exam	12 th week

Weighting of Assessments:

Periodical	20%
Practical	30%
Final exam	80%
Oral exam	20%
Total	150%

5. List of References

- 6.1- **Course Note:** Lecture and practical notes prepared by instructors



Course Specifications **(2015 –2016)**

6.2- Essential Books (Textbooks): Trease, G.E. & Evans, W.C.; "Pharmacognosy", W.B. Saunders Publishers, Ltd, 15th ed., 2002.

6.3- Periodicals: Pharmacognosy and phytochemistry journals

6.4- Web Sites: <http://www.pubmed.com>

<http://www.botanical.com>

<http://www.herbmed.com>

6. Facilities required for teaching and learning

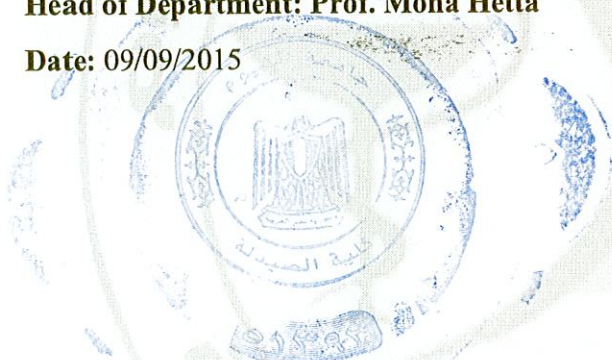
1. Lecture rooms with data show
2. Computers and internet facilities for online teaching
3. Practical Session (Tools: labs., boards, instruments, chemicals, glass wares, equipments).
4. Procurement of latest edition of the above-mentioned texts and others to update the education process

Teaching Staffs: Prof. Mona Hetta & Prof. Khaled Elghondakly

Course Coordinator: Prof. Mona Hetta

Head of Department: Prof. Mona Hetta

Date: 09/09/2015





Course Specifications
(2015 – 2016)

Course: Parasitology

Course code: 2401





Course Specifications (2015 – 2016)

A. Basic Information

Program(s) on which the course is given:	General
Department offering the course	Microbiology
Faculty offering the program	Pharmacy
Dept. responsible for teaching the course	Microbiology
Academic year / level	Level 2, semester 4
Course title	Parasitology
Course code	2401
Contact hours (credit hours)	3
Pre-requisite of the course:	No
Course coordinator	
Major or Minor element of program	Major
Date of specification approval	17/01/2016

B. Professional Information

1. Overall Aims of Course

Introduction, protozoology; amoebae; ciliate; flagellates; blood and tissue protozoa. Medical helminthology; nematodes; custodies; treaties, and arthropods.

2. Intended Learning Outcomes of Course (ILOs)

a- Knowledge and Understanding:

By the end of the course, the students should be able to:

- a1 Demonstrate the taxonomic affiliation of specific parasitic examples.
- a2. Discuss the adaptations of parasites and their host specificity
- a3. Compare the life cycles of various parasites

b- Intellectual Skills

By the end of this course, the student should be able to:

- b1. Identify the medical losses due to parasitic infections
- b2. Gain the practical skills of identifying, classifying and drawing parasitic examples

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Course Specifications **(2015 – 2016)**

c- Professional and Practical Skills

By the end of the course, the student should be able to:

- c1. Correlate parasite infections with certain pathological manifestations
- c2. Discuss the relation of parasite infections and environmental factors

c- General and Transferable Skills

By the end of the course, the student should be able to:

- d1. Show the risk factor of parasite infections

3. Contents

Teaching week	TOPIC	No. of lecture hours	No. of Practical hours
1	Introduction	2	1
2	Host-parasitic relationships	2	1
3	Amoeba	2	1
4	Ciliates	2	1
5	Flagellates	2	1
6	First periodic exam	2	1
7	Blood and tissue protozoa	2	1
8	Blood and tissue protozoa	2	1
9	Medical helminthology	2	1
10	Medical helminthology	2	1
11	Medical helminthology	2	1
12	Second periodic exam	2	1
Total no of hours		36	
13	FINAL Exam		



Course Specifications **(2015 – 2016)**

4. Teaching and Learning Methods

4.1- Lectures (board, data show)

4.2- Assignments

4.3- Class discussion

5. Student Assessment Methods

5.1. Practical exams to assess knowledge and understanding as well as intellectual skills.

5.2. Written, periodic and oral exams to assess all types of skills and mainly general and transferrable skills practice.

Assessment Schedule

Quiz 1	6 th week
Quiz 2	12 th week
Final exam	13 th week; according to semester schedule

Weighting of Assessments

Oral	20%
Practical	20%
Periodical	30%
Final exam	80%
Total	150%

6. List of References

6.1- Course Notes: Lecture notes in Parasitology

6.2- Essential Books (Textbooks)

Human Parasitology by Thomas N. Oeltmann, Burton J. Bogitsh and Clint E. Carter



Course Specifications (2015 – 2016)

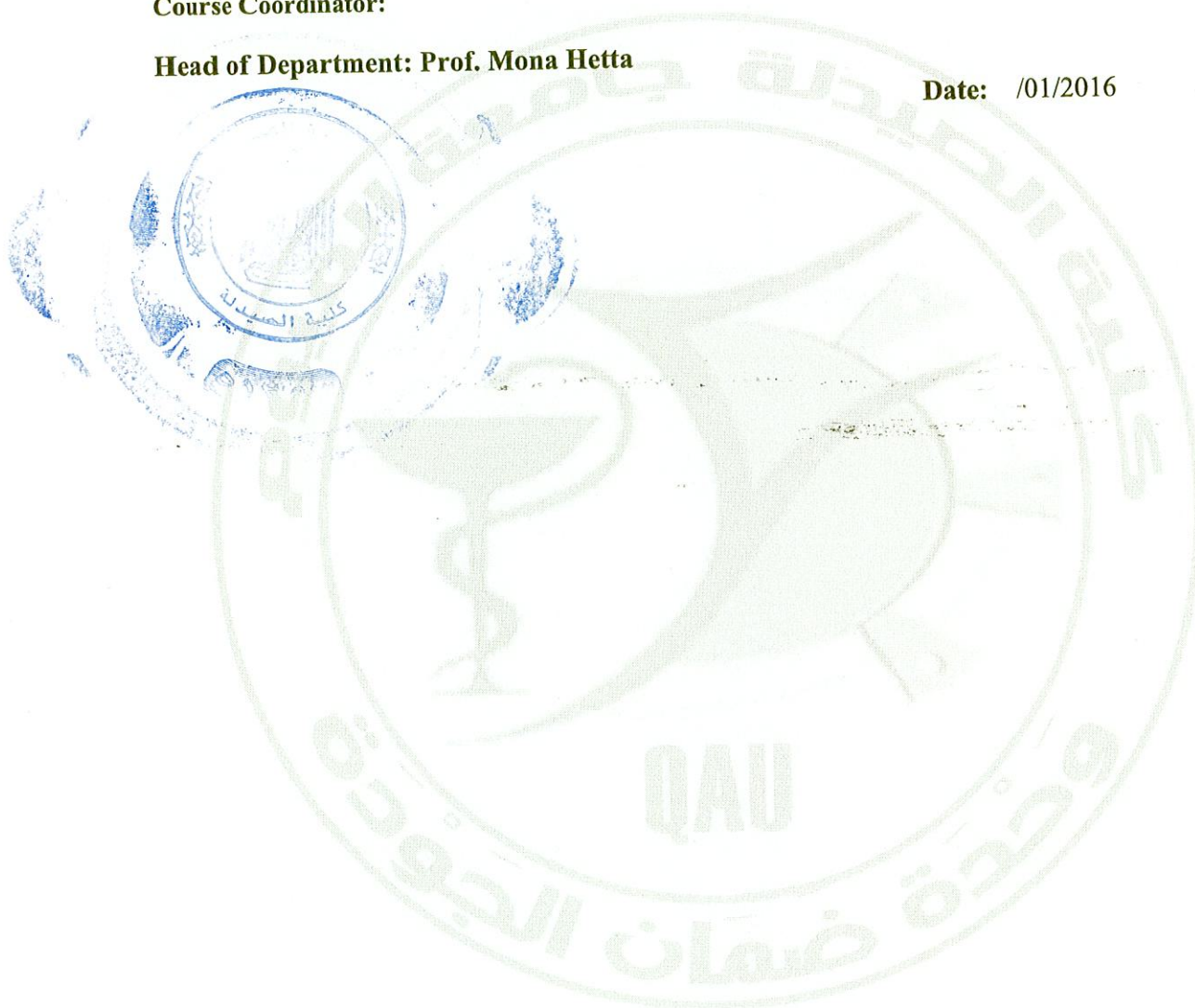
Facilities required for teaching and learning

1. Lecture rooms with data show
2. Procurement of latest edition of the above-mentioned texts and others to update the education process

Course Coordinator:

Head of Department: Prof. Mona Hetta

Date: /01/2016



Course Specifications

**Pharmaceutics-2
(2106)**

**Level 2
Semester 4**

General Pharmacy Program

Course Specification

A-Basic Information	
Course code:	2106
Course name:	Pharmaceutics-2
Credit hours of the course:	Lecture: 2 Practical: 1 Total: 3
Pre-requisite of the course:	Pharmaceutics-1
Department teaching the course:	Pharmaceutics
Program for which the course is given:	General Pharmacy Program
Course Co-ordinator:	Dr. Doaa Helal
Head of the Department:	Prof Dr.Mona Hetta
Date of specifications approval:	17/09/2016

B-Professional Information
1- Overall aims of the course:
By the end of this course the students should be able to recognize different semisolid dosage forms, parenteral and ophthalmic preparations know the basic composition of transdermal batch and their use .they are capable to choose suitable excipient according to API and according to dosage form required
2-intended learning outcomes (ILO'S)
a- knowledge and understanding by the end of this course .the student should be able to

Dr. Doaa Helal

17/09/2016

General Pharmacy Program

A1-Define different semi-solid dosage forms, their advantages and disadvantages and recognize different methods of their manufacture

A2-discuss factors affecting the stability of a specific dosage forms and its pre-formulation consideration

a3-Identify different routes of Parenteral administration and consideration for parenteral) formulations

a4-Discuss advantage and disadvantage of parenteral dosage form as.

A5-Discuss advantage and disadvantage of ophthalmic dosage forms

b-Intellectual Skills

By the end of this course, the student should be able to

B1- Compare between different techniques used in production of semi-solid dosage forms

B2-Detect D V value of different semi-solid dosage forms and quantities of ingredients used

.b3-Analyze the results to determine the accepted topical dosage form

.b4- Assess excipients used in parenteral forms

b5. Assess excipients used in ophthalmic preparations.

c-Professional and Practical Skills

By the end of this course, the student should be able to:

cl. Demonstrate different Pharmaceutical semi-solid dosage forms.

c2. Prepare different types of suppositories on small scales.

.c3-Use chemical and physical tests on a dosage forms to determine their quality control

c4. Analyze manufacturing requirements for parenteral formulations and ophthalmic dosage forms.

d-General Skills:

By the end of this course, the student should be able to:

d1. Use internet in research and communications.

d2. Work effectively in a team during applications of instrumental analysis of different pharmaceutical preparations.

General Pharmacy Program

3- Course contents:

Topic	No. of hours		
	Lecture	Practical	Total
Rectal and vaginal dosage form	2	2	4
Suppository bases	2	2	4
Quality control of suppository	2	2	4
Topical preparations	2	2	4
Transdermal drug delivery system	2	2	4
Parenteral formulations	2	2	4
Excipient and manufacturing of parental formulations	2	2	4
Ophthalmic preparations	2	2	4
Total	16	16	32

4- Teaching and Learning Methods (lectures, open discussion, role plays,...etc):

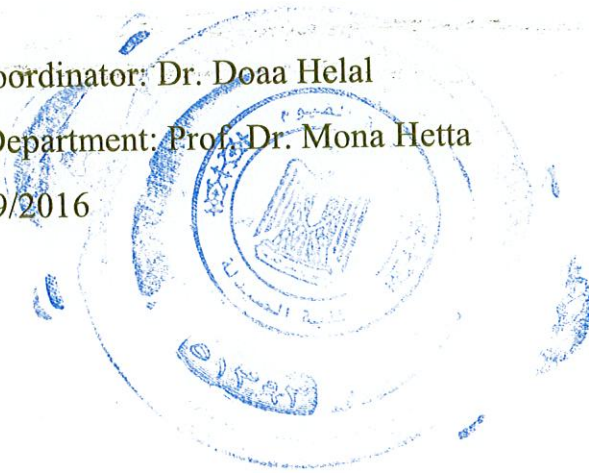
- Lectures, using Power point presentation
- Open discussion
- Practical labs.....

a- Assessment Methods and Weighing	
-	Class participation: 20%
-	Practical Exam: 30%
-	Oral Exam: 20%
-	Final Exam: 80%
b- Assessment Schedule:	
-	Class participation: Quiz 1: Week 4-5 Quiz 2: Week 8-9 Other activities: throughout the semester
-	Practical Exam: Week 13-14
-	Oral Exam: According to semester timetable
-	Final Exam: According to semester timetable

Course Coordinator: Dr. Doaa Helal

Head of Department: Prof. Dr. Mona Hetta

Date: 17/9/2016





Course Specification of Pharmacognosy III

A. Basic information:

University: Fayoum

Faculty: Pharmacy

Program (s) on which the course is given: Bachelor of pharmacy (General)

Department offering the course: Pharmacognosy

Academic year Level: second level

Basic information:

Title: Pharmacognosy III **code:** 2204

Credit hours: 3 (2+1)

Lectures: 2 hrs/ week **Practical:** 1 hrs/ week

Total: 3 hrs/ week

B. Professional information:

1- Overall Aims of the Course:

Upon completion of this course, the students should have information about medicinal natural products from plant and animal origins, be able to recognize morphological and microscopical characters, active constituents and uses of herbs, roots, rhizomes, and unorganized drugs & evaluate various methods of identification and standardization of active substances from different organs.

2- Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding	
a1	Illustrate morphological, Histological characters and uses of medicinal flowers, barks, wood and herbs
a2	Identify adulteration of different medicinal flowers, barks, wood and herbs.
a3	Recognize the pharmacological actions and uses of certain medicinal plants & natural products
B- Professional and Practical skills	
b1	Handel and dispose chemicals in a safe way

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b2	Handle lab microscopes effectively
b3	Examine drugs of plant origin in entire and powdered form.
C- Intellectual skills	
c1	Adapt GLP and safety guidelines in the lab.
c2	Differentiate between drugs in entire and powdered form
c3	Differentiate the active constituents of different drugs.
D- General and Transferable skills	
d1	Work as a member of a team
d2	Implement writing and presentation skills
d3	Develop critical thinking, decision making and time management skills

C. Contents

Week no.	Lecture (2 credit hours /week)	Practical /tutorial (2 credit hours /week)
1	<u>Part I: Subterranean organs</u> Introduction to subterranean plants. Examples of medicinal subterranean organs including Rhubarb.	Lab Safety
2	Examples of medicinal subterranean organs including Liquorice, Ginseng	Subterranean introduction Macroscopic and microscopic investigation of Rhubarb
3	Examples of medicinal subterranean organs including Ginger, Turmeric, Echinacea and Goldenseal.	Macroscopic and microscopic investigation of subterranean organs including (Ginger, Curcuma, and Liquorice)
4	Examples of medicinal subterranean organs including Ashwagandha, Valerian and Kava roots.	Introduction Herb Macroscopic and microscopic investigation of Hyoscyamus
5	Examples of medicinal subterranean organs including Garlic, Onion and colchicum.	Macroscopic and microscopic investigation of herbs including Mentha + Thyme



Week no.	Lecture (2 credit hours /week)	Practical /tutorial (2 credit hours /week)
6	<u>Part II : Animal drugs</u> Examples of animal derived drugs including Heparin, Insulin, Cod liver oil,	Revision
7	<u>Part II : Animal drugs</u> Examples of animal derived drugs including Honey, Propolis and royal jelly	
8	<u>Part III: Herbs:</u> -Introduction to Herb Examples of medicinal herbs including Mentha, Thyme and Lobelia:	Practical exam (part I)
9	Examples of medicinal herbs including Cannabis and Solanaceous herbs (Datura, Hyoscyamus and belladonna)	Unorganized drug I Colophony, Myrrh, Aloe, and Benzoin
10	- Examples of medicinal herbs including Vinca, Ephedra, Halfbar (Cymbopogon proximus) and Lemon grass: -Thallophyta: Fucus, Carrageen, Ergot, Yeast and Penicillum	Unorganized drug II Gum acacia, Gum tragacanth, Agar and Gelatin
11	Part IV: Unorganized drugs: Examples of unorganized drugs including Dried Latex (Opium) and Dried Juices (Aloes) + periodical exam	Revision
12	Examples of unorganized drugs including Extracts (Pale Catechu, Black Catechu, Agar and Gelatin) & Plant Gums (Gum acacia and Gum tragacanth).	Practical exam (part II)



Week no.	Lecture (2 credit hours /week)	Practical /tutorial (2 credit hours /week)
13	Part IV: Unorganized drugs: Examples of unorganized drugs including Resins and resin combinations (Colophon), Oleo-Resin (Copaiba), Oleo-Gum-Resin (Asafoetida, Myrrh and olibanum),	Delivery of assignment
14	Part IV: Unorganized drugs: Examples of unorganized drugs including Balsams (Benzoin and Balsam tolu) + periodical exam	
Total	28 credit hours	26 [13 credit hours]
Cours e Total Hours	54 credit hours	

D- Teaching and Learning Methods:

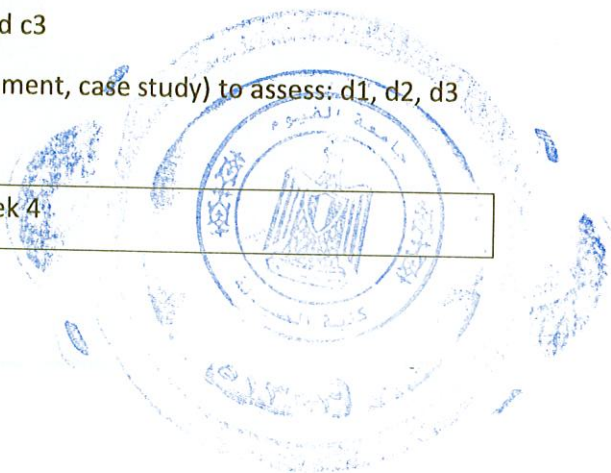
- Lectures and interactive lectures.
- Practical sessions
- Self learning (group discussion, group assignment)

E- Student Assessment methods:

- Periodic exam to assess: a1, a2, a3, c1,c2 and c3
- Written exams to assess: a1, a2, a3, c1, c2 and c3
- Practical exams to assess: b1, b2, b3 and d1
- Oral exam to assess: a1, a2, a3, c1, c2 and c3
- Activities (group discussion, group assignment, case study) to assess: d1, d2, d3

Assessment schedule

Assessment (1): activity	Week 4
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Assessment (2): Periodic exam	Week 7, 14
Assessment (3): Practical exam	Week 8,12
Assessment (4):Final written exam	Week 15
Assessment (5): Oral exams	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Periodic exam	20	20%
Practical exam	30	30%
Final written exam	80	80%
Oral exam	20	20%
TOTAL	150	150%

F- Facilities required for teaching and learning:

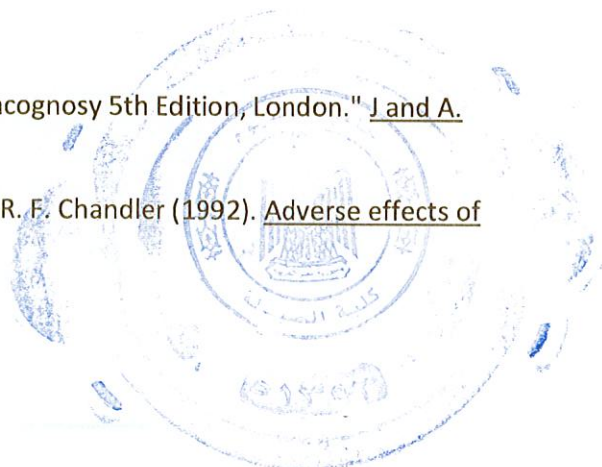
- **For lectures:** Black (white) boards and data show.
- **For Labs:** Chemicals, glassware and microscopes.

G- List of References:

1- **Course Notes:** Student book of Pharmacognosy I approved by Pharmacognosy Department (2019).

2- Essential Books:

- Wallis, T. (1967). "Text Book of Pharmacognosy 5th Edition, London." J and A. Churchhill Ltd: 81-82.
- De Smet, P. A., K. Keller, R. Hänsel and R. F. Chandler (1992). Adverse effects of herbal drugs, Springer.





- Betty, P. and W. Derek (2000). "Atlas of microscopy of medicinal plants, culinary Herbs and species." CBS publisher New Delhi: 17-42.
- Evans, W. (2005). Trease and Evans Pharmacognosy, ed: 15th, Elsevier, a reed Elsevier India pvt ltd.
- Jackson, M. and A. Lowey (2010). Handbook of extemporaneous preparation: a guide to pharmaceutical compounding, Pharmaceutical Press London, UK.
- Upton, R., A. Graff, G. Jolliffe, R. Länger and E. Williamson (2016). American herbal pharmacopoeia: botanical pharmacognosy-microscopic characterization of botanical medicines, CRC Press.
- McCreath, S. B. and R. Delgoda (2017). Pharmacognosy: Fundamentals, applications and strategies, Academic Press.

2- Recommended Books

- Martindale (2007), "The extra pharmacopeia". 31st edn., by James, E.F Reynolds. And Kathleen Parfitt, Royal Pharmaceutical Society, London.

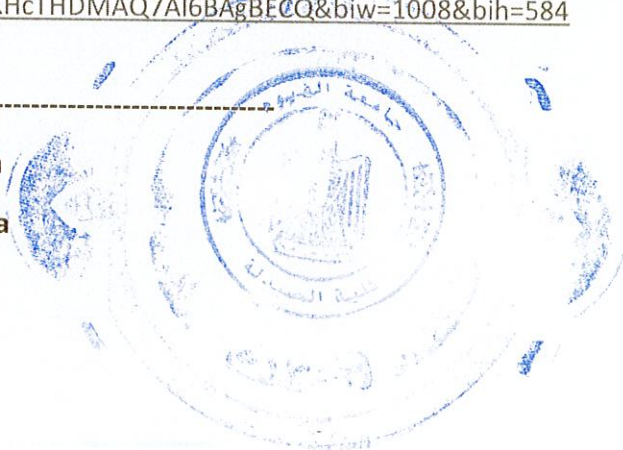
3- Periodicals and websites:

- Aquilina A. (2013), The extemporaneous compounding of paediatric medicines at Mater Dei Hospital. Journal of the Malta College of Pharmacy Practice. Issue 19, 28 – 30.
- <http://canadianpharmacistsletter.therapeuticresearch.com/ce/ceCourse.asp>
- <https://www.google.com/search?safe=active&sxsrf=ACYBGNT1wfCQl6DGxZ5ouZYI1QZZfJSrYg:1568843605556&q=Pharmacognosy4all&tbm=isch&source=univ&sa=X&ved=2ahUKEwiel8TurdvkAhVlrXoKHcTHDMAQ7AI6BAgBECQ&biw=1008&bih=584#imgsrc=7NmuWomEPI70WM:>

Course Coordinators: Prof. Dr. Mona Hetta

Head of Department: Prof. Dr. Mona Hetta

Date:





Fayoum University



Faculty of Pharmacy

**General Pharmacy Program
(2015-2016)**

Course Specifications

A-Basic Information	
Course code:	2311
Course name:	Psychology
Credit hours of the course:	Lecture: 1 PracTotal:1 Total: 1
Pre-requisite of the course:	No
Department teaching the course:	Faculty of Arts, Psychology Department
Program for which the course is given:	General Pharmacy Program
Course Co-ordinator:	
Head of the Department:	Prof. Mona Hetta
Date of specifications approval:	20/09/2015

B-Professional Information

1-Overall aims of the course:

The objective of this course is to help understand the behavior of the people around us. Including: different psychological processes, sensation, perception, conditioned learning, motivation and secondary psychological processes: Learning, memory, language and cognition, intelligence, personality, developmental psychology, environmental and child psychology.

Mental Health: signs of good mental health and disturbances (neuroses and psychoses), conflicts and frustration as precursors to the neuroses, genetic predisposition and diseases as precursors to the psychoses, some of the main therapies in psychology.

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Fayoum University



Faculty of Pharmacy

**General Pharmacy Program
(2015-2016)**

2-Intended learning outcomes (ILO's):

a- Knowledge and Understanding:

By the end of this course, the student should be able to:

- a1- List different principles and theories.
- a2- Identify basic concepts of social psychology

b-Intellectual Skills:

By the end of this course, the student should be able to:

- b1- Analyze different behaviors of people.

c-Professional and Practical Skills:

By the end of this course, the student should be able to:

- c1- Apply interpersonal; communication which relate to the pharmacy practice system that involves patient.
- c2- Apply interpersonal; communication which relate to the pharmacy practice system that involves physicians.
- c3- Apply interpersonal; communication which relate to the pharmacy practice system that involves nurses.

d-General Skills:

By the end of this course, the student should be able to:

- d1- Develop communication with the internet critically as a source of information about human psychology.

3-Course contents:

	No of hours		
	Lecture	Practical	Total
Different principles, theories and vocabulary of psychology as a science	1	0	1
Different principles, theories and vocabulary of psychology as a science	1	0	1



Fayoum University



Faculty of Pharmacy

**General Pharmacy Program
(2015-2016)**

Basic concepts of social psychology	1	0	1
Basic concepts of medical psychology	1	0	1
Basic concepts of medical psychology	1	0	1
Basic concepts of medical psychology	1	0	1
Interpersonal communication which relate to the pharmacy practice system that involves patients	1	0	1
Interpersonal communication which relate to the pharmacy practice system that involves physician	1	0	1
Interpersonal communication which relate to the pharmacy practice system that involves nurses	1	0	1
Interpersonal communication which relate to the pharmacy practice system that involves other healthcare providers	1	0	1
Signs of good mental health and disturbances (neuroses and psychoses)	1	0	1
Revision	1	0	1
Total	12		12

4-Teaching and Learning Methods (lectures, open discussion, role plays, ..etc):

- Lectures.
- Open discussion.
- Assignments.
- Role plays.

5- Student Assessment:

a-Assessment Methods and Weighing:

- Written exams evaluate the levels of knowledge and understanding and Intellectual Skills.
- Periodic exams evaluate the levels knowledge and understanding and Intellectual Skills.
- Class participation: 10%
- Final exam: 40%

b-Assessment Schedule:



Fayoum University



Faculty of Pharmacy

**General Pharmacy Program
(2015-2016)**

- Class participation: Quiz 1: Week 4-	Quiz 2: Week 8-9
- Final exam:	Other activities: throughout the semester According to semester timetable

6-List of References:

Course Notes	- Staff lectures handouts
Recommended Books	- British psychological society standards for undergraduate accreditation.

Course Coordinator:

Head of Department: Prof. Mona Hetta

Date: 20/09/2015



Course Specifications
(2015 –2016)

Instrumental analysis

2604





Course Specifications
(2015 –2016)

Pharmaceutical Analytical Chemistry

A. Basic Information

Program(s) on which the course is given	Bachelor of pharmacy
Department offering the course	Pharmaceutical Analytical Chemistry department
Faculty offering the program	Faculty of pharmacy, Fayoum University
Dept. responsible for teaching the course	Pharmaceutical Analytical Chemistry department
Academic year / level	Second level, semester 4
Course title	Instrumental analysis
Course code	2604
Contact hours (credit hours)	Lecture 2 (2) + Practical 2 (1): Total 4 (3)
Pre-requisite of the course:	Registration
Course coordinator	Dr/ Ragab Ahmed
Major or Minor element of program	Major
Date of specification approval	17/01/2016

B. Professional Information

1. Overall Aims of Course

1. Understand the principles behind major analytical instruments such as UV-Vis spectrophotometers, HPLC, GC, and mass spectrometry.
2. Apply instrumental techniques for the qualitative and quantitative analysis of pharmaceutical compounds.
3. Develop the ability to select appropriate instrumental methods based on the nature of the sample and the required analysis.
4. Interpret and analyze data generated from various instruments to identify and quantify substances.
5. Demonstrate proficiency in the use of laboratory equipment for chromatographic and spectroscopic analysis.
6. Troubleshoot common issues in instrumental analysis, ensuring accurate and reliable results.
7. Critically evaluate the limitations and advantages of different instrumental techniques in pharmaceutical research and quality control.
8. Apply theoretical knowledge to real-world pharmaceutical problems, enhancing understanding of drug purity, concentration, and interactions using modern analytical tools.



Course Specifications (2015 –2016)

2. Intended Learning Outcomes of Course (ILOs)

a- Knowledge and Understanding:

By the end of the course, the students should be able to:

- a₁- Describe the basic principles and theory behind major instrumental analysis techniques such as spectroscopy, chromatography, and electrochemical methods.
- a₂- Identify the appropriate analytical techniques for specific types of pharmaceutical samples and substances.
- a₃- Understand the role of instrumental analysis in quality control and drug development within the pharmaceutical industry.
- a₄- Explain the scientific basis of quantitative and qualitative analysis of drugs using instrumental methods.

b- Intellectual Skills

By the end of this course, the student should be able to:

- b₁- Critically evaluate the advantages and limitations of different instrumental techniques for drug analysis.
- b₂- Interpret and analyze data obtained from various instrumental methods to ensure accuracy and reliability.
- b₃ - Apply problem-solving skills to select the best analytical technique for a given pharmaceutical problem.
- b₄- Develop strategies for optimizing instrumental conditions to achieve accurate and reproducible results.

c- Professional and Practical Skills

By the end of the course, the student should be able to:

- c₁. Operate a range of instrumental analysis equipment, such as HPLC, UV-Vis spectrophotometers, and GC, with proper calibration and maintenance.
- c₂. Conduct experiments to assess the purity, potency, and concentration of pharmaceutical substances using instrumental methods.
- c₃- Ensure compliance with Good Laboratory Practices (GLP) and safety standards during instrumental analysis procedures.



Course Specifications **(2015 –2016)**

c4- Record, analyze, and present experimental results following the scientific method and professional reporting standards.

d-General and Transferable Skills

By the end of the course, the student should be able to:

d1. Collaborate effectively with peers and multidisciplinary teams to perform and interpret experimental analyses.

d2. Communicate complex scientific data and interpretations in a clear, concise manner through written reports, presentations, and discussions.

d3. Demonstrate efficient time management skills in balancing laboratory work, data analysis, and report writing to meet deadlines.

d4. Use relevant software and digital tools for data analysis, result interpretation, and graphical representation of experimental findings.

d5- Develop problem-solving strategies for troubleshooting technical issues with instruments and analyzing unexpected data results.

d6. Engage in self-directed learning to stay updated on new analytical technologies and methodologies, promoting lifelong learning and professional growth.

3. Contents

Teaching week	TOPIC	No. of lecture hours	No. of practical hours	Assessment of ILOs
1	Introduction to Instrumental Analysis: Basic Concepts and Importance	1		a2, b1, d1
	Introduction to Lab Safety and Instrumental Analysis Tools		2	
2	UV-Visible Spectrophotometry: Theory and Applications	1		a1, a2,a3,b1,b2, c1, c2, d2
	Calibration and Operation of UV-Visible Spectrophotometers		2	
3	Fluorescence and Phosphorescence Spectroscopy	1		a1, a2,a4,b1,b2, c1, c2, d2



Course Specifications
(2015 –2016)

	Quantitative Analysis of a Drug by UV-Vis Spectrophotometry		2	
4	Atomic Absorption and Emission Spectroscopy	1		a1, a5,a3,b1,b3, c1, c3, d1,d2
	Fluorescence Measurement of Pharmaceutical Compounds		2	
5	Infrared (IR) Spectroscopy: Molecular Vibrations and Functional Groups	1		a1, a2,a4,b1,b2, c1, c3, d2, d3
	Analysis of Metals using Atomic Absorption Spectroscopy		2	
6	Nuclear Magnetic Resonance (NMR) Spectroscopy: Principles and Applications	1		a1, a2,a3,b1,b3, c1, c2, d1,d5
	Interpretation of IR Spectra for Functional Group Identification		2	
7	Mass Spectrometry: Ionization Techniques and Data Interpretation	1		a1, a2,a4,b1,b2, c1, c3, d2, d6
	NMR Spectrum Interpretation of Organic Compounds		2	
8	High-Performance Liquid Chromatography (HPLC): Separation Principles	1		a1, a2,a3,b2, c1, c2, d1
	Mass Spectrometry Data Interpretation for Drug Fragmentation		2	
9	Gas Chromatography (GC): Techniques and Pharmaceutical Applications	1		a2,a3,b1, c1, c2, d1,d6
	Separation of Compounds by High-Performance Liquid Chromatography (HPLC)		2	
10	Capillary Electrophoresis: Fundamentals and Applications in Drug Analysis	1		a1, a4,a4, a5, a6, b1,b2, c1, c3, c4, d2
	Analysis of Volatile Compounds		2	



Course Specifications (2015 –2016)

	using Gas Chromatography (GC)			
11	Electrochemical Methods: Potentiometry, Voltammetry, and Applications	1		a2,a4, a5, a6, b1, c1, c2, c4, d1, d5, d6
	Final practical exam			
Total no of hours		11	20	
11 & 12	FINAL Exam			

4. Teaching and Learning Methods

- 4.1- Lectures (board, data show, power point) ✓
- 4.2- Interactive learning (Discussions, brain storming) ✓
- 4.3- Self-study (Tutorials) -
- 4.4- Practical (labs, tools, chemicals, glassware, equipment and instruments) ✓
- 4.5- Other methods (Assignments) ✓

5. Student Assessment Methods

- 5.1. Written exams to assess knowledge and understanding as well as intellectual skills.
- 5.2. Oral exams to assess all types of skills and mainly general and transferrable skills practice.
- 5.3. Practical exams

Assessment Schedule

Quiz 1	5 th week
Quiz 2	9 th week
Practical exam	11 th week
Final exam	12 th week
Oral exam	12 th week

Weighting of Assessments

Periodical	20%
Practical	30%



Course Specifications (2015 –2016)

Final exam	80%
Oral exam	20%
Total	150%

6. List of References

6.1- Course Notes

Complied by the department

6.2- Essential Books (Textbooks)

- [1] D. A. Skoog, F. J. Holler, and S. R. Crouch, Principles of Instrumental Analysis, 7th ed. Belmont, CA: Brooks/Cole Cengage Learning, 2017.
- [2] H. H. Willard, L. L. Merritt, J. A. Dean, and F. A. Settle, Instrumental Methods of Analysis, 7th ed. New Delhi: CBS Publishers, 2012.
- [3] D. L. Pavia, G. M. Lampman, and G. S. Kriz, Introduction to Spectroscopy, 5th ed. Boston, MA: Cengage Learning, 2014.
- [4] D. C. Harris, Quantitative Chemical Analysis, 9th ed. New York, NY: W. H. Freeman, 2016.
- [5] D. A. Skoog, D. M. West, F. J. Holler, and S. R. Crouch, Fundamentals of Analytical Chemistry, 9th ed. Belmont, CA: Cengage Learning, 2014.

6.3- Periodicals

- Analytical letters
- J. pharmaceutical and biomedical analysis
- Analytical chemistry

6.4- Web Sites

<https://www.journals.elsevier.com/journal-of-pharmaceutical-and-biomedical-analysis>

<https://pubs.acs.org/journal/ancham>

<https://www.degruyter.com/view/journals/revac/revac-overview.xml>



Course Specifications **(2015 –2016)**

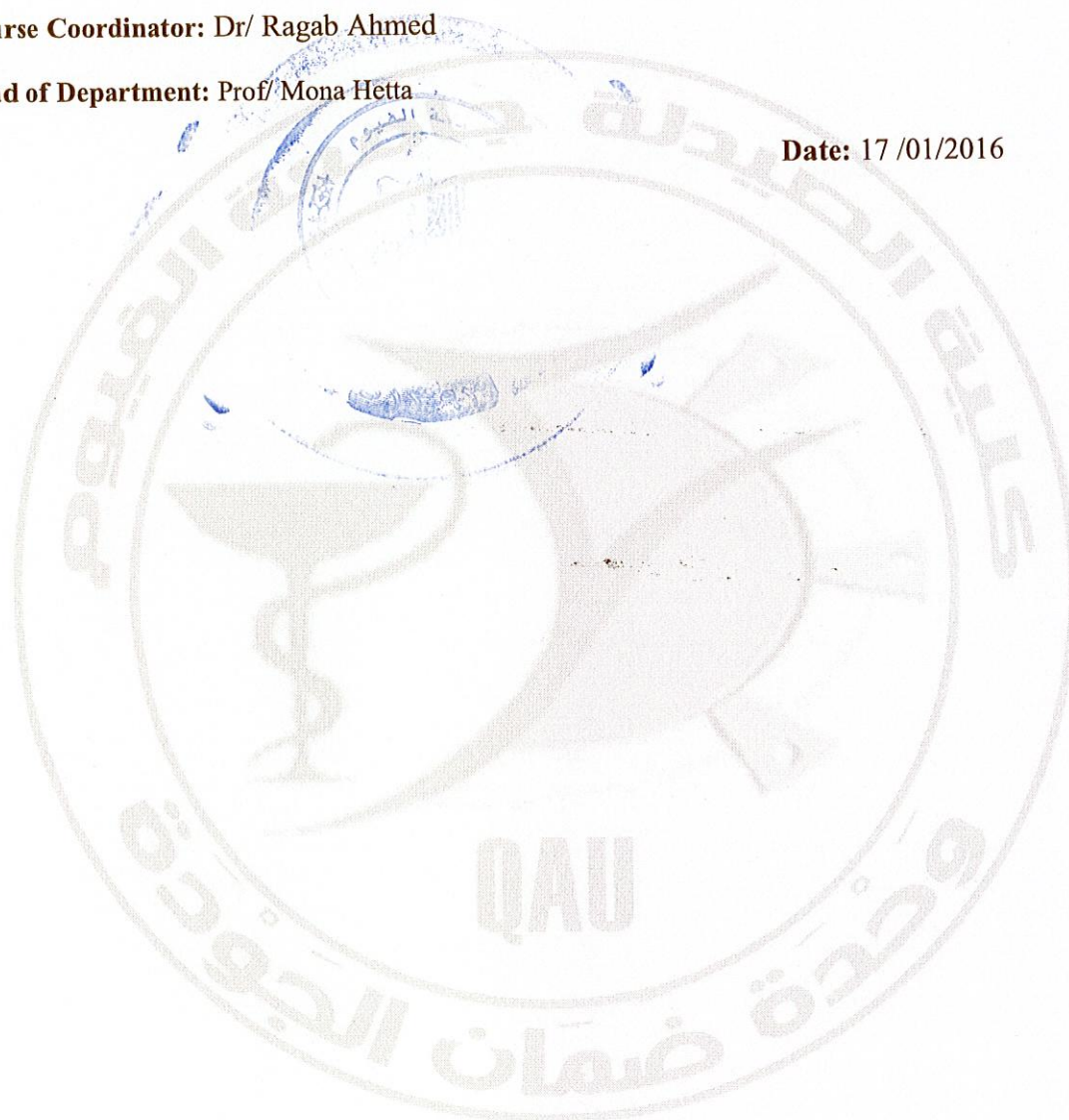
7. Facilities required for teaching and learning

1. Lecture rooms with data show
2. Procurement of latest edition of the above-mentioned texts and others to update the education process

Course Coordinator: Dr/ Ragab Ahmed

Head of Department: Prof/ Mona Hetta

Date: 17 /01/2016





General pharmacy program



Course specifications

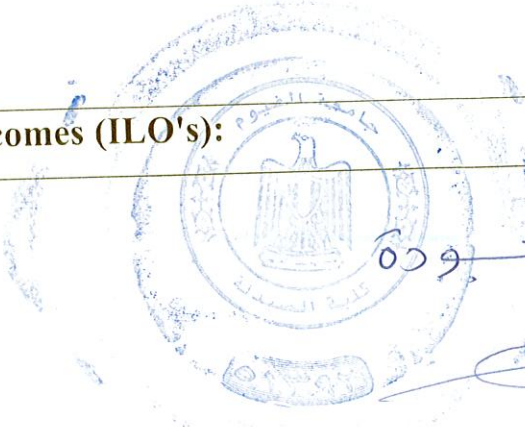
A-Basic Information	
Course code	2505
Course name	Pharmaceutical organic Chemistry -4
Credit hours of the course	Lecture: 2 Practical: 1 Total: 3
Pre-requisite of the course	Pharmaceutical organic Chemistry III
Department teaching the course	Pharmaceutical Medicinal Chemistry Department
Program for which the course is given	Clinical Pharmacy Program
Course coordinator	Dr. Mohammed Ibrahim Abd El Latif Hamed
Head of the department	Prof / Mona Hetta
Date of specifications approval	09/9/2015

B-Professional Information

1-Overall aims of the course:

The aim of the course is to provide students with the fundamental principles of Stereochemistry and Stereoisomerism. Organic reaction mechanisms (substitutions, additions, eliminations and condensations). Heterocyclic compounds including, monocyclic monoheteroatom and fused bicyclic compounds.

2-Intended learning outcomes (ILO's):


م. محمد إبراهيم عبد الحفيظ هادي
09/9/2015

a-Knowledge and Understanding:

By the end of this course, the student should be able to:

a1- Recognize the nomenclature, structure, and physical properties of the different classes of The theoretical basis of chemistry of heterocyclic compounds

a2-Know the Organic reaction mechanisms (substitutions, additions, eliminations and condensations).

b-Intellectual Skills:

By the end of this course, the student should be able to:

B1. Sketch the structure and name the , monocyclic monoheteroatom and fused bicyclic compounds.

B2. Apply the reaction mechanisms and employ the effect of condition on the type of products.

B3. Synthesize more complex classes of monocyclic monoheteroatom and fused bicyclic compounds..

c-Professional and Practical Skills:

By the end of this course , the student should be able to:

.c1. Synthesize preliminary heterocyclic compounds of different drug categories

.c2. Purify and identify the newly synthesized chemical compounds or drugs

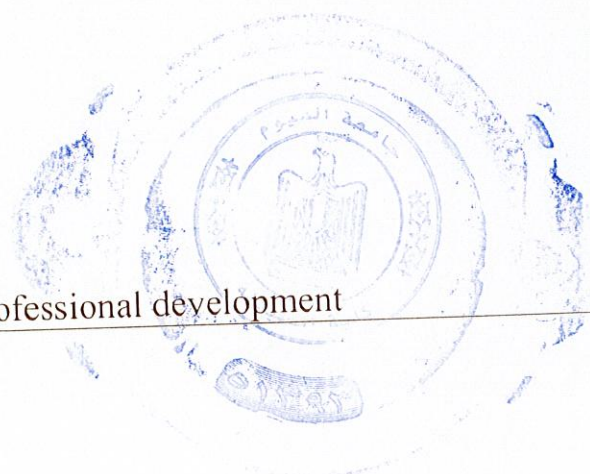
c3. Use spectral data to confirm the synthesized monocyclic monoheteroatom and fused bicyclic compounds.

d-General Skills:

By the end of this course, the student should be able to:

D1. Communicate clearly by verbal and written means

.D2- Demonstrate self-learning needed for continuous professional development



3. Course content

Topics	lecturer	lecture	practical	total
Introduction of stereochemistry	Dr/Farag Farouk	2	1	3
Introduction of stereoisomerism	Dr/Farag Farouk	2	1	3
Types of stereochemistry reactions	Dr/Farag Farouk	2	1	3
Organic reaction (Mechanism substitutions)	Dr/Farag Farouk	2	1	3
Organic reaction (Mechanism substitutions)	Dr/Farag Farouk	2	1	3
Organic reaction (Mechanism additions)	Dr/Farag Farouk	2	1	3
Organic reaction (Mechanism additions)	Dr/Mohammed Ibrahim	2	1	3
Nomenclature of monocyclic monohetero atom and fused bicyclic compounds.	Dr/Mohammed Ibrahim	2	1	3
Organic reaction (Mechanism eliminations)	Dr/Mohammed Ibrahim	2	1	3
Organic reaction (Mechanism eliminations)	Dr/Mohammed Ibrahim	2	1	3
Organic reaction (Mechanism	Dr/Mohammed	2	1	3



General pharmacy program



condensations)	Ibrahim			
Organic reaction (Mechanism condensations)	Dr/Mohammed Ibrahim	2	1	3
Revision and practical schemes				
Synthesis, reaction and biological activity of derivative of monocyclic monoheteroatom and fused bicyclic compounds.	Dr/Mohammed Ibrahim	2	1	3
Practical exam				

4-Teaching and Learning Methods (lectures, open discussion, role plays . etc.):-

4.1-Lectures (board, overhead projector, molecular models ,software chemistry programs and data show)

4.2- tutorial and discussion sessions

4.3- practical sessions

5- Student Assessment:

a. Assessment methods and weighing :

5.1-Quiz to assess the knowledge, understanding and intellectual skills of the course.

5.2- mid-term written exam to assess the knowledge, understanding and intellectual skills of the previously studied sections of the course.

5.3-Practical exam to assess the practical and professional skills gained by the students.

5.-Final written exam to assess all the knowledge and understanding of the different sections of the course.

5.5-Oral examination to assess all the intellectual skills and knowledge of the different sections of the course. -

1. Class participation: 20% .
2. Practical exam: 30% .
- 3.Oral exam: 20% .
- 4.Final exam: 80% .

b-Assessment Schedule:

Class participation: Quiz 1: Week 4-5

Quiz 2: Week 8-9

Other activities: throughout the semester

Practical exam :Week 13-14

Oral exam : According to semester timetable

Final exam : According to semester timetable

6-list of references

Course notes	On ELS
Required books	Essential organic chemistry, paula YurkanisBruice.
Recommended books	- Fundamental of organic chemistry, J . McMurry and E.simanek , 6th edition • Organic chemistry , R.T Morrison and R,N. Boyd, 6th edition • Chemistry of pharmacy students , satyajit D, sarker • Mechanisms in advanced organic chemistry ,R.P narain (2008)





General pharmacy program



	- Stereochemistry , V.M POTAPOV (1979) - Organic stereochemistry , Micheal J.T Robinson (1999) - VOGEL 'S 'textbook of practical organic chemistry ' brian S, furniss 5th edition .
Periodicals	Different pharmacopoeias (Egyptian & British).
Web sites	- Journal of organic chemistry - http://www.pubmed.com

Course Coordinator: Dr/Mohammed Ibrahim Abd El Latif Hamed

Head of Department: Prof/ Mona Hetta

Date: 09/9/2015

