Program SPECIFICATION FOR Master Degree in Pharmacology

Code: 1704700

University: Alexandria   **Faculty:** Medical Research Institute

Program Specification

A-   Basic information

1- Program title: Master of Science in Pharmacology and Experimental Therapeutics

2- Program type: **single** | √ | **double** | | **multiple** | |

3- Department(s): Pharmacology department

4- Coordinator: Ass. Prof. Rowaida Refaat

5- External evaluator(s): Prof. Safaa El Rewini, Prof. of pharmacology, Faculty of Medicine, Alexandria University.

6- Last date of program specification approval: 8/1/2017

B-   Professional Information

1- Program aims:
   The program is designed to:
   1. Provide sufficient knowledge of the essential basic molecular biology, biochemical and physiological sciences applicable to pharmacology.

   2. Integrate information of drugs & related pharmacological actions and the basic principles underlying the therapeutic actions of drugs.

   3. Resolve specific common problems in pharmacology adequately.

   4. Provide laboratory and practical skills in experimental design, procedures and skills in analysis of experimental data.

   5. Provide sufficient knowledge of ethical and medico legal principles relevant to the field of pharmacology.

6. Promote development of personal and interpersonal communication skills and team work skills.

7. Conduct research proficiently.

2- Intended learning outcomes (ILOs)

a- knowledge and understanding:

1. Recall the basic facts and principles of the relevant basic science of molecular biology.

2. Recall the basic facts and principles of biochemistry.

3. Recall the basic principles of physiology.

4. Discuss the general principles of pharmacology, mode of actions of drugs acting on the autonomic nervous system, drugs acting on and treating the CNS diseases.

5. Discuss the basis of pharmacotherapy in patients with cardiovascular diseases like hypertension, congestive heart failure and ischemic heart diseases, GIT diseases, rheumatoid arthritis, gout, bronchial asthma, pain and seizures.

6. Discuss the basic principles underlying the therapeutic actions of drug in special patient groups as pediatrics, geriatrics, pregnant and lactating mothers, immunocompromized and obese patients and in thyroid and renal disorders.

7. Recall basics and principles of chemotherapy and immunosuppressive drugs.

8. Recall the basic facts of drugs dosage forms, clinical studies and ethical and scientific principles of good experimental design and oxidative stress.

9. Explain detailed analysis of the pharmacological effects of naturally occurring autocrine and paracrine hormones and their role in health and diseases.

10. Recall the general principles of basic toxicology taking into consideration the ethical and medico legal principles of drugs and chemicals in practice.

11. List basic statistical methods for analysis of data.

b- Intellectual skills:

1. Correlate the facts of relevant basic sciences; molecular biology, biochemistry and physiology with reasoning, diagnosis and management of common problems in pharmacology.

2. Assess the importance of drug absorption and distribution with regard to efficacy and toxicity of drugs and how good practice can improve the impact of drug abuse- related problems on the society.

3. Evaluate changes in relevant pharmacokinetic parameters associated with common clinical situations related to pharmacology.

4. Evaluate alternative decisions in different situations in the field of pharmacology.

5. Evaluate different methods for induction of several experimental models of diseases.

6. Assess the adverse effects and interactions of angiotensin converting enzyme (ACE) inhibitors, antihistamines and serotonergic drugs.

7. Evaluate the potential hazards of different food contaminants, heavy metals, teratogenic and carcinogenic drugs.

8. Compare between the different statistical methods in data analysis.

c- Professional and practical skills:

1- Acquire laboratory and biological practical skills.

2- Perform experiments on isolated tissues and whole animal preparations (determination of oxidative stress parameters).

3- Demonstrate methods of induction of experimental models of diseases

4- Write competently all forms of professional reports related to pharmacology (lab reports, experimental reports, statistical reports).

d- General and transferable skills:

1. Communicate effectively using all methods.

2. Develop skills of information technology to improve professional practice.

3. Use different sources of information to obtain data.

4. Develop skills of continuous and independent learning.

3- Academic standards

3a - External references for standards (Benchmarks)

Generic Academic Reference Standards of the National Authority for Quality Assurance and Accreditation of Education (NAQAAE)

3b- Comparison of provision to selected external references

NAQAAE	GARS
A1-Basic facts , theories, of the specialty and related subjects/ fields	a1- Recognize established basic molecular biology, physiological and biochemical sciences related to pharmacology. a2- Recognize the principles and theories in the basic science of Pharmacology.
A2-Mutual relation between professional practice and effects on environment	a5- Recognize the relation between the professional practice in pharmacology and the welfare of the society.
A3-Main scientific advances in the field of practice	a3- Recognize recent developments in common problems related to the field of Pharmacology.
A4-Fundamentals of ethical & legal practice	a4- Identify ethical and medicolegal aspects of the effects of drugs and chemicals in practice.
A5 -Quality standards of the practice	a7- Recognize quality assurance principles related the good practice in the pharmacology field.
A6- Basics and ethics of scientific research	a6- Identify ethical and scientific basics of research
B1 -Interpret, analyze & evaluate the information to solve problems	b2- Interpret changes in relevant pharmacokinetic parameters in patients with different diseases and special patients groups for problem solving based on data analysis.
B2- Solve some problems that do not conform to classic data (incomplete data)	b3-Distinguish systematic approach in studying common themes or problems relevant to the pharmacology field.
B3- Integrate different information to solve professional problems	b1- Integrate different relevant sciences in the problem solving and management of common problems of pharmacology.
B4- Conduct a scientific research &/Or write scientific systematic approach to a research	Through Thesis students can conduct scientific research

problem (hypothesis)	
B5- Evaluate risks imposed during professional practice.	b4- Evaluate alternative decisions in different situations in the pharmacology field.
B6- Plan for professional improvement	Through student questionnaire, the student can plan professional development courses to improve practice and enhance performance of juniors.
B7- Take professional decisions in wide range of professional situations	b4- Evaluate alternative decisions in different situations in the pharmacology field.
C1- Competent in all basic and some of theadvanced professional skills (to be determined according to the specialty board/ department)	c1-Gain practical/laboratory skills relevant to pharmacology.
C2- Write and appraise reports	c2-Write and comment on reports for situations related to the field of Pharmacology.
C3-Evaluate methods and tools used in specialty	c3-Apply different statistical tests for analysis of pharmacological data
D1- Communicate effectively using all methods	d2- Present scientific topics clearly. d3- Develop skills of communication. d4- Develop skills of open discussion.
D2- Use information technology to improve his/her professional practice	d5-Develop skills of information technology
D3-Practice self appraisal and determines his learning needs	- Through Thesis
D4- Share in determination of standards for evaluation of others (e.g.: subordinates/ trainees etc.)	- Through group seminars
D5- Use different sources of information to obtain data	d7- Develop skills of critical and creative thinking
D6- Work in teams - Manage time effectively	d1- Develop team work skills.
D7-Work as team leader in situations comparable to his work level	- Through group seminars
D8-Learn independently and seek continuous learning	d6- learn independently and seek continuous learning

4- curriculum structure and contents

4.a program duration: *2-5 years*

4.b program structure :

4.b.i- No. of hours per week in each year/semester:

Semester	Core courses	Elective courses
	Number of hours	**Number of hours**
First semester	7	2
Second semester	7	2
Third semester	10	
Fourth semester	2 + 2 Cr Thesis	
Fifth semester- tenth semester	6 Thesis	

4.b.ii- No. of credit hours **Lectures** 24 **Practical** 12 **Total** 30

Compulsory 26 **Elective** 4 **Optional** 0

4.b.iii- No. of credit hours of basic science courses No. 7 % 23.3

4.b.iv- No. of credit hours of courses of social sciences and humanities. No. 0 % 0

4.b.v- No. of credit hours of specialized courses No. 19 % 63.3

4.b.vi- No. of credit hours of other courses No. 4 % 13.3

4.b.vii-Field Training No. 0 % 0

4.b.viii- Program levels (in credit-hours system)
Student is required to pass at least 12 credit hours with CGPA not less than C+ before submitting a thesis proposal.

5- Program Courses
5.1- Compulsory (26 Cr)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1704701	Graduate Pharmacology I	4	4	-
1704702	Clinical pharmacology and therapeutics I	3	3	-
1704703	Therapeutics in special patient groups	4	4	-
1704704	Methods in Pharmacology I	2	1	2
1704705	Autacoids and their antagonists	2	2	-
1704706	Toxicology	2	2	-
1704707	Advanced topics in pharmacology	2	2	-
1701720	Biochemistry	2	1	2
1703720	Physiology	1	1	-
1721720	Medical Statistics	2	1	2
1701721	Molecular Biology	2	1	2

5.2- Elective I (4 Cr)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1721721	Computer	2	1	2
1706720	Bacteriology	2	1	2
1707720	Parasitology	2	1	2
1708720	Immunology	2	1	2
1713720	Genetics	2	1	2

5.3- Optional – (none)

6- Program admission requirements

Graduate students with a M.B.Ch.B. of Medicine, or a B.Sc. of Pharmacy with a general grade of good.

7- Regulations for progression and program completion

For the progression and completion of the program to obtain the degree of M.Sc. in Pharmacology the student must:

1- Complete 30 credit hours with CGPA of at least C+.

2- Submit a thesis validity report by an examination committee approved by the department council and their members include at least two external examiners.

8- Evaluation of Students enrolled in the program.

Tool evaluation	Intended learning outcomes being assessed
Written	ILOs a &b
Practical	ILOs c
Oral	ILOs a ,b &d
Semester Work	ILOs b & d

Evaluation of the Program

Evaluator	Tool	Sample
1- Senior students	Interview	At least 50 %
2- Alumni	Interview	Representative sample
3- Stakeholders (Employers)	Interview	Representative sample
4- External Evaluator(S) or External Examiner (s)	Reports	Prof. Safaa El Rewini, Prof. of pharmacology, Faculty of Medicine, Alexandria University
5- Other		

Dates of Previous editions/revisions:

Editions/Revisions Number	Date
Edition no.1	2009
Edition no. 2	2011
Edition no.3	5/6/2014
Edition no.3, revision no.1	12/2014
Edition no.3, revision no.2	10/2016
Edition no.3, revision no.3	9/2017

Program coordinator:
Name: Ass. Prof. Rowaida Refaat   Signature: Rowaida Refaat

Department Head:

Name: Ass. Prof. Rowaida Refaat   Signature: Rowaida Refaat

Date of Department Council Approval: 6/9/2017

Courses *vs* program ILO matrix:

Medical Research Institute

Course Title	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4	D1	D2	D3	D4
Graduate Pharmacology			x										X											x	x	x	X
Clinical Pharmacology &therapeutics I					x							X		X	X									x	x	x	X
Therapeutics in special patient groups						X						X		X	X									x	x	x	X
Methods in Pharmacology								X								x				X	X	x	X	x	x	x	X
Autacoids and their antagonists									x								X							x	x	x	X
Toxicology										X								X						x	x	x	X
Advanced topics in Pharmacology I							x					X		X	x									x	x	x	X
Biochemistry		x										X								X							
Physiology			X									X															
Medical Statistics											x							x					X				
Molecular Biology	x											x								X							

١٠

Medical Research Institute

Program aims vs ILOs

Program Aims / Program ILOs	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	b1	b2	b3	b4	b5	b6	b7	b8	C1	C2	C3	C4	d1	d2	d3	d4
1-Provide sufficient knowledge of the essential basic molecular biology, biochemical and physiological sciences applicable to pharmacology.	X	x	x									X															
2-Integrate information of drugs & related pharmacological actions and recognize the basic principles underlying the therapeutic actions of drugs.				x	x	x	x	x	X	X							x	x									
3-Resolve specific common problems in pharmacology adequately.													X	x	x												
4-Provide laboratory and practical skills in experimental design, procedures and skills in analysis of experimental data.										X						x			X	x	X	x	X				
5-Provide sufficient knowledge of ethical and medicolegal principles relevant to the field of pharmacology.									X																		
6-Promote development of personal and interpersonal communication skills and team work skills.																								X			
7-Conduct research proficiently																									x	x	x

Program ARS vs ILOs:

Program ILOs / GARS	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	b1	b2	b3	b4	b5	b6	b7	b8	C1	C2	C3	C4	d1	d2	d3	d4
a1	x	x	x																								
a2				x	x	x	X		x	x																	
a3				x	x	x	X																				
a4										x																	
a5				x	x	x	X		X																		
a6								x			X																
a7				x	x	x	X																				
b1												x					X										
b2													X	X													
b3																x	x	X									
b4															X												
c1																				x	x	X					
c2																							X				
c3																							X				
d1																								X			
d2																								X			
d3																								X			
d4																								X			
d5																									x	X	
d6																											X
d7																								X			

Teaching and Learning Methods Vs Courses Matrix

Degree: Master   Code: 1704700

	Course code	Course code	Course code	Course code	Course code	Course code	Course code
	1704701	1704702	1704703	1704704	1704705	1704706	1704707
Lecture	√	√	√	√	√	√	√
Practical/Clinical				√			
Brainstorming	√	√	√	√	√	√	√
Discussion Groups (Seminars)	√	√	√	√	√	√	√
Problem Solving							
Case Study						√	
Field Training							
Role playing							
Training Workshops							
Self-Directed Learning (Assignments)	√	√	√	√	√	√	√
e-learning							
Project							