



**Program SPECIFICATION FOR Doctorate Degree in
Pharmacology Code: 1704800**

University: Alexandria

Faculty: Medical Research Institute

Program Specification

A-

Basic information

1- Program title: Doctorate of Philosophy in Pharmacology and Experimental Therapeutics

2- Program type: **Single** **double** **multiple**

3- Department(s): Pharmacology

4- Coordinator: Prof. Magda Nasr

5- External evaluator(s): Prof. Safaa El Rewini, 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 a deep-rooted knowledge of the essential basic molecular biology, biochemical and physiological sciences related to pharmacology.
2. Manage difficult and professional problems in pharmacology adequately.
3. Provide higher updated knowledge of the progress of pharmacology published in recent textbooks.
4. Encourage a sense of curiosity and enthusiasm for evidence based settings related to pharmacology.
5. Support acquisition of specific professional skills in experimental design and in the analysis of experimental data.
6. Conduct research proficiently.



7. Promote professional development of communication skills and the ability to use information technology.
8. Provide sufficient knowledge of ethical principles relevant to the field of pharmacology.

2- Intended learning outcomes (ILOs)

a-knowledge and understanding:

1. Recall updated knowledge of the relevant science of molecular biology.
2. Discuss principles of biochemistry related to pharmacology.
3. Discuss principles and updates in the field of physiology.
4. Discuss updated in-depth knowledge of therapeutics in cardiovascular diseases; arrhythmia, shock, autoimmune GIT diseases, joint and hematopoietic disorders and respiratory diseases.
5. Explain clinically relevant age, sex and disease related variations that affect response to drugs
6. Discuss the updates in the field of neuropharmacology and ethical principles relevant to practice in the use of drugs that relieve pain and ameliorate the suffering of patients.
7. Discuss principles of immunopharmacology, molecular therapies of diabetes and hyperlipidemia, osteoporosis, resistance to antimicrobial drugs, role and limitations of alternative and complementary therapies commonly in use.
8. Recall recent chemotherapeutic agents used in solid tumors, leukemia, stem cell and cancer therapy and multidrug resistance in cancer patients.
9. Recall the principles and updates of clinical pharmacokinetics and pharmacodynamics.
10. Discuss the principles of quality assurance in therapy with different drugs & drug abuse.
11. Discuss the relation between the pharmacological practice and effects on surrounding environment.



12. Discuss ethics and principles of scientific research and statistical principles for analysis of data.

b- Intellectual skills:

1. Contrast the facts of relevant basic sciences molecular biology, biochemistry and physiology with reasoning, diagnosis and management of clinical problems in pharmacology.
2. Analyze rational therapeutic strategies for both acute and chronic clinical conditions taking into account the various variables that influence these strategies.
3. Appraise alternative decisions in different situations in the field of pharmacology taking into consideration toxicity and effectiveness of therapy.
4. Distinguish changes in relevant pharmacokinetic parameters in high risk patients.
5. Distinguish recent chemotherapeutic drugs in different types of cancer.
6. Examine involvement in research studies related to pharmacology and in evaluation of statistical data.

c- Professional and practical skills:

1. Write reports for the medical statistical data.
2. Interpret reports and case studies related to pharmacology

d- General and transferable skills:

- 1- Communicate effectively using all methods.
- 2- Use information technology to improve professional practice.
- 3- Seek continuous learning
- 4- Present scientific topics clearly
- 5- Develop skills of team work and open discussion
- 6- Manage scientific meeting.

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. Identify established and updated molecular biology, physiological and biochemical sciences related to pharmacology.
A2-Mutual relation between professional practice and effects on environment	a6. Recognize the effect of medical practice on surrounding environment.
A3-Recent advances in the field of practice	a2. Recognize established, updated and evidence-based theories and developments in the basic science of pharmacology.
A4-Details of ethical & legal practice	a5. Mention ethical principles relevant to practice in the use of drugs.
A5 -Quality standards of the practice	a4. Identify the principles of quality assurance in therapy with different drugs & drug abuse.
A6- Design, conduction & publishing of scientific research	Through thesis
A7- Ethical considerations in different types of scientific research	a3. Identify ethics and principles of scientific research.
B1 –Analyze, deduce, extrapolate and evaluation of information	b2.Evaluate changes in relevant pharmacokinetic parameters of the up to date drugs used in patients with common and less common diseases.
B2- Solve the majority of problems in the specialty according to the available data (complete or incomplete data)	b1.Integrate basic and other relevant sciences to solve pharmacology related problems. b3. Interpret different drug related problems in clinical and/or pharmacy settings.
B3- Conduct research studies that add to the existing specialty knowledge	b5. Evaluate involvement in research studies related to pharmacology
B4- Publish scientific articles/papers (in indexed journals)	-Through Thesis students share in writing and publishing scientific articles
B5- Plan and implement (or supervise implementation of) enhancement & improvement approaches to practice	-Through students questionnaire, the student can plan professional development courses to improve practice



B6- Take decisions in various professional situations (including dilemmas & controversial issues).	b4. Evaluate alternative decisions in different situations in the pharmacology field.
B7- Add to the specialty field through creativity & innovation	- Through Thesis students can add to the specialty field
B8- Manage discussions on basis of evidence and proofs.	- Through Thesis students can manage discussions on basis of evidence and proofs.
C1- Competent in all basic and all required advanced professional skills (to be determined according to the specialty board/ department).	. Through practical research work of thesis
C2- Write and appraise reports	C1. Write and comment on reports for situations related to the field of pharmacology.
C3-Evaluate and improve methods and tools used in specialty	C2. Apply different statistical tests for analysis of pharmacological data
C4- Use technology to advance practice	. Through practical research work of thesis
C5- Plan professional development courses to improve practice and enhance performance of juniors	- Through students questionnaire
D1- Communicate effectively using all methods	d4. Develop skills for communication and interaction d6. Present scientific topics clearly
D2- Use information technology to improve his/her professional practice	d3. Develop skills of information technology
D3- Teach and evaluate others	d6. Present scientific topics clearly d7. Develop skills of open discussion
D4-Perform self appraisal and seek continuous learning	- Through Thesis
D5- Use different sources of information to obtain data	d5. Study independently to meet targets with deadlines
D6- Work in teams as well as a member in larger teams	d1. Develop skills for team work
D7- Manage scientific meetings and appropriately utilize time	d2. Develop skills of critical thinking d6. Present scientific topics clearly d7. Develop skills of open discussion



4- Curriculum structure and contents

4.a program duration: (3-5 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	5	3
Second semester	7	
Third semester	6	
Fourth semester	3+ 2 Thesis	
Fifth semester- end of program	22 Thesis	

4.b.ii- No. of credit hours Lectures Practical Total

 Compulsory Elective Optional

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

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

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

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

4.b.vii-Field Training No. %

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 (21)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1704801	Clinical pharmacology & Therapeutics II	3	3	-
1704802	Therapeutics in high risk patients	3	3	-
1704803	Neuropharmacology	2	2	-
1704804	Advanced topics in pharmacology II	2	2	-
1704805	Recent advances in chemotherapy	3	3	-
1704806	Clinical pharmacokinetics	2	2	-
1701720	Biochemistry	1	1	-
1703820	Physiology	1	1	-
1721820	Medical Statistics	3	2	2
1701821	Molecular Biology	1	1	-

5.2- Elective I (3)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1721821	Computer	3	2	2
1706820	Bacteriology	3	2	2
1707820	Parasitology	3	2	2
1708820	Immunology	3	2	2
1713820	Genetics	3	2	2

5.3 Optional – (none)

6- Program admission requirements

Graduate students with a Master degree in Pharmacology with a general grade of at least good from an Egyptian university.



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

- 1- Complete 24 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, 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: Prof. Magda Nasr Signature: Magda Nasr

Department Head:

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

Date of Department Council Approval: 6/9/2017



Program-course ILO Matrix

Course Title	A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8	A 9	A 10	A 11	A 12	B 1	B 2	B 3	B 4	B 5	B 6	C 1	C 2	D 1	D 2	D 3	D 4	D 5	D 6
Clinical pharmacology & Therapeutics II				x						X			x	X	X			X			X	X	X	X	X	X
Therapeutics in high risk patients					X					X			x	X	X	x		X			X	X	X	X	X	X
Neuropharmacology						X				X	X		x	X	X			X			X	X	X	X	X	X
Advanced topics in pharmacology II							X			X			x	X	X			X			X	X	X	X	X	X
Recent advances in chemotherapy								x		X							x	X			X	X	X	X	X	X
Clinical pharmacokinetics									x							x		X		X	X	X	X	X	X	X
Biochemistry		X											X													
Physiology			x										X													
Medical Statistics												X						X	x							
Molecular Biology	X												x													



Program Aims vs Program ILOs:

Program Aims / Program ILOs	A 1	a 2	a 3	a 4	a 5	a 6	a 7	a 8	a 9	a 10	a 11	a 12	b 1	b 2	b 3	b 4	b 5	b 6	C 1	C 2	d 1	d 2	d 3	d 4	d 5	d 6
1-To provide a deep-rooted knowledge of the essential basic molecular biology, biochemical and physiological sciences related to pharmacology	x	x	x										x													
2-To manage difficult and professional problems in pharmacology adequately.				x	X	X	x			X	X		x	x	x	X	x			X						
3- Provide higher updated knowledge of the progress of pharmacology published in recent textbooks.				x	X		x	x	x					x				x	X							
4-To encourage a sense of curiosity and enthusiasm for evidence based settings related to pharmacology.					X		x				X			x	x											
5-To support acquisition of specific professional skills in experimental design and analysis of experimental data.												x								x						
6-To conduct research proficiently.																			x				X	x		x
7-To promote professional development of communication skills and the ability to use information technology.																					X	x				X
8-To provide sufficient knowledge of ethical principles relevant to the field of pharmacology.						X																				



Program ARS vs ILOs

Program ILOs GARS	a	a	a	a	a	a	a	a	a	a	a	a	b	b	b	b	b	b	C	C	d	d	d	d	d	d
	1	2	3	4	5	6	7	8	9	0	1	2	1	2	3	4	5	6	1	2	1	2	3	4	5	6
a1	x	X	X																							
a2				x	x	x	x	x	x																	
a3												x														
a4										x																
a5						x																				
a6											x															
b1													x													
b2														x		x	x									
b3															x											
b4															x											
b5																	x									
C1																			x							
C2																			x							
d1																									x	
d2																										x
d3																							x			
d4																						x				
d5																										x
d6																									x	x
d7																										x

**Teaching and Learning Methods Vs Courses Matrix****Degree: Doctorate****Code: 1704800**

	Course code	Course code	Course code	Course code	Course code	Course code
	1704801	1704802	1704803	1704804	1704805	1704806
Lecture	√	√	√	√	√	√
Practical/Clinical						
Brainstorming	√	√	√	√	√	√
Discussion Groups (Seminars)	√	√	√	√	√	
Problem Solving						
Case Study						√
Field Training						
Role playing						
Training Workshops						
Self-Directed Learning (Assignments)	√	√	√	√	√	√
e-learning						
Project						