



Program Specification for Master Degree in **Medical Pharmacology**

Program type: Single

Program code: PHAR800

Department offering the program: Department of Medical Pharmacology

Total credit points: 160

Academic year: 2015/2016

Date of approval by the department council: July 2015

Program Coordinators:

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Prof./ Abd El Fattah Marrie

Prof./ Mona Osman

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External evaluator: Prof./ Ahmed Abd Elsalam Mohamed Elmelegy, Professor of Pharmacology, Ain Shams University.

I. Program aims

The aim of this program is to provide candidates with appropriate knowledge, skills and attitudes that enable them to practice as self-dependent clinical pharmacologists in health care, research and pharmaceutical industry.

II. Intended learning outcomes of program (ILOs)

A. Knowledge and understanding: By the end of the program the candidate should be able to

1. Explain Basic pharmacology including:
 - a) Pharmacokinetics.

- b) Pharmacodynamics including the mechanisms of action of drugs, dose response relationships and types of antagonism.
 - c) Autonomic pharmacology.
 - d) Autacoid drugs acting on smooth muscles, their mechanism of action and wide range of effects.
 - e) Pharmacotherapeutics.
 - f) Major organ pharmacology.
 - g) Special pharmacological modules such as pediatric and geriatric pharmacology.
2. Explain patho-physiology of diseases for better selection of drugs.
 3. Identify major concepts in comparative anatomy and physiology to be familiar with the experimental animal models and their anesthesia and surgery.
 4. Describe the principles of drug bioassay.
 5. Explain principles and applications of non-pharmacological (non-traditional or non-chemical) therapeutic measures including, Herbal medicine, Homeopathy, Radiotherapy and Acupuncture.
 6. Identify molecular basis for drug actions.
 7. Describe the types of drug receptors, their molecular structure, their signaling mechanisms and their main target secondary messengers
 8. Recognize the regulation of receptor expression.
 9. Describe the types of ion channels and their molecular structure.
 10. Correlate between the expression of receptors with the occurrence of diseases as well as with the treatment of diseases.
 11. Recognize the importance of animal studies and preclinical testing in the process of drug development.
 12. Describe the phases of clinical trials.
 13. Identify Investigational New Drugs and New Drug Applications.
 14. Explain the use of orphan drugs in the treatment of rare diseases.
 15. Explain objectives, principles and applications of clinical pharmacology.

16. Identify principles and applications of evidence based medicine.

B. Intellectual skills: By the end of the program the candidate should be able to:

1. Design research protocols and clinical trials.
2. Perform statistical analysis of results.
3. Interpret clinical and laboratory data.
4. Apply the understanding of basic and clinical sciences as a basis for, Critical thinking, Problem solving, Decision making, Clinical reasoning and Judgment.
5. Rationalize therapeutic regimens suitable to each intended case (patient and disease) putting into consideration possible adverse effects and drug interactions of the used drugs.

C. Professional and practical skills: By the end of the program the candidates should be able to:

1. Master a wide range of pharmacological experiments including:
 - a) In-vitro experiments on isolated organ or tissue or cell or cellular component up to a single ion channel.
 - b) In-vivo experiments on conscious or anesthetized animals.
2. Select the animal model and tissue suitable for demonstration of effects of a specific drug.
3. Record vital data either by invasive or non-invasive methods in experimental animals e.g. ECG, EEG, EMG, blood pressure, muscle tone and motility.
4. Perform basic surgical skills on experimental animals.
5. Perform basic anesthetic skills in experimental animals.
6. Demonstrate the pharmacological, toxicological profiles of drugs acute and mutagenic effects.
7. Apply principles of clinical pharmacology through participation in health care team to, Review medication for inpatients, Identify and document adverse drug reactions and drug interactions, Participate in auditing

medication for inpatient and Follow up implementation of guidelines in Kasr Alainy Hospital.

8. Apply evidence based medicine in practice and decision making.
9. Participate in clinical trials.

D. General and transferable skills: By the end of the program the candidates should be able to:

1. Communicate effectively.
2. Handle, store and retrieve information.
3. Use informatics such as scientific journals, computers and the internet.
4. Prioritize tasks and manage time.
5. Work in a team.
6. As a researcher, the candidate should be able to, Abide to values, moral, ethical, legal and religious issues of medical practice and research, Show confidence and disillusionment, Show precision and punctuality and Show creativity.
7. Identify principles and applications of biostatistics.

III. Academic standards.

A) Academic reference standards:

The academic standards of Master Program of Medical Pharmacology is adopted and accredited by the department council.

B) External references for standards:

"Specialty Training Curriculum for Clinical Pharmacology and Therapeutics"
Royal Colleges Of Physicians – UK.

IV. Program admission requirements.

According to the bylaws of the faculty of medicine Cairo University applicants should have MBBCh or equivalent degree. According to Cairo University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects; Medical statistics – English language – Computer skills. Training prior to registration may be accredited according to departmental evaluation. Admission for the program is open during July.

V. Program structure and contents.

Program duration: Three years.

Program structure: Total Credit points 160 (table 1)

Table 1: Program structure

	Courses	Credit points	Total Points	ILOs
First part (60 credit points) (1.5 years)	Compulsory course: <ul style="list-style-type: none"> Medical Pharmacology – 1 (one academic year) 	10	10	A1(a,b,c,d,e,f), 2, 3, 4, 16 B4 C1(a), 2, 3, 4, 5 D1, 2, 3, 4, 5, 6
	Elective course (A): Candidate choose one course <ul style="list-style-type: none"> Molecular pharmacology Clinical Trials 	1 1	1	A7, 8, 9, 10, 11, 12, 13, 14, 15 B1, 2, 3, 4 C1, 2, 3, 4 D1, 2, 3, 4, 5, 6, 7
	Elective Course (B): Candidate choose 2 courses <ul style="list-style-type: none"> Evidence based medicine Advanced medical statistics Scientific Writing 	0.5 0.5 0.5	1	-
	Scientific activities	3	3	-
	Training program Phase 1: <ul style="list-style-type: none"> Basic Experimental Pharmacology Basic Clinical Pharmacology 	30 15	45	A1(b, c, d), 3, 4, 16 B3, 4, 5 C1(a), 2, 3, 4, 5, 6, 9 D1, 2, 3, 4, 5, 6, 7, 8
	Second part (70 credit points) (1.5 years)	Compulsory course: <ul style="list-style-type: none"> Medical Pharmacology – 2 (one academic year) 	12	12
	Scientific activities	3	3	-
	Training program Phase 1: <ul style="list-style-type: none"> Specialized Experimental Pharmacology Clinical Pharmacology 	40 15	55	A1(b, c, d), 3, 4, 5, 16 B3, 4, 5 C1, 2, 3, 4, 5, 6, 9 D1, 2, 3, 4, 5, 6, 7, 8
Master Thesis	Completed during second part	30	30	-

Master Thesis

All master-degree students should prepare a thesis in Medical Pharmacology. The department and the ethical committees must approve the protocol of the research. The thesis should include a review part and a research part. The thesis is supervised by one or more senior staff members and may include other specialties according to the nature of the research. The thesis should be evaluated and approved by a committee of three professors including one of the supervisors and an external professor.

Scientific Activities:

Students should participate in the scientific activities of the departments:

- Journal club (presenting scientific articles) once every one- two weeks.
- Seminars (recent topics and controversial issues) once weekly.
- Scientific meetings arranged by the department
- Attendance of Thesis discussions
- Others

Each activity will be monitored and given credit points registered in a student logbook. The student should collect the required points before being allowed to sit for final exam.

VI. Regulations for progression and program completion

After finishing the first part of pharmacology course, attending the specified courses and collecting the required credit points, the student should pass the first part examination including the basic sciences (pharmacology), practical and clinical pharmacology, before proceeding to the second part. In case the student fails to pass the examination, he may proceed in the experimental and clinical training and can resubmit for the next examination. After passing the first part, the student submits a protocol for master thesis at the beginning of second part. Before submitting to the final exam, he should finish the thesis and get approval, complete phase 2 of special training program, and collect the required credit points. The candidate will receive his degree after passing this final examination. Master degree should be obtained within a maximum of 6 years after registration date.

VII. Assessment

Supervision & Monitoring of the Training Program:

According to the bylaws of the student, professors carry continuous assessment during the program. A student-training program logbook will be kept for each student to document all his/her clinical, laboratory activities as well as his/her participation in different scientific activities. The head of the department should allow the students to undergo the final examination when they complete their training program and collect the credit points needed.

A: Assessment Tools:

1. Final Exam First part

- Medical Pharmacology (1):
two written exam papers each three-hours + oral exams.
- Elective Course (A):
one-hour written exam + oral exams.
- Training program:
practical examination and presentation of clinical cases.

2. Final Exam Second part

- Medical Pharmacology (2):
two written exam papers each three-hours + oral exams.
- Training program:
practical examination and presentation of clinical cases.

B: Assessment Schedule:

First part: The written examinations include short and long essay questions, MCQ and problem solving. This will be followed by presentation of clinical cases, oral and practical examinations.

Second part: The written examinations include short and long essay questions, MCQ and problem solving. This will be followed by presentation of clinical cases, oral and practical examinations.

C: Weighing Of Assessment (table 2):

- Marks allocated to courses

- It is mandatory to pass all papers of the written exams separately
- Passing mark in a written exam is $\geq 60\%$

Table 2: Weighing of assessment

Courses	Written	Oral	practical	Total
First part				550
<u>Compulsory courses</u>				
Medical Pharmacology (1)	250	125	125	500
<u>Elective Course (A)</u>	30	10	10	50
<u>Elective Course (B)</u>	-	-	-	-
<u>Training program</u>				
Basic experimental pharmacology	-	-	-	-
Second part				600
<u>Compulsory courses</u>				
Medical Pharmacology (2)	350	100	150	600
<u>Training program</u>				
Specialized experimental pharmacology	-	-	-	-

VIII. Evaluation of program intended learning outcomes:

Evaluator	Tool	Sample
1. Candidates (Present and previous).	- Questionnaires - Meeting and discussions.	- All present candidates. - Available representatives of previous candidates.
2. Teaching staff	- Questionnaires - Meeting and discussions specially in department council	All involved staff
3. Stakeholders (Employers of candidates from outside the department)	- Questionnaires - Meeting and discussions.	Available representatives.
4. External Evaluator	Program report	Once before implementation Bi-annual report
5. External examiners	- Questionnaires - Meeting and discussions.	All external examiners

Date of approval by department council: July 2015

Program Coordinators:

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