



Program Specification

MD Degree in Medical Pharmacology

- **Program Name:** MD Degree in Medical Pharmacology
- **Program type:** single
- **Department offering the program:** Department of Medical Pharmacology
- **Program Code:** PHAR 907
- **Total Credit points:** 140
- **Date of program approval:** July 2015
- **Program coordinator:** أ.د عبد الفتاح مرعى – أ.د أميمة انور خورشيد – أ.د أمانى نبيل
- **External Evaluator:** Prof./

I. Aim of the Program

The curriculum for M.D. degree in medical pharmacology is designed to provide a broad-based foundation in pharmacology, as well as flexible opportunities to individually tailor a program that meets the individual student's background and research interests. The goal is to become a leader in translational research— discoveries at the bench that will lead to improvements in the treatment and prevention of disease.

This program provides candidates with advanced knowledge, skills and attitudes regarding the practice of advanced medical pharmacology. In addition, suitable teaching, learning and assessment methods are designed to ensure that the graduate will have the following attributes:

- 1- Continuously updating and integrating knowledge in pharmacology and related sciences.
- 2- Understand the current problems and new theories in pharmacology.
- 3- Point out professional problems in pharmacology and suggesting solutions.
- 4- Command of wide scale of practical and professional skills in pharmacology.
- 5- Develop new methods and tools in the practice of pharmacology.
- 6- Command of basics and methods of scientific research.
- 7- Apply analytical and critical thinking.
- 8- Use new technical methods.
- 9- Communicate effectively and lead/participate in a team of multi-disciplinary members.
- 10- Make decisions in the light of available information.
- 11- Add new resources and good and effective use of available resources.

- 12- Participate in community service and environment development.
- 13- Exhibit commitment to integrity, honesty and professional ethics.
- 14- Commitment with continuous self-development.
- 15- Transfer knowledge, skills and experience to others.

II. Intended Learning Outcomes of the Program (ILOs)

A- Knowledge and Understanding: By the end of this program, the candidate will be able to show full knowledge and understanding of:

- 1- Advanced knowledge and recent theories in medical pharmacology and related disciplines.
- 2- Recent advances and new theories in pharmacology pharmacokinetics and pharmacodynamics, and their applications.
- 3- Physiological, biochemical, pathological and genetic changes that are responsible for the genesis of diseases.
- 4- Recent advances and new theories inpharmaco-therapeutics, particularly in special patient populations such as the pediatrics, geriatrics, pregnant and lactating females, genetic polymorphism, and major organ disease.
- 5- Complementary non-pharmacological therapeutic approaches (**Elective**).
- 6- Basics, principles and applications of pharmaco-epidemiology including pharmacovigilance and pharmaco-economics(**Elective**).
- 7- Therapeutic drug monitoring (**Elective**)
- 8- Basics, methods, ethics and tools of scientific research.
- 9- Principles of ethical and medico-legal issues governing the practice of experimental and clinical pharmacology.
- 10-Principles and basics of good practice in experimental and clinical pharmacology.
- 11-Impact of experimental and clinical pharmacology practice on community and environment.

B- Intellectual Skills: By the end of the program the candidate should be able to:

- 1- Correlate the patho-genesis of diseases with the rational use of therapeutic drugs.
- 2- Individualize therapeutic regimenfor each patient.
- 3- Predict therapeutic and harmful effects of drug and/or drug combinations on patients.
- 4- Analyze and interpret clinical and laboratory data.
- 5- Design an experimental protocol and a clinical trial.
- 6- Design a protocol and tools to monitor therapeutic effects of drugs (**Elective**).
- 7- Design a protocol and tools to determine the economics of different therapeutic regimens (**Elective**).
- 8- Interpret data and information related to undesirable effects of drugs and drug interactions.

9- Evaluate research protocols and clinical trials.

C- Professional Skills: By the end of the program, the candidate should be able to:

- 1- Perform in-vivo and in-vitro animal experiments.
- 2- Induce animal models that resemble different diseases in humans.
- 3- Perform pharmacological screening of investigational drugs, plant, herbal extract, or biological products.
- 4- Evaluate the therapeutic equivalence of different drugs on animal models of diseases.
- 5- Evaluate the potency and efficacy of generics of drugs on experimental animals.
- 6- Audit patient's sheets.
- 7- Monitor therapeutic effects of drugs (*Elective*).
- 8- Determine the economics of different therapeutic regimens (*Elective*).
- 9- Evaluate and document the pharmacovigilance impact of drugs.
- 10- Write a scientific report.
- 11- Practice clinical pharmacology.
- 12- Participate in clinical trials.

D- General and Transferable Skills: By the end of the program, the candidate should be able to:

- 1- Communicate effectively with colleagues, researchers and students.
- 2- Use new technical methods and informatics such as scientific journals, computers, internet and websites.
- 3- Lead/participate in a research team of multi-disciplinary members.
- 4- Make decisions in the light of available information.
- 5- Add new resources and good and effective use of available resources.
- 6- Participate in community service and environment development.
- 7- Exhibit commitment to integrity, honesty and professional ethics.
- 8- Commitment with continuous self-development.
- 9- Transfer knowledge, skills and experience to others.

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) Benchmark:

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

IV. Program Admission Requirements

According to the Faculty of Medicine, Cairo University Bylaws for Post Graduate Programs (2009 update 2015), applicants should have Master degree or equivalent accredited degree in Medical Pharmacology. Medical Pharmacology department council defines the number of accepted candidates yearly, according to its capacity. Priority for acceptance is according to the M.Sc. grades.

According to Cairo University requirements, all applicants for MD degree had fulfilled, as a part of their Master degree the following programs: preliminary courses on; Medical statistics I – English language (Toefl or equivalent degree) – Computer skills (ISDL).

V. Program Structure and Contents

* **Program duration:** Two academic years.

* **Program structure:** Total credit points 140- (Table 1)

o **Compulsory courses:** Two academic years (30 weeks each)

- Medical pharmacology (Advanced level) PHAR 907 AD **10 credit points**

o **Elective courses:** Candidate chooses ONLY TWO courses = **6 Credit points**

- Complementary Medicine PHAR 907 CM (3 credit points)

- Pharmaco-economics PHAR 907 PE (3 credit points)

- Therapeutic Drug Monitoring PHAR 907 TDM (3 credit points)

o **Scientific activities:** **4 credit points**

o **Training program:**

- Advanced experimental pharmacology PHAR 907 P **25 credit points**

- Clinical pharmacology PHAR 907 C **15 credit points**

o **MD Thesis:** **80 credit points**

o **Total** **140 credit points**

Table 1: Program structure

Courses	Credit Points		ILOs
	CPS	Total	
COMPULSORY COURSES			
Medical Pharmacology PHAR 907 AD	10	10	A) 1,2,3&4. B) 1,2,3 & 9.
ELECTIVE COURSES: Candidate choose two			

Complementary Medicine PHAR 907 CM	3	6	A) 1, 4, <u>5</u> & 9. B) 2, 3 & 9. D) 4.
Pharmaco-economics PHAR 907 PE	3		A) 1 & <u>6</u> . B) <u>7</u> . C) <u>8</u> & 10. D) 4.
Therapeutic Drug Monitor PHAR 907 TDM	3		A) 4 & <u>7</u> . B) 3, 4, <u>6</u> & 8. C) <u>7</u> & 10.
SCIENTIFIC ACTIVITIES	4	4	A) 1, 2 & 3. B) 1, 2 & 3. D) 1, 2 6, 8 & 9.
Advanced training program			
Advanced experimental PHAR 907 P	25	40	A) 9, 10 & 11. B) 4, 5 & 9. C) 1, 2, 3, 4 & 5. D) 3, 5, 7 & 9.
Clinical pharmacology PHAR 907 C	15		A) 1, 2, 4, 6, 9, 10 & 11. B) 1, 2, 3, 4, 5, 6, 8, & 9. C) 6, 7, 10, 11 & 12. D) 1, 2, 3, 4, 6, 7, 8 & 9.
THESIS			
MD Thesis	80	80	A) 1, 2, 3, 8, 9, 10 & 11. B) 1, 4, 5 & 9. C) 1, 2, 3, 4, 5 & 10. D) 1 – 9.

- **Practical Training Program:** Timetable schedule to perform:

- 1- Perform in-vivo and in-vitro animal experiments.
- 2- Induce animal models that resemble different diseases in humans.
- 3- Perform pharmacological screening of investigational drugs, plant, herbal extract, or biological products.
- 4- Evaluate the therapeutic equivalence of different drugs on animal models of diseases.
- 5- Evaluate the potency and efficacy of generics of drugs on experimental animals.

- **Clinical training program**

- 1-Duration of the clinical training is 3 months (3 times /week).
- 2- Candidates are intended to join a Clinical Department: e.g. ICU Medicine, ICU Surgery, Cardiology, Neurology, Pediatrics, Chest and General medicine (specialized Department).
- 3- Candidate should join the same department he used to be during his training for Master degree
- 4-Number of Records: not less than 30 patientsheet
- 5- This activity is carried out under combined supervision of both pharmacology & concerned clinical department. Supervision will be by one professor & one lecturer from each department.
- 6- For follow up a logbook should be prepared, presented and to be assessed regularly every 2 weeks. It should include all audited sheets in addition to all experimental work & scientific activity done by the candidate.

- **Scientific Activities:**

The candidates should participate in the scientific activities of the department such as:

- 1- Supervised Teaching: Students will assist the faculty members who teach either graduate or medical students
- 2- Seminars about recent topics, including 4 audited sheets before the exam.
- 3- Journal clubs.
- 4- Scientific meetings.
- 5- Workshops.
- 6- Conferences.
- 7- Thesis discussions.
- 8- Each activity is monitored and given credit points registered in a special section in the logbook. Candidates should collect the required points before allowed to sit for final exam.

- **MD Thesis:**

All MD degree students should prepare a thesis in medical pharmacology. The research and ethical committee must approve the protocol of the research program that meets the individual student's background, research interests and clinical training. Students are expected to consult with their advisors to plan a sequence of coursework that best suits their needs. The thesis should fulfill scientific rules of research. 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.

VI. Regulations for Progression and Program Completion

After collecting the required credit points for the respective courses, practicing advanced pharmacological training, the scientific activities, and the thesis the student will be eligible to sit for the final examination. In case the student fails to pass the examination, he/she may resubmit for the next examination. The candidate will receive his/her degree after passing this final examination. MD degree should be obtained within a maximum of 6 years after registration date.

VII. Assessment

* Supervision and Monitoring of Training Program

- 1-According the Faculty of Medicine, Cairo University Bylaws for practical Training Programs, professors carry continuous assessment during the program.
- 2- A training program logbook will be kept for each candidate to document all his/her practical activities as well as his/her participation in different scientific activities.
- 3-The log book should be presented, and assessed regularly every 2 weeks. It should include all audited sheets in addition to all experimental work tracings & documents etc..., All scientific activity done by the candidate.
- 4- The completed approved log book should be presented before the final exam. The head of the department and MD professor committee should evaluate its contents. They will allow the candidates to undergo the final examination when they complete their training program and collect the credit points needed.

* Formal Assessment

According the Faculty of Medicine, Cairo University Bylaws for Post Graduate Programs (2009 update 2015). Students should be assessed at the end of the program.

A: Assessment Tools:

- 1- Medical Pharmacology: Two written exam papers each three-hours + practical laboratory and oral exams.
- 2- Elective Course: Two written exam papers one-hour each + practical and oral exams.
- 3- Clinical pharmacology: auditing 30 patient medication sheets + presentation
No allocated marks: just pass or fail.
- 4- Frequent reporting during preparation of the thesis.
- 5- Scientific presentations.
- 6- Thesis discussion.

	Assessment tool	Program ILOs
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1	Written exams	A) 1, 2, 3, 4, 5, 6, 7 & 8. B) 1, 2, 3, 4, 5, 6, 7&8.
2	Oral exams	A) 1, 2, 3, 4, 5, 6, 7& 11. B) 1, 2, 3, 4, 5, 6, 7, 8& 9.
3	Practical	B) 4, 5 & 6. C) 1, 2, 3, 4, 5 & 10. D) 1, 2, 4, 5, 7 & 9.
4	Clinical presentation	A) 1, 2, 3, 4, 7, 10 & 11. B) 1, 2, 3, 4, 6, 7, 8 & 9. C) 6, 7, 8, 9, 10, 11 & 12. D) 1, 2, 3, 4, 6, 7, 8 & 9.
5	Frequent reporting during preparation of the thesis	A) 1, 2, 3, 4, 8, 9 & 10. B) 1, 3, 4, 5, 6, 7, 8 & 9. C) 1, 2, 3, 4, 5, 6 & 10. D) 1, 2, 3, 4, 5, 6, 7, 8 & 9.
6	Scientific presentations.	A) 1 – 11. B) 1 – 9. D) 1 – 9.
7	Thesis discussion	A) 1, 2, 3, 4, 8, 9, 10 & 11. B) 1, 3, 4, 5, 6, 7, 8 & 9. D) 1 – 9.

B: Assessment Schedule:

The written examinations include short and long essay questions, MCQ and problem solving. This will be followed by the practical and oral examinations.

C: Weighing Of Assessment (Marks allocated to courses):

Courses	Marks				
	Code Title	Written	Oral	Clinical /Practical	Total
Medical pharmacology	Two papers = 300 marks	100	100	100	500
Elective Courses	Two papers = 200 marks	100	100	100	300
Total					800

- It is mandatory to pass all the papers of written exams separately.

- The passing mark in any written exam is $\geq 60\%$.

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	One before implementation
5. External examiners	- Questionnaires - Meeting and discussions.	All external examiners

Signatures

Date of approval by department: 6/11/2016

Program coordinator

Prof. Dr / عبد الفتاح مرعى

Prof. Dr / امانى نبيل شفيق

Prof. Dr / أميمة انور خورشيد

Head of Medical Pharmacology Department

أ.د هشام عطية الشخبي

