



برنامج جامعة المنصورة للدراسات العليا الطبية
والبيولوجية

كلية الطب-

شهادة مهارية متخصصة في علم تسمم الجهاز العصبي

**Mansoura University Program for
Postgraduate Medical and Biological
Studies**

*Faculty of Medicine- Mansoura University
Neurotoxicology Fellowship (NT)*

Program specifications

A- Administrative Information

1. **Title:** Neurotoxicology
2. **Director:** Dr. Mohamed Salama
3. **Coordinators:** Dr. Shaaban ElMosallamy
Dr. Mohamed El Gamal
4. **International collaborators:**
 1. Prof. Mohamed B. Abou Donia, Duke University, USA
 2. Prof. Guenter Hoeglinger, TUM, Germany
 3. Prof. Marina Bentivoglio, Verona University, Italy
5. **Date of board approval:**
6. **Date of approval of program specification by the faculty council:**

B- Professional Information:

1- Program Aims:

Neurotoxicology stems from numerous biological disciplines starting from Neurobiology (or, more generally, Neuroscience) which is an attempt to understand the higher functions of the nervous system (such as memory, learning, perception, consciousness, behavior, etc.) in terms of the biology of nerve cells. It developed from several different lines of inquiry that have merged into the current diverse field which include: Neuroanatomy--the macro- and micro-scopic study of brain structure; Neurophysiology--the study of electrical and chemical signaling mechanisms of nerve cells; Neuropharmacology--the study of the effects of various drugs--psychoactive, paralytic, anesthetic, etc.—on the function of the nervous system; and neuropsychology--the study of how neurons affects behavior. In this course we will focus on the biology of nerve cells--their structure, their cell biology, their signaling mechanisms, and how they are affected by toxicants/ or drugs leading altered function. Processes of neuronal diseases (neurodegenerative, Parkinson, Alzheimer, multiple sclerosis, epilepsy etc). We will not spend much time discussing the macroscopic anatomy of the brain nor human behavior, except when these topics are necessary for us to understand the functions of neurons. I hope you will come away from the course with a conviction that studying the cell and molecular biology of

small numbers of nerve cells will help us understand larger scale processes such as effects of toxicants on neuronal functions such as memory, learning, and other nervous diseases.

2-Intended Learning Outcomes (ILOs) for Program

a- Knowledge and Understanding:

A1. To know the workings of anticholinesterase insecticides and pesticides. Consequences of metals such as mercury, lead, zinc, and polytypic byproducts of combustion on nerves functions. Understand natural toxins - those of microbial origin (microbial, marine, clostridial, and botulinical neurotoxins), as well as those of animal origin (snake, spider, and scorpion venoms).

A2. To Understand the characteristics of the nerves that make them a target of neurotoxicants.

A3. To Understand the anatomy, physiology and biochemistry of the nerves, the electrophysiological properties of the nerves and generation of nervous transmission, Action potentials, and ion channels.

b- Intellectual skills

At the end of the Program the student should be able to:

B1 To Identify sites and mechanisms of neurotoxicity, how chemicals affect the nervous system, effects of human-made neurotoxins, as well as those of natural origin.

B2. To use integrative approach in understanding neurotoxicity through introduction of students to the organization and workings of the nervous system: Central Nervous System and Peripheral Nervous System.

c- Professional and practical skills

At the end of the Program the student should be able to:

c1- Design Animal Models for Neurotoxicity

c2- Study effect of neurotoxicants on different cell systems

c3- Evaluate clinical aspects of delayed neurotoxicity of pesticides

D- General and Transferable skills

At the end of the Program the students should be able to:

- D1. Use Evidence Based Medicine in management decisions.
- D2. Work effectively within the health care team.
- D3. Solve problems related to patients, work management, and among colleagues.
- D4. Cope with a changing work environment.
- D5. Apply safety and infection control measures during practice.

3-Academic Standards:

Academic Reference Standards for hemodialysis Diploma Degree of Mansoura faculty of Medicine were compiled according to the general Academic Reference Standards provided by the national authority for quality assurance and accreditation of education (naqaae) for postgraduate programs (published on February 2009). This program ARS were approved by the faculty council on / /2015.

4-Curriculum Structure and Contents

4a. Program duration: 2 years (39 credit hours).

4b. Program structure:

	Duration	Lecture	Credit hours
1 st Semester	6 months	4.5hrs./w for 18 weeks & 4hrs. for 6 w	7
2 nd Semester	6 months	3hrs./w for 18 weeks & 3.5hrs for 6 w	9

3rd Semester	4 months	5.5hrs./w for 12w & 6hr/w for 4w	5
4th Semester	6 months	5.5hrs./w for 18w & 6hr/w for 6w	9
Log book (includes clinical training)	2 month		9
Total	24 months		39

5-Courses contributing to the program

5.1. 1st semester:

a . Compulsory

a1- Code No. **NT1**

Course Title: **Neurobiology/physiology**

Credit hours: 7

5.2. 2nd semester :

a . Compulsory

a1 - Code No. **NT2**

Course Title: **PESTICIDES**

Credit hours: 9

5.3. 3rd semester :

a . Compulsory

a1 - Code No. **NT3**

Course Title: **NATURAL TOXINS**

Credit hours: 5

5.4. 4th semester :

a . Compulsory

a1 - Code No. NT4

Course Title: **Reviews of the neuronal impact of drugs of abuse**

Credit hours: 9

Program: Online Neurotoxicology Fellowship

Semester	Code	ILOs
Neurobiology/physiology	NT1	A2,3: B1: C1: D5
Pesticides	NT2	A1: B1,B2: C3: D5
Natural Toxins	NT3	A1: B1:C1:D1,2,3,4,5
Drug abuse	NT4	A2: B1: C1,2: D5

6-Program admission requirements

- Medical Bachelor of medicine and surgery (M.B.B.Ch) with at least good level.
- Acceptance letter of site of work.
- Selection criteria will be established by the Council of the MERC

7- Regulations for progression and Program completion

-The lectures for each course will appear once at the start of the course and there will be continuous evaluation to the candidates by online cases discussions, activities, quizzes and traineeship evaluation thorough the course.

-The assessment is :

Online MCQs following each semester(All represent 20% of final exam marks) and the candidate will not pass to the following semester unless he/she scores at least 75% in previous semester exam.

-log book (9 credit hours): this book will contain all the activity that will be done through the program and the clinical training which will be conducted through the courses. The candidate will not be allowed to apply to the exam of the fellowship unless completing 75% of log book activities.

-Accepted places for traineeship activities:

1. Mansoura Medical Experimental Research Center (MERC)
2. Mansoura Poisoning Unit/ Emergency Hospital
3. Toxicology Department

-The final exam(objectively-structured exam 80% of total mark) will be conducted online after the end of the 4th semester including MCQs(25%), EMQs(25%) and cases studies (30%).

8-Evaluation of program intended learning outcomes

8.1-Senior students:

Tool: Questionnaires-Review of assessment method

Sample: Students in the last year

8.2-Alumni

Tool: Questionnaires

Sample: Student finished diploma within 5 years

8.3-Stakeholders (Employers)

Tool: interviews

Sample: directors of nearby hospitals and hemodialysis units .

8.4-External Evaluator(s) External Examiner

Tool: Reports

Sample: External examiners in each course

We verify that all of the information required to deliver this program is contained in the above specification and will be implemented. All course specification for this program are in place.

Program director: Dr. Mohamed Salama
Head of Quality Assurance Unit:
Dean: