



## Program SPECIFICATION FOR MD Degree in Clinical Physiology

**Code: 1703800**

**University:** Alexandria

**Faculty:** Medical Research Institute

### Program Specification

#### A- Basic information

**1- Program title:** MD in Clinical Physiology

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

**3- Department(s):** Human Physiology

**4- Coordinator:** Prof. Maha Shoukry Ibrahim

**5- External evaluator(s):** Dr. Essam Elshamy, Professor of physiology , faculty of medicine, Alexandria University

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

---

#### B- Professional Information

##### 1- Program aims:

This program aims to produce scientifically and professionally capable Clinical Physiologists to meet national and regional needs while developing study skills and attitudes suitable for life-long learning. It also aims to equip students with knowledge, skills and critical awareness to make a significant contribution to research.

- Understand the methods applied in physiology research with special emphasis on experimental design and Learn topics with recent implication in special areas of physiology as angiogenesis, apoptosis, physiological proteomics and genomics, integrative physiology of the cardiovascular, respiratory, renal, neural, endocrine systems.
- Understanding of Bioethics, presenting different types of clinical cases including disturbed function assessment and clinical diagnosis. Different topics relating to clinical physiology such as bronchial asthma ,COPD, Heart failure obstructive and restrictive airway disease, renal failure & endocrinal disturbance.
- Acquire practical skills as: planning, designing and execution of self-directed and original research investigations, from the problem recognition stage through the evaluation and appraisal of results and findings.
- Gain knowledge about Aviation, highly altitude and space physiology, effects of low oxygen pressure on the body, physiology of deep sea diving and other hyperbaric condition and hyperbaric oxygen therapy. Recognize physiology of stress, pollution and its relation to exercise.



- Recognize the pharmacological principles of treatment using drugs, their efficacy in management of diseases and their adverse reactions

## 2- Intended learning outcomes (ILOs)

### a- knowledge and understanding:

**a1-** Describe essential concepts, principles, theories of physiological functions and discuss regulatory mechanisms and express understanding of selected advanced physiological topics.

**a2-** Know physiological principles underlying disease states that aids in interpretation of symptoms (such as in cardiac hypertrophy, bronchial asthma, pulmonary hypertension, gastro-esophageal reflux, metabolic syndrome). Recall altered physiological functions and their ways of assessment (as in renal dysfunction, heart failure, peripheral neuropathy).

**a3 -** Describe, explain principles and application of different physiological assessments and discuss the association between altered physiological functions and the pathological lesions.

**a4-** Discuss normal, abnormal functions of different systems under different temperatures, stress and different O<sub>2</sub> pressures. Demonstrate the effect of deep diving and high altitude on cardio-respiratory system and the effect of radiation, pollution and smoking on different systems of the body.

**a5-** Review basic principles of pharmacology.

### b- Intellectual skills:

**b1-** Evaluate functions of respiratory, cardiac, renal and endocrine systems and analyze effects of hormones on the body

**b2-** Solve problems and analyze some abnormalities in diseases affecting respiratory, cardiac, renal and endocrine systems.

**b3-** Interpret data derived from laboratory and clinical observations in terms of their significance and theory underlying them and solve problems of different body systems

**b4-** Distinguish between physiological and pathological performance of different body systems under conditions of pollution, different temperatures and different oxygen pressures

### c- Professional and practical skills:

c1. Perform pulmonary functions and Cardiac functions.

c2. Develop skills in hormonal assays and PCR.

c3. Interpret pulmonary functions and Cardiac functions.

c4. Perform & evaluate data of provocational challenges for respiratory system and assessment of reflexes.

c5. Interpret results of physiological diagnostic procedures and contribute appropriately to patient management

c6. Interpret and analyze important clinical physiological cases.

C7. Conduct important physiological techniques for clinical assessment (echocardiogram, exercise echocardiogram, EEG, EPS and EMG).



- C8. Demonstrate oxidative stress and radioactivity.
- C9. Apply precautions to decrease risk of pollution during exercise.
- c10. Perform work tests to evaluate cardiorespiratory fitness.
- c11. Use spirometric results in diagnosis of occupational lung diseases.
- c12. Assess psychophysiological parameters.
- c13. Perform respiratory muscle training maneuver
- c14. Observe some basic pharmacological techniques.

**d- General and transferable skills:**

- d1. Communicate effectively through written and oral presentation.
- d2. Use modern computing resources for data handling, information retrieval, document preparation, presentation and communication.
- d3. Develop process of critical and evaluative thinking and perform self and peer appraisal.
- d4. Seek continuous learning and help in teaching others and to assess the importance of the ideas of others.
- d5. Work separately or in a team and understands the responsibilities of a team leader.
- d6. Manage scientific meetings.
- d7. Utilize time appropriately.

**3- Academic standards**

**3a External references for standards (Benchmarks)**

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

**Date of Academic Reference standards (ARS) approval by Institute Council: 12/2/2014**

**3b Comparison of provision to selected external references**

NAQAAE	ARS for MD in clinical physiology
<b>A1-Basic facts , theories, of the specialty and related subjects/ fields</b>	<p>A1.Realize the basic concept of homeostasis. He must have deep fluent knowledge of the normal function of each human body system and recognize how different systems work in harmony to maintain homeostasis under different conditions.</p> <p>A2.Identify traditional and recent methods for functional assessment of the body</p>



	systems.
<b>A2-Mutual relation between professional practice and effects on environment</b>	A3.Have good knowledge about the function of different systems under variable physiological conditions and discuss the effect of environmental stressors on normal physiological function.
<b>A3-Recent advances in the field of practice</b>	A6.Review recent scientific research in clinical physiology.
<b>A4-Details of ethical &amp; legal practice</b>	A7.Identify legal and ethical considerations in clinical physiology practice and research.
<b>A5 -Quality standards of the practice</b>	A8.Identify quality standards in the clinical physiology laboratory.
<b>A6- Design, conduction &amp; publishing of scientific research</b>	A6.Review recent scientific research in clinical physiology.
<b>A7- Ethical considerations in different types of scientific research</b>	A7.Identify legal and ethical considerations in clinical physiology practice and research
<b>B1- Analyze, deduce, extrapolate &amp; evaluation of information</b>	B1.Analyze the molecular mechanisms of normal physiological functions and evaluate their role in pathophysiology of different diseases.  B2.Interpret abnormalities of physiological functions and plan for improving clinical physiology practice
<b>B2- Solve the majority of problems in the specialty according to the available data ( complete or incomplete)</b>	B3.Solve clinical problems in different fields of clinical physiology according to available data.
<b>B3- Conduct research studies that add to the existing specialty knowledge</b>	B6.Design, conduct and publish scientific research that adds to the existing knowledge in clinical



	physiology through thesis.
<b>B4- Publish scientific articles/papers (in indexed journals)</b>	B10.Publish scientific articles/papers through thesis.
<b>B5- Plan and implement ( or supervise implementation of) enhancement &amp; Improvement approaches to practice</b>	B8.Plan for periodic self-enhancement of his/her skills through assignment.
<b>B6- Take decisions in various professional situations ( including dilemmas &amp; controversial issues)</b>	B9.Take decisions in various clinical situations including dilemmas and controversial issues
<b>B7- Add to the specialty field through creativity &amp; innovation</b>	B11. Add to the specialty field through creativity & innovation through thesis
<b>B8- Manage discussions on basis of evidence and proofs</b>	B12.Manage discussions on basis of evidence and proofs through seminars.
<b>C1- Competent in all basic and all required advanced professional skills ( to be determined according to the specialty board/ department)</b>	C1.Perform competently, write a report, and interpret the results of pulmonary function, exercise and methacholine bronchoprovocation challenge tests.  C2.Examin and interpret: nerve and muscle, kidney, and GIT function and test results. C3.Apply traditional and recent types of hormonal assays
<b>C2- Write and appraise reports</b>	C1.Perform competently, write a report, and interpret the results of pulmonary function, exercise and methacholine bronchoprovocation challenge tests
<b>C3-Evaluate <i>and improve</i> methods and tools used in specialty</b>	C4.Use available tools for diagnosis of cardiovascular and respiratory diseases and sleep related disorders and plan for improving methods of diagnosis.
<b>C4-Use technology to advance practice</b>	C5.Use technology to enforce his physiological knowledge, analyze data and improve his practice
<b>C5- Plan professional development courses to improve practice and enhance performance of juniors</b>	C6.Plan for enhancing professional practice and improving performance of other clinical physiologists through



	assignments.
<b>D1- Communicate effectively using all methods</b>	D1.Communicate effectively using different methods.
<b>D2- Use information technology to improve his/her professional practice</b>	D2.Use information technology to obtain data and improve his/her professional practice.
<b>D3- Teach and evaluate others</b>	D3.Perform self and peer appraisal.
<b>D4- Perform self appraisal&amp; seek continuous learning</b>	D3.Perform self and peer appraisal. D4.To be motivated and able to seek continuous learning and help in teaching others.
<b>D5- Use different sources of information to obtain data</b>	D7.Use different sources of information to obtain data
<b>D6- Work in teams as well as a member in larger teams</b>	D5.Work in a team and understands the responsibilities of a team leader
<b>D7- Manage scientific meetings and appropriately utilize time</b>	D6.Manage scientific meetings and appropriately utilize time

#### 4- curriculum structure and contents

4.a program duration: 3-5years)

**4.b program structure :**

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

Semester	Core Courses	Elective Courses
	No. of hours	No. of hours
First semester	4	3
Second semester	3	
Third semester	4	3
Fourth semester	4	



**5.2- Elective I (3 Credit Hours)**

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1700850	Nutrition	۳	2	1
1701821	Molecular Biology	۳	2	1
1705820	Haematology	۳	2	1
1708820	Immunology	۳	2	1
1713820	Genetics	۳	2	1

**5.3- Elective II (3 Credit Hours)**

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1715851	Chest Diseases	۳	2	1
1715852	Renal Diseases	۳	2	1
1715853	Endocrinal Diseases	۳	2	1
1715854	Cardiac Diseases	۳	2	1

**5.4- Optional – (none)**

---

**6- Program admission requirements**

Postgraduate students with a M.Sc. or an equivalent degree in Clinical Physiology

**7- Regulations for progression and program completion**

For the progression and completion of the program to obtain the degree of ....., the student must:

- 1- Complete..... 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.**

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

**Evaluation of the Program**

<b>Evaluator</b>	<b>Tool</b>	<b>Sample</b>
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	Name of evaluator or examiner
5- Other		

**Dates of Previous editions/revisions:**

<b>Editions/Revisions Number</b>	<b>Date</b>
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

**Program coordinator:**

Name: Prof. Maha Shoukry Ibrahim

Signature: .....



**Department Head:**

Name: Prof. Azza Saad

Signature: .....

**Date of Department Council Approval: 7/9/2017**

***Attach these Matrixes:***

***\*Program Aims vs ILOs matrix***

<b><i>Program Aims</i></b> <b><i>ILOs</i></b>	1	2	3	4	5
a1	×				
a2		×			
a3		×	×		
a4				×	
a5					×
b1		×			
b2			×		
b3		×			
b4				×	
c1		×			
c2		×			
c3			×		
c4		×	×		
c5		×			
c6			×		
C7				×	
C8				×	
C9			×		
c10				×	
c11				×	
c12		×			
c13	×				
c14					×
d1	×	×	×	×	×
d2	×	×	×	×	×
d3	×	×	×	×	×
d4	×	×	×	×	×



d5		×	×		
d6	×	×	×	×	
d7	×	×	×	×	

**\* Courses vs Program ILOs matrix**

**a- Knowledge and understanding:**

<b>Course Title</b>	a1	a2	a3	a4	a5
Advanced Physiology	×				
Advanced Clinical Physiology		×			
Environmental Physiology				×	
Diagnostic Physiology			×		
Pharmacology					×

**b- Intellectual skills:**

<b>Course Title</b>	b1	b2	b3	b4
Advanced Physiology	×			
Advanced Clinical Physiology		×		
Environmental Physiology				×
Diagnostic physiology			×	
Pharmacology				

**c- Professional and practical skills:**

<b>Course Title</b>	c1	c2	c3	c4	c5	c6	C7	C8	C9	c10	c11	c12	c13	c14
Advanced Physiology	×	×	×									×	×	
Advanced Clinical Physiology					×									
Environmental Physiology							×	×		×	×			
Diagnostic physiology				×		×			×					
Pharmacology														×

**d- General and transferable skills:**

<b>Course Title</b>	d1	d2	d3	d4	d5	d6	d7
Advanced Physiology	×	×				×	×
Advanced Clinical Physiology	×	×	×	×		×	×







Medical Research Institute

Department Of: Human Physiology

---

Self-Directed Learning	√	√	√	√	√	√
e-learning						
Project						