Master (M.Sc.) Degree Program and Courses Specifications for Medical Physiology

(According to currently applied Credit point bylaws)

Medical Physiology Department
Faculty of Medicine
Assiut University
2022-2023

Assiut University
Faculty of Medicine
Quality Assurance Unit (QAU)

كلية الطب
جامعة أسيوط

Master degree of Medical Physiology

- **Program Title:** Master degree of Medical Physiology.
- **Nature of the program: Single.**
- **Responsible Department:** Department of Medical Physiology, Faculty of Medicine, Assiut University, Eygpt.
- **Program Academic Director (Head of the Department):** Prof. Nashwa Abdel Motaleb.

Coordinator (s): Principle coordinator: Prof. Ebtihal Anwar

- **Assistant coordinator (s):** Prof. Saly Anwer Sayed.

- **Internal evaluators:** Pro. Dr. Mahmound R. Abdel fadel.
- **External evaluator:** Pro. Dr. Abel Aziz M Hessein- Masoura University
- **Date of Approval by the Faculty of Medicine Council of Assiut University: 23-9-2014**
- **Date of most recent approval of program specification by the Faculty of Medicine Council of Assiut University:**
  ٢٧ /١١ /2022
- **Total number of courses: 2 courses + one elective course**

B. Professional Information

1- Program Aims:

1/1: To prepare highly qualified physiologists.

1/2: To prepare candidates to the basics of scientific medical research and its ethics.

1/3: To enable the candidates to develop basic concepts and principles of human physiology logically and clearly correlate and analyze physiological phenomena.

1/4: To provide an educational environment that encourages creativity and research both fundamental and applied.

1/5: To enable students improves their skills in research and undergraduate teaching.

1/6: By the end of the program students will be able to:

1. Have a satisfactory level of knowledge of the cellular basis of Medical physiology and function of organ systems of the body and the control systems of the human body and varies body functions in health.
2. Develop knowledge concerning molecular biology & the bases of genetics.
3. Understand and get the best of published scientific researches.
4. Emphasis is placed on the acquisition of a sound basic training in general physiology through individually planned programs of course work, tutorials, seminars and supervised research.
5. Demonstrate skills in oral and written presentations.

6. Provide an understanding of quality assurance issues.
7. Become acquainted with the methods of consulting the literature and preparing review.
8. Develop a professional skill in techniques used for experimental physiology on isolated organs, tissues and whole animals.
9. Graduates with a degree in physiology can pursue careers in research, teaching or management in academia, the pharmaceutical and biotechnology industries, private research institutions, government science or regulatory agencies, or medicine and health care.

2- Intended Learning Outcomes (ILOs) *for The Whole Program*:

2- Intended Learning Outcomes (ILOs) *for The Whole Program*:

2/1Knowledge and Understanding:

A. Explain the essential facts and principles of relevant basic sciences including, Biochemistry and Pharmacology related to Medical Physiology.

B. Mention essential facts of clinical supportive sciences including Cardiology, Neurology, Gastroenterology and endocrinology related to Medical Physiology.

C. Demonstrate sufficient knowledge of the main subjects including Central nervous system and special sense, Endocrine system and reproduction, General metabolism and regulation of body temperature, Renal system,

Cardiovascular system, Respiratory system, Muscle and nerve, Digestive system, Blood and Medical biophysics.

D. Give the recent and update developments in the most important themes related to Medical Physiology.

E. Mention the basic ethical and medico-legal principles that should be applied in practice and are relevant to the Medical Physiology.

F. Medico-legal principles that should be applied in practice and are relevant to the Medical Physiology.

G. Mention the basics and standards of quality assurance to ensure good practice in the field of Medical Physiology.

H. Mention the ethical and scientific principles of medical research methodology.

I. State the impact of common problems related to Medical Physiology on the society and how good practice can improve these problems.

2/2 Intellectual Outcomes:

A- Correlate the relevant facts of relevant basic and clinically supportive sciences with reasoning, diagnosis and management of common problems of the Medical Physiology.

B- Demonstrate an investigatory and analytic thinking approach (problem solving) to common clinical or practical situations related to Medical Physiology.

C- Design and /or present a case or review (through seminars/journal clubs) in one or more of common themes or problems relevant to the Medical Physiology.

D- Formulate management plans and alternative decisions in different situations in the field of Medical Physiology.

2/3 Skills:

2/3/1 Practical Skills:

A. Demonstrate competently relevant laboratory skills related to Medical Physiology.
B. Use the up to date technology for the conditions related to Medical Physiology.
C. Develop plans for performing experiments related to Medical Physiology.
D. Carry out common experiments related to Medical Physiology.
E. Counsel and educate students, technicians and junior staff, in the lab about conditions related to Medical Physiology; including handling of samples, devices, safety and maintenance of laboratory equipments.
F. Use information technology in some of the situations related to Medical Physiology.
G. Share in providing health care services aimed supporting patient care, solving health problems and better understanding of the normal structure and function.
H. Write competently all forms of professional reports related to the Medical Physiology (lab reports and experiments reports).

2/3/2 General Skills:

Including:

- Practice-based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism

- Systems-based Practice

Practice-Based Learning and Improvement:

A- Perform practice-based improvement activities using a systematic methodology (share in audits and risk management activities and use logbooks).
B- Appraises evidence from scientific studies.
C- Conduct epidemiological studies and surveys.
D- Perform data management including data entry and analysis and using information technology to manage information, access on-line medical information; and support their own education.
E- Facilitate learning of students, lab technical staff and other health care professionals including their evaluation and assessment.

Interpersonal and Communication Skills:

A. Maintain therapeutic and ethically sound relationship with patients, their families, lab technical staff and other health professionals.
B. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.
C. Provide information using effective nonverbal, explanatory, questioning, and writing skills.
D. Work effectively with others as a member of a team or other professional group.

Professionalism:

A. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.
B. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.
C. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities

Systems-Based Practice:

A. Work effectively in relevant academic and health care delivery settings and systems including good administrative and time management.
B. Adopt cost-effective practice and resource allocation that does not compromise quality of services.
C. Assist patients in dealing with system complexities.

3- Program Academic Reference Standards (ARS) (Annex 2)

Academic Standards for Master Degree in Medical Physiology

Assiut Faculty of Medicine developed master degree programs' academic standards for different academic specialties.

In preparing these standards, the General Academic Reference Standards for post graduate programs (GARS) were adopted. These standards set out the graduate attributes and academic characteristics that are expected to be achieved by the end of the program.

These standards were approved by the Faculty Council on 17-6-2009. These standards were revised and approved without

changes by the Faculty Council on 23-9-2014.These standards were recently revised and reapproved without changes by the Faculty Council on 27-11-2022.

4- Program External References (Benchmarks)

1. **ACGME (Accreditation Council for Graduate Medical Education).**

http://www.acgme.org/acWebsite/navPages/nav_Public.asp

2. **King Abdulaziz University Hospital: Physiology master program**

http://medicine.ksu.edu.sa/index.php?option=com_content&view=article&id=839&Itemid=1187&lang=en

5. Program Structure and Contents

A. Duration of Program: 3 – 5 years

B. Structure of the Program: Total number of credit points: 180 (20 out of them for thesis)
Didactic 34 (18.89%), practical 126 (70%) thesis 20 (11.11%) total 180

First part

Didactic 8 (20%), practical 30 (75 %), elective coarse 2(5%) total 40.

Second part

Didactic 24 (20%) practical 96 (80 %) total 120

According the currently applied bylaws:

Total courses 160 CP
Compulsory courses: 98.9%

Elective course: 2 credit point: 1.1%

	Points	% from total
▪ Basic science courses	18	10%
Humanity and social courses	2	1.1%
▪ Speciality courses	140	77.77%
▪ Others (Computer, …)		
▪ Field training	126	70%
Thesis	20	11.1%

C. Program Time Table

A- **<u>Duration of program</u> 3 years maximally 5 years divided into**

- **Part 1: (One year)**
  Program-related basic science courses and ILOs + elective courses
  Students are allowed to sit the exams of these courses after 12 months from applying to the MSc degree.
  One elective course can be set during either the 1st or 2nd parts.
- **Thesis**
  For the M Sc thesis;
  MSc thesis subject should be officially registered within 6 months from application to the MSc degree,
  Discussion and acceptance of the thesis could be set after 12 months from registering the MSc subject;
  It should be discussed and accepted before passing the second part of examination)
- **Part 2 (2 years)**

Program –related speciality courses and ILOs
Students are not allowed to sit the exams of these courses before 3 years from applying to the MSc degree.
The students pass if they get 50% from the written exams and 60% from oral and clinical/practical exams of each course and

60% of summation of the written exams, oral and clinical/practical exams of each course
Total degrees 1600 marks.
400 marks for first part
1200 for second part
Written exam 40% - 70%.
Practical and oral exams 30% - 60%.

D. Curriculum Structure: (Courses):

Courses of the Program:

Modules/ Units delivering courses and student work load list	Course Code	Core Credit points		
		Didactics	training	total
First Part				
Basic science courses (8CP) **The student choose between the following courses:** - Biochemistery Or - Pharmacology.Or . -Pulmonology.Or -Neurology.Or - Cardiology.Or -Gasteroenterology.Or - Endocrinology.	 PHY204 PHY206 PPHY219 HY220 PHY232 PHY218A PHY218B	 8CP 8CP 8CP 8CP 8CP 8CP 8CP	 10CP 10CP 10CP 10CP 10CP 10CP 10CP	 18CP 18CP 18CP 18CP 18CP 18CP 18CP
Elective courses*	2CP			
Practical training and scientific activities				
A. Practical training in compulsory academic Basic science courses (10 CP)				
B. Practical training in Speciality course (20 CP)	PHY203A		**20CP**	
Total of the first part		**10CP**	**30CP**	**40CP**
Second Part	**Speciality courses**			

	Speciality Clinical Work			
Speciality Courses 1. Unit 1: General & Cellular Basis of Medical Physiology. 2. Unit 2: Nerve and Muscle. 3. Unit 3: Autonomic Nervous system. 4. Unit 4: Physiology of the Central Nervous System and Special Sense. 5. Unit 5: Cardiovascular Physiology. 6. Unit 6: Blood & Immunity. 7. Unit 7: Gastrointestinal physiology. 8. Unit 8: Respiration. 9. Unit 9: General Metabolism and Regulation of Body Temperature. 10. Unit 10: Renal Physiology. 11. Unit 11: Body fluids, Electrolytes and Acid Base Regulation. 12) Unit 12: Endocrine System and Reproduction.	PHY203A	1CP 1CP 1CP 5CP 4CP 2CP 2CP 2CP 1CP 1CP 3CP	2CP 4CP 4CP 27CP 22CP 12CP 8CP 13CP 5CP 2CP 9CP	3CP 5CP 5CP 32CP 26CP 14CP 10CP 15CP 6CP 3CP 12CP
Training and practical activities in Medical Physiology Department (96 CP)	PHY203A			
Total of the second part		**24**	**96**	**120**
Thesis	**20**			
Total of the degree	**180**			

 # Didactic (lectures, seminars, tutorial)

* Elective courses can be taken during either the 1st or 2nd parts.

Student work load calculation:

Work load hours are scheduled depending on the type of activities and targeted competences and skills in different courses

Elective Courses#:

- Medical statistics.
- Evidence based medicine.
- Medico-legal Aspects and Ethics in Medical Practice and Scientific Research
- Quality assurance of medical education
- Quality assurance of clinical practice.
- Hospital management

One of the above mentioned courses are prerequisites for fulfillment of the degree.

Thesis:

20 CP are appointed to the completion and acceptance of the thesis.

please complete the table correctly, the numbers are wrong

Units' Titles' list	% from total Marks	Level (Year)	Core Credit points		
			Didactic	training	Total
1. Unit {Module) 1: General & Cellular Basis of Medical Physiology.		1,2	1	2	3
2. Unit {Module) 2: Nerve and Muscle.		1,2	1	4	5
3. Unit {Module) 3: Autonomic Nervous system.		1,2	1	4	5
4. Unit {Module) 4: Physiol of the Central Nervous System and Special Sens		2,3	5	28	33
5. Unit {Module) 5: Cardiovascular Physiology.		1,2	4	22	26
6. Unit {Module) 6: Blood & Immunity.		1,2	2	12	14
7. Unit {Module) 7: Gastrointestinal physiology.		1,2	2	8	10
8. Unit {Module) 8: Respiration.		1,2	2	13	15
9. Unit {Module) 9: General Metabolism and Regulation of Body Temperature.		2,3	1	5	6
10. Unit {Module) 10: Renal Physiology.		2,3	1	8	9
11. Unit {Module) 11: Body fluids, Electrolytes and Acid Base Regulation.		2,3	1	2	3
12. Unit {Module) 12: Endocrine System and Reproduction.		2,3	1	9	10
Total No of units	**12**		**24**	**116**	**140**

6. Courses Contents (Annex 1)

The competency based objectives for each course/module/rotation are specified in conjunction with teaching/training methods, requirements for achieving these objectives and assessment methods.

See Annex 1 for detailed specifications for each course/ module

Annex 6 II: Program Matrix

7-Admission requirements

- **Admission Requirements (prerequisites) if any :**
  - **I. General Requirements:**
    - a. - MBBCh Degree from any Egyptian Faculties of Medicine
    - b. Equivalent Degree from medical schools abroad approved by the Ministry of Higher Education
    - c. One year appointment within responsible department (for non Assiut University based registrars)
  - **II. Specific Requirements:**
    - Fluent in English (study language)

VACATIONS AND STUDY LEAVE

The current departmental policy is to release administrator from their duties for 15 days prior to the scheduled date for the first and final certifying Master Degree examination

FEES:

As regulated by the postgraduate studies rules and approved by the faculty vice dean of post graduate studies and the faculty and university councils.

8-Progression and Completion Requirements:

- Examinations of the first part could be set at 12 months from registering to the MSc degree.
- Examination of the second part cannot be set before 3 years from registering to the degree.
- Discussion of the MSc thesis could be set after 1 year from officially registering the MSc subject before setting the second part exams.
- The minimum duration of the program is 3 years.

The students are offered the degree when:

1. Passing the exams of all basic science, elective and speciality courses of this program as regulated by the post graduates approved rules by the faculty council.

2. Completing all scheduled CP and log book (minimum 80%).

3. Discussion and acceptance of the MSc_thesis.

9- Program Assessment Methods and Rules (Annex IV)

Method	ILOs measured
Written examinations: Structured essay questions Objective questions MCQ Problem solving	K & I
Practical: OSPE	K ,I, P &G skills
Structured oral	K ,I &G skills
Logbook assessment	All
Research assignment	I &G skills

Weighting of assessments:

Courses		Degrees			
	Course Code	Written Exam	Oral Exam	Practical / Clinical Exam	Total
First Part					
Basic academic Courses: choose one of the following course					
Biochemistry	PHY204	240	80	80	400
Pharmacology	PHY206	240	80	80	400
Neurology	PHY220	240	80	80	400
Cardiology	PHY232	240	80	80	400
Gastroenterology	PHY218A	240	80	80	400
Pulmonology	PHY2119	240	80	80	400
Endocrinology	PHY218B	240	80	80	400
Total of the first part					400
Second Part					
Speciality Courses:					
Course II : Speciality Course of Medical Physiology Paper 1 Paper 2 Paper 3 Paper 4		 200 200 200 200			
Total of the degree		800	200	200	1200
Elective course		50	50		100

*** 25% of the oral exam for assessment of logbook**

Total degree 1600

400 marks for first part

1200 for second part

Written exam 66.66% (800 marks).

Clinical /practical and oral exams 33.33% (400 marks)

- **Examination system:**
- **Examination system:**
  - **First part:**
    - Written exam two papers 2 hours for each in Basic science course + Oral exam +practical exam
  - **Second part:**
    - Written exam four papers 3 hours for each in Medical Physiology + Oral exam+ practical exam
  - **Elective courses**
    - Written exam one paper 1 hour in Elective course + Oral & Practical exam

10-Program Evaluation		
By whom	**Method**	**Sample**
Quality Assurance Unit	Reports Field visits	#
External Evaluator (s):According to department council External Examiner (s): According to department council	Reports Field visits	#
Stakeholders	Reports Field visits questionnaires	#
Senior students	questionnaires	#
Alumni	questionnaires	#

#Annex 5 contains evaluation templates and reports (joined in the developmental folder).

11-Declaration

We certify that all of the information required to deliver this program is contained in the above specification and will be implemented.

All course specifications for this program are in place.

Contributor	Name	Signature	Date
Program Principle Coordinator	Prof. Ebtihal Anwar Prof. Hayam G. Sayyed		
Head of the Responsible Department (Program Academic Director)	Prof. Nashwa Abdel Motaleb.		

Annex 1, Specifications for Courses / Modules

Annex 1: specifications for courses

First Part

Basic Course I
Primary level (I-1)
Biochemistry

- **Medical Physiology Department**
- **Faculty of Medicine**
- **Assiut University**
- **2022-2023**

The student choose between the following courses:

- Biochemistery Or
- Pharmacology ,or,
- Pulmonology, or
-Neurology, or
- Cardiology ,or
Gasteroenterology, or
- Endocrinology.

1. Course Data

- **Course Title:** Basic course 1 (1) Biochemistry
- **Course code:** PHY204
- **Speciality:** Medical Physiology
- **Number of credit points: Didactic 8 (44.44%), practical 10 (65.66%), total 18 CP**
- **Department (s) delivering the course:** Department of Biochemistry, Faculty of Medicine, Assiut University, Egypt.
- **Coordinator (s): Staff members of Medical Physiology Department in conjunction with Department of**

Biochemistry Department as annually approved by both departments councils.

- **Date last reviewed:** **7-** 2022
- **General requirements (prerequisites) if any : None**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

1. Master relevant laboratory skills in the following situations:

   a- Application of different methods of collection and preparation of body fluid samples.

   b- Estimation of some indices by kits (ELISA & RIA).

   c- Chemical methods of measurement of some indices.

2. Apply the basic concepts and principles of biochemistry:

3. Develop knowledge concerning molecular biology and the bases of genetics.

4. Develop information technology (IT) skills through the use of technology, computer-assisted learning and databases.

5. Demonstrate a commitment to ethical principles

3. Course Intended Learning Outcomes (ILOs):

A-Knowledge and Understanding

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
A. Describe common clinical conditions in Biochemistry related to Medical Physiology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
B. Mention the factual basics and principles of biochemistry essential for Medical Physiology.		
C. State update and evidence based Knowledge related to the course: ▪ Metabolism of carbohydrate, Fat and protein. ▪ Genetic control of protein synthesis. ▪ Hormones. ▪ Receptors and 2nd messengers ▪ Vitamins and mineral metabolism.		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to medical physiology including: molecular biology & the bases of genetics.		
E. Mention the basic ethical and medicolegal principles relevant to the medical physiology.		
F. Mention the basics of quality assurance to ensure good professional skills in his field.		
G. Mention the ethical and scientific principles of medical research.		

B. Intellectual outcomes

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Correlates the facts of Biochemistry and clinically supportive sciences with conditions and diseases of relevance to Medical Physiology.	Lectures Seminars Presentations	Written, oral examinations.
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to Medical Physiology.	Lectures Seminars Presentations	Written, oral examinations.
C. Design and present audits, cases, seminars in common problems related to Medical Physiology.	Lectures Seminars Presentations	Written, oral examinations.

C. Practical skills

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Perform the following basic lab skills essential to the course: 1. Different methods of collection and preparation of body fluid samples. 2. Estimation of some indices by kits (ELISA & RIA). 3. Chemical methods of measurement of some indices.	Laboratory training	Practical examination
B. Use instruments and devices in evaluation of the condition mentioned above in A.	Laboratory training	Practical examination
C. Write and evaluate of the reports of the conditions in A	Laboratory training	Practical examination
D. Perform the following basic experiments in related basic sciences to be utilized in the research work: ▪ Collection and preparation of body fluid samples. ▪ Estimation of some indices by kits (ELISA & RIA). ▪ Measurement of some indices.	Laboratory training	Practical examination
E. Use information technology to support decisions in common situations related to Medical Biochemistry.	Laboratory training	Practical examination

D-General Skills

Practice-Based Learning and Improvement

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	Oral communication Senior staff experience	Written, and oral examinations
B. Appraises evidence from scientific studies.		
C. Participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
F-Maintain ethically sound relationship with others.	Observation & Supervision Seminars Lectures Hand on workshops	Simulation Record review (report) Log book Check list
G-Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H-Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I-Work effectively with others as a member of a health care team or other professional group.		
J-Present a case.		
K-Write a report.		

Professionalism

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
L-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation Senior staff experience	Objective structured clinical examination
M-Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices	Observation Senior staff experience	Objective structured clinical examination
N-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities	Observation Senior staff experience	Objective structured clinical examination

Systems-Based Practice

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
O-Work effectively in relevant health care delivery settings and systems.	Observation, Senior staff experience	Global rating Check list evaluation of live or recorded performance
P-Practice cost-effective health care and resource allocation that does not compromise quality of care.		

Q-Assist patients in dealing with system complexities.		

4. Course contents (topic s/modules/rotation Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Metabolism of carbohydrate, Fat and protein.	A, E-G	B	A-E	A-Q
Vitamins and mineral metabolism	A, E-G	C	A	A-E
Hormones	A, E-G	A	B	A-Q
Receptors and 2nd messengers	B	C	A	A-E
Genetic control of protein synthesis	A, E-G	B	C	A-E

5. Course Methods of Teaching/Learning:

1. Laboratory training.
2. Lectures, Seminars & Presentations.
3. Oral communication & observation Senior staff experience.
4. Observation & supervision Seminars, Lectures, Hand on workshops.

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial)
2. Extra laboratory work

7. Course assessment methods:

i. Assessment tools:

Practical examination.

Written and oral examinations.

Simulation Record review (report), Log book, Chick list, Senior staff opinion.

ii. Time schedule: At the end of first part**.**

iii. Marks: 400.

8. List of references

i. Lectures notes

ii. Essential books

Harper's Illustrated Biochemistry, McGraw Hill/Medical; Thirty first Edition 2018

iii. Recommended books

Lippincott's Illustrated Reviews: Biochemistry, LWW; Seven Edition, 2017.

iv. Periodicals, Web sites, … etc

- Biochemistry and molecular biology education journal.
- Physiology and Biochemistry journal

v. Others

9. Signatures

Contributor	Name	Signature	Date
Program Principle Coordinator	Prof. Ebtihal Anwar Prof. Saly Anwer Sayed		

Head of the Responsible Department (Program Academic Director)	Prof. Nashwa Abdel Motaleb		

Basic Course I
Primary level (I-2)
Pharmacology

- **Medical Physiology Department**
- **Faculty of medicine**
- **Assiut University**
- **2022-2023**

1. Course data

- **Course Title:** Basic course (I-2) Pharmacology
- **Course code:** PHY206
- **Speciality: Medical Physiology**
- **Number of credit points: Didactic 8 (44.44%), practical: 10 (65.66%), total 18 CP.**
- **Department (s) delivering the course:** Department of Pharmacology, Faculty of Medicine, Assuit University, Egypt.
- **Coordinator (s): Staff members of Medical Physiology Department in conjunction with Department of Pharmacology Department as annually approved by both departments councils.**
- **Date last reviewed: 7-** 2022

- **General requirements (prerequisites) if any : None**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

1. Apply the basic concepts and principles of Pharmacology, Drug metabolism, pharmacological aspects of autonomic nervous system, cardiovascular system, respiratory system, gastrointestinal system, and central nevus system.
2. Use information technology to manage information, access on-line medical information in pharmacological analysis.
3. Develop information technology (IT) skills through the use of technology, computer-assisted learning and databases.

3. Course Intended Learning Outcomes (ILOs):

A-Knowledge and Understanding

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
A. Describe common clinical conditions related to Pharmacology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
B. Mention the factual basics and principles of Pharmacology essential to Medical Physiology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
C. State update and evidence based Knowledge related to the course: ▪ Principle of pharmacology. ▪ Drug metabolism.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to specialty including: Pharmacological aspects of autonomic nervous system, cardiovascular system, respiratory system, gastrointestinal system, central nervous system.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
E. Mention the basic ethical and medico-legal principles relevant to the Pharmacology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
F. Mention the basics of quality assurance to ensure good professional skills in his field.	Didactic (lectures,	Written and oral

	seminars, tutorial)	examination - Log book
G. Mention the ethical and scientific principles of medical research.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book

B. Intellectual outcomes

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to Pharmacology.	Lectures Seminars Presentations	Written, oral examinations.
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevant to Pharmacology.		
C. Design and present audits, cases, seminars in common problems related to Medical Physiology.		

C. Practical skills

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Perform the following basic lab skills essential to the course: - Preparation of different physiological solutions. -Experiments on isolated organs and effect of different drugs on them.	Laboratory training	Practical examination
B. Use instruments and devices in evaluation of effect of different drugs on isolated organs.	Laboratory training	Practical examination
C-Interpret the invasive and non invasive procedures and instruments of the conditions mentioned above in A	Laboratory training	Practical examination
- D. Perform invasive and non invasive procedures of the conditions mentioned above in A.	Laboratory training	Practical examination
E. Write and evaluate of the reports of the conditions mentioned above in A.	Laboratory training	Practical examination
F. Perform the following basic experiments in related basic sciences to be utilized in the research work: - Preparation of different physiological solutions. - Experiments on isolated organs and	Laboratory training	Practical examination

effect of different drugs on them.		
G. Use information technology to support decisions in common situations related to Pharmacology.	Laboratory training	Practical examination

D. General Skills

Practice-Based Learning and Improvement

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A.Perform practice-based improvement activities using a systematic methodology(audit, logbook)	Oral communication Senior staff experience	Written, and oral examinations
B. Appraises evidence from scientific studies.		
C. participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
F-Maintain ethically sound relationship with others.	Observation & Supervision Seminars Lectures Hand on workshops	Simulation Record review (report) Log book Check list
G-Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H-Provide information using effective nonverbal, explanatory, questioning, and writing skills.		

I-Work effectively with others as a member of a health care team or other professional group.		
J-Present a case.		
K-Write a report.		

Professionalism

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
L-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation Senior staff experience	Objective structured clinical examination
M-Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
N-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	**Methods of teaching/ learning**	**Methods of Evaluation**
O-Work effectively in relevant health care delivery settings and systems.	Observation, Senior staff experience	Global rating Check list evaluation of live or recorded performance
P-Practice cost-effective health care and resource allocation that does not compromise quality of care.		
Q-Assist patients in dealing with system complexities.		

4. Course contents (topic s/modules/rotation Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Pharmacological aspects of autonomic nervous system	**A-G**	**A-C**	**A-G**	**A-Q**
Pharmacological aspects of cardiovascular system	**A-G**	**A-C**	**A-G**	**A-Q**
Pharmacological aspects of respiratory system	**A-G**	**A-C**	**B**	**A-Q**
Pharmacological aspects of gastrointestinal system	**A-G**	**A-C**	**C**	**A-Q**
Pharmacological aspects of central nervous system	**A-G**	**A-C**	**B**	**A-Q**

5. Course Methods of teaching/learning:

1. Laboratory training.

2. Oral communication senior staff experience.
3. Observation & supervision Seminars, Lectures, Hand on workshops.
4. Observation senior staff experience.

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial)
2. Extra laboratory work

7. Course assessment methods:

i. Assessment tools:

- Practical examination.
- Written, oral examinations.
- Simulation Record review (report), Log book, Chick list, Senior staff opinion.

ii. Time schedule: 12-18 months.

iii. Marks: 400

8. List of references

i. Lectures notes

ii. Essential books

- Basic & Clinical Pharmacology, 11th Edition. By Bertram Katzung, Anthony Trevor, Susan Masters. Publisher: McGraw-Hill 2021.

iii. Recommended books

- Godman Gilmans: The pharmacological Basis of therapeutics. 13th ed, 2018.
- Roach's Introductory Clinical Pharmacology, Susan M. Ford Sally S, 11th ed, 2017.

iv. Periodicals, Web sites, … etc

British journal of pharmacology

Pharmacological review

v. Others

9. Signatures

Contributor	Name	Signature	Date
Program Principle Coordinator	Prof. Ebtihal Anwar Prof. Saly Anwer		
Head of the Responsible Department (Program Academic Director)	Prof. Nashwa Abdel Motaleb		

Basic Course I
Primary Level (I-3)
Neurology

- **Medical Physiology Department**
- **Faculty of medicine**
- **Assiut University**
- **2022-2023**

1. Course data

- **Course/module Title:** Primary level (I-4) Neurology**.**
- **Course code**: PHY220
- **Speciality: Medical Physiology.**
- **Number of credit points:** Didactic 8 (44.44%), practical 10 (65.66%)**,** total **18 CP.**
- **Department (s) delivering the course:** Department of Neurology and Psychiatry, Faculty of Medicine, Assuit University, Egypt.
- **Coordinator (s): Staff members of Medical Physiology Department in conjunction with Department of Neurology Department as annually approved by both departments councils.**
- **Date last reviewed:** 7 - 2022
- **General requirements (prerequisites) if any :None**

- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

I-Master relevant laboratory skills in the following situations

1- Learning practical of neurophysiology as EEG, myogram, evoked potentials.

2- Knowing complete neurological examination of the patients (cranial nerves, sensory, motor, coordination tests, and vestibular apparatus).

II. Acquire the basic concepts and principles of neurology:

III. Develop knowledge concerning detection of many neurological diseases.

IV. Communicate scientific literature.

3. Course intended learning outcomes (ILOs):

A-Knowledge and understanding

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
A. Describe common clinical conditions and Neurological diseases related to Medical Physiology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
B. Mention the principles of neurology essential for Medical Physiology.		
C. State update and evidence based Knowledge related to the		

course: Knowing bases of neurophysiology. - Spinal cord lesions - Peripheral nerve diseases - Muscle disorders - Extrapyramidal tract lesion - Epilepsy - Cerebellum - Speech & Aphasia - Cerebrovascular stroke - Memory & learning - Physiology of behaviour.		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to speciality including: Knowing bases of neurophysiology. - Spinal cord lesions - Peripheral nerve diseases - Muscle disorders - Extrapyramidal tract lesion - Epilepsy - Cerebellum - Speech & Aphasia - Cerebrovascular stroke - Memory & learning - Physiology of behaviour		

B. Intellectual outcomes

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
A. Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to neurophysiology.	Lectures Seminars Presentations	Written Oral examinations.
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to neurophysiology.		
C. Design and present audits, cases, seminars in common problems related to Medical Physiology.		

C. Practical skills

ILOs	**Methods of teaching/ learning**	**Methods of Evaluation**
A. Perform the following basic lab skills essential to the course: 1. Learning practical of neurophysiology as EEG, myogram, evoked potentials. 2. Knowing complete neurological examination of the patients (cranial nerves, sensory, motor,	Laboratory training	Practical examination

coordination tests, and vestibular apparatus).		
B. Use instruments and devices in evaluation of conditions mentioned above in A.		
C. Interpret the non invasive and invasive procedures/ experiments of conditions mentioned above in A.		
D. Perform the non invasive/invasive procedures/ experiments of conditions mentioned above in A.		
E. Write and evaluate reports:		
F. Perform the following basic experiments in related basic sciences to be utilized in the research work: 1. Learning practical of neurophysiology as EEG, myogram, evoked potentials. 2. Knowing complete neurological examination of the patients (cranial nerves, sensory, motor, coordination tests, and vestibular apparatus).		
G. Use information technology to support decisions in common situations related to Medical Physiology		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ Learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	Oral communication Senior staff experience	Written, and oral examinations
B. Appraises evidence from scientific studies.		
C. Participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F-Maintain ethically sound relationship with others.	Observation & Supervision Seminars Lectures Hand on workshops	Simulation Record review (report) Log book Check list
G-Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H-Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I-Work effectively with others as a member of a health care team or other professional group.		

J-Present a case		
K-Write a report		

Professionalism

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
L-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation Senior staff experience	Objective structured clinical examination
M-Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
N-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	**Methods of teaching/ Learning**	**Methods of Evaluation**
O-Work effectively in relevant health care delivery settings and systems.	Observation, Senior staff experience	Global rating Check list evaluation of live or recorded performance
P-Practice cost-effective health care and resource allocation that does not compromise quality of care.		
Q-Assist patients in dealing with system complexities.		

4. Course contents (topic s/modules/rotation Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Spinal cord lesions	A-D	A-C	B,E-G	A-Q
Peripheral nerve diseases	A-D	A-C	B	A-Q
Muscle disorders	A-D	A-C	A	A-Q
Extrapyramidal tract lesion	A-D	A-C	B	A-Q
Epilepsy	A-D	A-C	B	A-Q
Cerebellum	A-D	A-C	A	A-Q
Speech & Aphasia	A-D	A-C	C, E-G	A-Q
Cerebrovascular stroke	A-D	A-C	A, E-G	A-Q
Memory & learning	A-D	A-C	B	A-Q
Physiology of behaviour	A-D	A-C	B	A-Q

5. Course Methods of teaching/learning:

1. Laboratory training.
2. Literatures, Seminars & Presentations.
3. Oral communication & observation Senior staff experience.
4. Observation & supervision Seminars, Lectures, Hand on workshops.

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial)
2. Extra laboratory work

7. Course assessment methods:

i. Assessment tools: Practical examination

Written, oral examinations.

Simulation Record review (report), Log book, Chick list, Senior staff opinion

ii. Time schedule: At the end of the first part

iii. Marks: 400

8. List of references

i. Lectures notes

Essential books

Merritt's Neurology, 16th Edition *Lippincott Williams & Wilkins, 2021*

iii. Recommended books

Gilroy, John. *Basic Neurology* third edition, 2009

iv. Periodicals, Web sites, … etc

BMC Neurology

Acta Neurological Scandinavia

v. Others

9. Signatures

Contributor	Name	Signature	Date
Program Principle Coordinator	Prof. Ebtihal Anwar Prof. Saly Anwar		

Head of the Responsible Department (Program Academic Director)	Prof. Nashwa Abdel Motaleb		

Basic Course I
Primary Level (I-4)
Cardiology

- **Medical Physiology Department**
- **Faculty of medicine**
- **Assiut University**
- **2021-2022**

1. Course data

- **Course/module Title:** Primary level (I-5) Cardiology**.**
- **Course code** PHY232
- **Speciality: Medical Physiology**
- **Number of credit points: Didactic 8 (44.44%), practical 10 (65.66%), total 18**
- **Department (s) delivering the course:** Department of cardiology, Faculty of Medicine, Assuit University, Egypt.
- **Coordinator (s): Staff members of Medical Physiology Department in conjunction with Department of Cardiology as annually approved by both departments councils.**
- **Date last reviewed:** 7 -2022

- **General requirements (prerequisites) if any : none**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

I- Acquire relevant laboratory skills in the following situations

1-Know how to do ECG and interpretation of it.

2-Knowing basis of echocardiography & catheterization

II. Identify and apply the basic concepts and principles of cardiology:

III. Develop knowledge concerning molecular biology& the bases of genetics.

IV. Communicate scientific literature.

3. Course intended learning outcomes (ILOs):

A-Knowledge and understanding

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
A. Describe common cardiovascular clinical conditions and diseases related to Medical Physiology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
B. Mention the basic concepts and principles of cardiology essential for Medical Physiology.		

C. State update and evidence based Knowledge related to the course: General techniques used in cardiology. -Properties of the cardiovascular systems. - Electrophysiology of the heart and its uses in detection of many cardiac diseases. - Coronary heart diseases, Hypertension, - Shock.		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to speciality including: General techniques used in cardiology. -Properties of the cardiovascular systems. - Electrophysiology of the heart and its uses in detection of many cardiac diseases. -Coronary heart diseases, Hypertension, - Shock.		

B. Intellectual outcomes

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to Cardiology.	Lectures Seminars Presentations	Written oral examinations.
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to Cardiology.		
C. Design and present audits, cases, seminars in common problems related to Medical Physiology.		

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform the following basic lab skills essential to the course: 1. ECG and interpretation on it. 2. Knowing basis of echocardiography & catheterization.	Laboratory training	Practical examination
B. use instruments and devices in evaluation of 1. Knowing how to do ECG and interpretation on it. 2. Knowing basis of echocardiography & catheterization.		
C. Interpret the non invasive and invasive procedures/ experiments of conditions mentioned above in A.		
A. Perform the following non invasive and invasive procedures/ experiments of conditions mentioned above in A.		
E. Write and evaluate of the reports of conditions mentioned above in A.		
F. Perform the following basic experiments in related basic sciences to be utilized in the research work.		
G. Use information technology to support decisions in common situations related to Medical Physiology.		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ Learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	Oral communication Senior staff experience	Written, and oral examinations
B. Appraises evidence from scientific studies.		
C. participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F-Maintain ethically sound relationship with others.	Observation & Supervision Seminars Lectures Hand on workshops	Simulation Record review (report) Log book Check list
G-Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		

H-Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I-Work effectively with others as a member of a health care team or other professional group.		
J-Present a case.		
K-Write a report.		

Professionalism

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
L-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation Senior staff experience	Objective structured clinical examination
M-Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
N-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
O-Work effectively in relevant health care delivery settings and systems.	Observation, Senior staff experience	Global rating Check list evaluation of live or recorded performance
P-Practice cost-effective health care		

and resource allocation that does not compromise quality of care.		
Q-Assist patients in dealing with system complexities.		

4. Course contents (topic s/modules/rotation Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
General techniques used in cardiology.	**A-D**	**A-C**	**A-G**	**A-Q**
Shock.	**A-D**	**A-C**	**A-G**	**A-Q**
Properties of the cardiovascular systems	**A-D**	**A-C**	**A-G**	**A-Q**
Electrophysiology of the heart and its uses in detection of many cardiac diseases.	**A-D**	**A-C**	**A-G**	**A-Q**
Coronary heart diseases, hypertension.	**A-D**	**A-C**	**A-G**	**A-Q**

5. Course Methods of teaching/learning:

1. Laboratory training
2. Literatures, Seminars & Presentations
3. oral communication & observation Senior staff experience

4. Observation & supervision Seminars, Lectures, Hand on workshops**.**

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial).
2. Extra laboratory work.

7. Course assessment methods:

i. Assessment tools: Practical examination.
Written, oral examinations.
Simulation Record review (report), Log book, Chick list, Senior staff opinion

ii. Time schedule: At the end of the first part

iii. Marks: 400

8. List of references

i. Lectures notes

Essential books

Eric J *Topol* Textbook of Cardiovascular Medicine, third edition Lippincott Williams & Wilkins, 2009

iii. Recommended books: Advanced Cardiac Care in the Streets 1997 by, Raymond V. Taylor, Craig B. Key, Mark Trach.

iv. Periodicals, Web sites, … etc

Circulation
JACC Journal of Cardiology
Indian Heart Journal
European Heart Journal

v. Others

9. Signatures

Contributor	Name	Signature	Date

Program Principle Coordinator	Prof. Ebtihal Anwar Prof. Saly Anwar		
Head of the Responsible Department (Program Academic Director)	Prof. Nashwa Abdel Motaleb		

Basic Course I
Primary Level (I-5)
Gastroenterology

- **Medical Physiology Department:**
- **Faculty of medicine**
- **Assiut University**
- **2022-2023**

1. Course data

- **Course/module Title:** Primary level (I-5) gastroenterology**.**
- **Course code** PHY2**18A**
- **Speciality: Medical Physiology**
- **Number of credit points: Didactic 8 (44.44%), practical 10 (65.66%), total 18**
- **Department (s) delivering the course:** Department of cardiology, Faculty of Medicine, Assuit University, Egypt.
- **Coordinator (s): Staff members of Medical Physiology Department in conjunction with Department of Tropical**

- **Medicine and Gastroenterology as annually approved by both departments councils.**
- **Date last reviewed:** 7 - 2022
- **General requirements (prerequisites) if any : none**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

I-Master relevant laboratory skills in the following situations:

1-Know what liver function tests and interpretation on it.

2-Know how to evaluate gastroenterology and liver cases.

II. Identify and apply the basic concepts and principles of gastroenterology.

III. Develop knowledge concerning liver cirrhosis and jaundice.

III. Communicate scientific literature.

3. Course intended learning outcomes (ILOs):

A-Knowledge and understanding

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
A. Describe common gastroenterology clinical conditions and diseases related to Medical Physiology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
B. Mention the basic concepts and principles of gastroenterology essential for Medical Physiology.		
C. State update and evidence based		

Knowledge related to the course: • Gastro-esphageal reflux. • Gastritis. • Dysphagia. • Vomiting. • Peptic ulcer. • Malabsorption. • Jaundice. • Liver cirrhosis		
A. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to speciality including: • Gastro-esphageal reflux. • Gastritis. • Dysphagia. • Vomiting. • Peptic ulcer. • Malabsorption. • Jaundice. • Liver cirrhosis		

B. Intellectual outcomes

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to gastroenterology.	Lectures Seminars Presentations	Written oral examinations.
B. Demonstrate an investigatory and		

analytic thinking (problem solving) approaches to conditions relevance to Gastroenterology.		
C. Design and present audits, cases, seminars in common problems related to Medical Physiology.		

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform the following basic lab skills essential to the course: 1. Knowing what liver function tests and interpretation on it. 2. 2-Knowing how to evaluate gastroenterology and liver cases.	Laboratory training	Practical examination
A. use instruments and devices in evaluation of 1. Liver function tests and interpretation on it. 2. Gastroenterology and liver cases.		
C. Interpret the non invasive and invasive procedures/ experiments of conditions mentioned above in A.		
A. Perform the following non invasive and invasive procedures/ experiments of conditions mentioned above in A.		
E. Write and evaluate of the reports of		

conditions mentioned above in A.		
F. Perform the following basic experiments in related basic sciences to be utilized in the research work.		
G. Use information technology to support decisions in common situations related to Medical Physiology.		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	Oral communication Senior staff experience	Written, and oral examinations
B. Appraises evidence from scientific studies.		
C. Participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F-Maintain ethically sound relationship with others.	Observation & Supervision Seminars Lectures	Simulation Record review (report) Log book

	Hand on workshops	Check list
G-Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H-Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I-Work effectively with others as a member of a health care team or other professional group.		
J-Present a case.		
K-Write a report.		

Professionalism

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
L-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation Senior staff experience	Objective structured clinical examination
M-Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
N-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	**Methods of teaching/ learning**	**Methods of Evaluation**
O-Work effectively in relevant health care delivery settings and systems.	Observation, Senior staff experience	Global rating Check list evaluation

		of live or recorded performance
P-Practice cost-effective health care and resource allocation that does not compromise quality of care.		
Q-Assist patients in dealing with system complexities.		

4. Course contents (topic s/modules/rotation Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
General techniques used in cardiology.	**A-D**	**A-C**	**A-G**	**A-Q**
Shock.	**A-D**	**A-C**	**A-G**	**A-Q**
Properties of the cardiovascular systems	**A-D**	**A-C**	**A-G**	**A-Q**
Electrophysiology of the heart and its uses in detection of many cardiac diseases.	**A-D**	**A-C**	**A-G**	**A-Q**
Coronary heart diseases, hypertension.	**A-D**	**A-C**	**A-G**	**A-Q**

5. Course Methods of teaching/learning:

5. Laboratory training
6. Literatures, Seminars & Presentations

7. oral communication & observation Senior staff experience
8. Observation & supervision Seminars, Lectures, Hand on workshops.

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial).
2. Extra laboratory work.

7. Course assessment methods:

i. Assessment tools: Practical examination.

Written, oral examinations.

Simulation Record review (report), Log book, Chick list, Senior staff opinion

ii. Time schedule: At the end of the first part

iii. Marks: 400

8. List of references

i. Lectures notes

Essential books

Harrison's Principles of Internal Medicine, 21th Edition 2022,BY Joseph Loscalzo, Anthony Fauci, Dennis Kasper, Stephen Hauser, Dan Longo, J. Larry Jameson

iii. Recommended books:

Kelley's Textbook of Internal Medicine. Publication Year: 2009. Edition: 4th Ed. Authors/Editor: Humes, H. David,reviewed 2019.

iv. Periodicals, Web sites,

annals of internal medicine

Journal of General Internal Medicine

The American Journal of Medicine

v. Others

9. Signatures

Contributor	Name	Signature	Date
Program Principle Coordinator	Prof. Ebtihal Anwar Prof. Saly Anwar		
Head of the Responsible Department (Program Academic Director)	Prof. Nashwa Abdel Motaleb		

Basic Course I
Primary Level (I-6)
Pulmonology

- **Medical Physiology Department:**
- **Faculty of medicine**
- **Assiut University**
- **2022-2023**

1. Course data

- **Course/module Title:** Primary level (I-6) pulmonolgy**.**
- **Course code** PHY219
- **Speciality: Medical Physiology**
- **Number of credit points: Didactic 8 (44.44%), practical 10 (65.66%), total 18CP**
- **Department (s) delivering the course:** Department of chest, Faculty of Medicine, Assuit University, Egypt.
- **Coordinator (s): Staff members of Medical Physiology Department in conjunction with Department of Chest as annually approved by both departments councils.**

- **Date last reviewed:** 7 -2022
- **General requirements (prerequisites) if any : none**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

I-Master relevant laboratory skills in the following situations;

1-Know what pulmonary function tests and interpretation on it.

2-Know how to evaluate pulmonology cases.

II. Identify and apply the basic concepts and principles of pulmonology.

III. Communicate scientific literature.

3. Course intended learning outcomes (ILOs):

A-Knowledge and understanding

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
A. Describe common pulmonology clinical conditions and diseases related to Medical Physiology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
B. Mention the basic concepts and principles of pulmonology essential for Medical Physiology.		

C. State update and evidence based Knowledge related to the course: ▪ Pneumonia. ▪ Tuberculosis. ▪ Chronic bronchitis and Emphysema. ▪ Respiratory failure. ▪ Pulmonary embolism. ▪ Pulmonary hypertension. ▪ Pulmonary edema ▪ Acute respiratory distress syndrome. ▪ Bronchial asthma. ▪ Pneumothorax. ▪ Pulmonary diseases in systemic diseases. ▪ Diseases of the Pleura.		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to speciality including: ▪ Pneumonia. ▪ Tuberculosis. ▪ Chronic bronchitis and Emphysema. ▪ Respiratory failure. ▪ Pulmonary embolism. ▪ Pulmonary hypertension. ▪ Pulmonary edema ▪ Acute respiratory distress syndrome. ▪ Bronchial asthma. ▪ Pneumothorax.		

▪ Pulmonary diseases in systemic diseases. ▪ Diseases of the Pleura.		

B. Intellectual outcomes

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to pulmonology.	Lectures Seminars Presentations	Written oral examinations.
A. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to pulmonology.		
B. Design and present audits, cases, seminars in common problems related to Medical Physiology.		

C. Practical skills

ILOs	**Methods of teaching/ learning**	**Methods of Evaluation**
A. Perform the following basic lab skills essential to the course:	Laboratory training	Practical examination

1. Knowing what pulmonary function tests and interpretation on it. 2. Knowing how to evaluate pulmonology cases.		
B. Use instruments and devices in evaluation of 1. Pulmonary function tests and interpretation on it. 2. Pulmonology cases.		
C. Interpret the non invasive and invasive procedures/ experiments of conditions mentioned above in A.		
D. Perform the following non invasive and invasive procedures/ experiments of conditions mentioned above in A.		
E. Write and evaluate of the reports of conditions mentioned above in A.		
F. Perform the following basic experiments in related basic sciences to be utilized in the research work.		
G. Use information technology to support decisions in common situations related to Medical Physiology.		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ Learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology (audit,	Oral communication Senior staff	Written, and oral examinations

logbook)	experience	
B. Appraises evidence from scientific studies.		
C. participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F-Maintain ethically sound relationship with others.	Observation & Supervision Seminars Lectures Hand on workshops	Simulation Record review (report) Log book Check list
G-Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H-Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I-Work effectively with others as a member of a health care team or other professional group.		
J-Present a case.		
K-Write a report.		

Professionalism

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
L-Demonstrate respect, compassion, and integrity; a responsiveness to the needs	Observation Senior staff	Objective structured

of patients and society	experience	clinical examination
M-Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
N-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
O-Work effectively in relevant health care delivery settings and systems.	Observation, Senior staff experience	Global rating Check list evaluation of live or recorded performance
P-Practice cost-effective health care and resource allocation that does not compromise quality of care.		
Q-Assist patients in dealing with system complexities.		

4. Course contents (topic s/modules/rotation Course Matrix

Time Schedule: First Part

Covered ILOs				Topic
General Skills	Practical skill	Intellectual	Knowledge	
A-Q	A-G	A-C	A-D	General techniques used in pulmonolgy.
A-Q	A-G	A-C	A-D	Shock.

A-Q	**A-G**	**A-C**	**A-D**	Properties of the pulmonary systems
A-Q	**A-G**	**A-C**	**A-D**	Pulmonary function test.
A-Q	**A-G**	**A-C**	**A-D**	Pulmonary diseases.

5. Course Methods of teaching/learning:

1. Laboratory training
2. Literatures, Seminars & Presentations
3. oral communication & observation Senior staff experience
4. Observation & supervision Seminars, Lectures, Hand on workshops**.**

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial).
2. Extra laboratory work.

7. Course assessment methods:

i. Assessment tools: Practical examination.
Written, oral examinations.
Simulation Record review (report), Log book, Chick list, Senior staff opinion

ii. Time schedule: At the end of the first part

iii. Marks: 400

8. List of references

i. Lectures notes

Essential books

Murray & Nadel's Textbook of Respiratory Medicine, 2-Volume Set, 6th Edition By V.Courtney Broaddus, MD, Robert J. Mason, MD, Joel D2016

iv. Periodicals, Web sites

Journal of Pulmonary and Respiratory Medicine

Austin Journal of Pulmonary and Respiratory Medicine

9. Signatures

Contributor	Name	Signature	Date

Program Principle Coordinator	Prof. Ebtihal Anwar Prof. Saly Anwar		
Head of the Responsible Department (Program Academic Director)	Prof. Nashwa Abdel Motaleb		

Basic Course I
Primary Level (I-7)
Endocrinology

- **Medical Physiology Department:**
- **Faculty of medicine**
- **Assiut University**
- **2022-2023**

1. Course data

- **Course/module Title:** Primary level (I-7) endocrinology**.**
- **Course code** PHY21**8B**
- **Speciality: Medical Physiology**
- **Number of credit points: Didactic 8 (44.44%), practical 10 (65.66%), total 18CP**
- **Department (s) delivering the course:** Department of Internal Medicine, Faculty of Medicine, Assuit University, Egypt.

- **Coordinator (s): Staff members of Medical Physiology Department in conjunction with Department of Internal Medicine as annually approved by both departments councils.**
- **Date last reviewed:** 7- 2022
- **General requirements (prerequisites) if any : none**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

I-Master relevant laboratory skills in the following situations;

1-Know what endocrine function tests and interpretation on it.

2-Know how to evaluate endocrinology cases.

II. Identify and apply the basic concepts and principles of endocrinology.

III. Communicate scientific literature.

3. Course intended learning outcomes (ILOs):

A-Knowledge and understanding

ILOs	*Methods of teaching/ Learning*	*Methods of Evaluation*
A. Describe common endocrinology clinical conditions and diseases related to Medical Physiology.	Didactic (lectures, seminars, tutorial)	Written and oral examination - Log book
B. Mention the basic concepts and principles of endocrinology essential for Medical Physiology.		

C. State update and evidence based Knowledge related to the course: 1. Diabetes Melittus. 2. Hypoglycemia. 3. Obesity. 4. Hypo- and hyperpituitarism. 5. Hypo- and hyperthyroidism. 6. Hypo- and hypercalcemia. 7. Hypo- and hyperadrenocorticism. 8. Delayed and precoious puberty. 9. Intersex.		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to speciality including: 1. Diabetes Melittus. 2. Hypoglycemia. 3. Obesity. 4. Hypo- and hyperpituitarism. 5. Hypo- and hyperthyroidism. 6. Hypo- and hypercalcemia. 7. Hypo- and hyperadrenocorticism. 8. Delayed and precoious puberty. 9. Intersex.		

B. Intellectual outcomes

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A. Correlates the facts of relevant basic and clinically supportive scienc es with conditions and diseases of relevance to	Lectures Seminars Presentations	Written oral examinations.

endocrinology.		
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to endocrinology.		
C. Design and present audits, cases, seminars in common problems related to Medical Physiology.		

C. **Practical skills**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform the following basic lab skills essential to the course: 1. Knowing what endocrine function tests and interpretation on it. 2. 2-Knowing how to evaluate endocrinology cases.	Laboratory training	Practical examination
B. use instruments and devices in evaluation of Endocrine function tests and interpretation on it. Endocrinology cases.		
C. Interpret the non invasive and invasive procedures/ experiments of conditions mentioned above in A.		
D. Perform the following non invasive and invasive procedures/ experiments of conditions mentioned above in A.		

E. Write and evaluate of the reports of conditions mentioned above in		
F. Perform the following basic experiments in related basic sciences to be utilized in the research work.		
G. Use information technology to support decisions in common situations related to Medical Physiology.		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology (audit, logbook)	Oral communication Senior staff experience	Written, and oral examinations
B. Appraises evidence from scientific studies.		
C. Participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ Learning	Methods of Evaluation
F-Maintain ethically sound relationship with others.	Observation & Supervision Seminars Lectures	Simulation Record review (report) Log book

	Hand on workshops	Check list
G-Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H-Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I-Work effectively with others as a member of a health care team or other professional group.		
J-Present a case.		
K-Write a report.		

Professionalism

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
L-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation Senior staff experience	Objective structured clinical examination
M-Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
N-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
O-Work effectively in relevant health care delivery settings and systems.	Observation, Senior staff experience	Global rating Check list evaluation of live

		or recorded performance
P-Practice cost-effective health care and resource allocation that does not compromise quality of care.		
Q-Assist patients in dealing with system complexities.		

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
General techniques used in endocrinology.	**A-D**	**A-C**	**A-G**	**A-Q**
Properties of the endocrine system.	**A-D**	**A-C**	**A-G**	**A-Q**
Electrophysiology of the heart and its uses in detection of many endocrine diseases.	**A-D**	**A-C**	**A-G**	**A-Q**
Endocrine diseases.	**A-D**	**A-C**	**A-G**	**A-Q**

5. Course Methods of teaching/learning:

9. Laboratory training
10. Literatures, Seminars & Presentations

11. oral communication & observation Senior staff experience
12. Observation & supervision Seminars, Lectures, Hand on workshops**.**

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial).
2. Extra laboratory work.

7. Course assessment methods:

i. Assessment tools: Practical examination.
Written, oral examinations.
Simulation Record review (report), Log book, Chick list, Senior staff opinion

ii. Time schedule: At the end of the first part

iii. Marks: 400

8. List of references

i. Lectures notes

Essential books

Textbook of Nephro-Endocrinology 2009 byAjay K. Singh, Gordon H. Williams

iv. Periodicals, Web sites,

The Journal of Clinical Endocrinology & Metabolism

International Journal of Endocrinology

9. Signatures

Contributor	Name	Signature	Date

Program Principle Coordinator	Prof. Ebtihal Anwar Prof. Saly Anwar		
Head of the Responsible Department (Program Academic Director)	Prof. Nashwa Abdel Motaleb		

Second Part

Speciality Course 2
Secondary Level (II {1-12 Modules])

- **Medical Physiology Department:**
- **Faculty of medicine**
- **Assiut University**
- **2022-2023**

1. Course data

- **Course/module Title:** Medical Physiology
- **Course code:** PHY203A
- **Speciality: Medical Physiology.**
- **Number of credit points: Didactic 24 (20%), practical 96 (80 %), total 120**

- **Department (s) delivering the course:** Department of Medical Physiology, Faculty of Medicine, Assiut University, Egypt.
- **Coordinator (s):**
  - **Principle course coordinator: Prof. Dr** Ebtihal Anwar.
  - **Assistant coordinator (s): Dr Saly Anwar** .
- **Date last reviewed:** 7-20**22**
- **General requirements (prerequisites) if any: None.**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**
- **This course consists of 12 Units(Modules)**

Unit (Module) 1: General & Cellular Basis of Medical Physiology.

Unit (Module) 2: Nerve and Muscle.

Unit (Module) 3: Autonomic Nervous system.

Unit (Module) 4: Physiology of the Central Nervous System and Special Sense.

Unit (Module) 5: Cardiovascular Physiology.

Unit (Module) 6: Blood & Immunity.

Unit (Module) 7: Gastrointestinal physiology.

Unit (Module) 8: Respiration.

Unit (Module) 9: General Metabolism and Regulation of Body Temperature.

Unit (Module) 10: Renal Physiology.

Unit (Module) 11: Body fluids, Electrolytes and Acid Base Regulation.

Unit (Module) 12: Endocrine System and Reproduction.

Unit Coordinator (s):

Unit	Principle Coordinator	Assistant coordinators
Unit 1: General & Cellular Basis of Medical Physiology	Prof. Ebtihal Anwar	Prof. Saly Anwar
Unit 2: Nerve and Muscle		
Unit 3: Autonomic Nervous system.		
Unit 4: Physiology of the Central Nervous System and Special Sense.		
Unit 5: Cardiovascular Physiology.		
Unit 6: Blood & Immunity.		
Unit 7: Gastrointestinal physiology.		
Unit 8: Respiration.		
Unit 9: General Metabolism and Regulation of Body Temperature.		
Unit 10: Renal Physiology.		

Unit 11: Body fluids, Electrolytes and Acid Base Regulation.		
Unit 12: Endocrine System and Reproduction		

2. Course Aims

- To acquire satisfactory knowledge of the cellular basis of Medical physiology, function of organ systems of the body and the control systems of the human body and varies body functions in health and disease.
- To acquire knowledge concerning molecular biology & the bases of genetics.
- Develop satisfactory skills in techniques used for experimental physiology on isolated organs, tissues and whole animals.

3. Course intended learning outcomes (ILOs):

A-Knowledge and understanding

ILOS	*Methods of teaching/ Learning*	*Methods of Evaluation*

A. Describe common clinical conditions and diseases related Medical Physiology.	Lectures Seminars Presentations	Written and oral examinations
B. Describe In-depth Knowledge of the following conditions: **Unit 1: The Cell and General Physiology** 1. Different fluid compartments in the human body, the size of each, and discuss the ways in which their sizes can be measured. 2. The ways that substances are moved across cell membranes. 3. The resting membrane potential. 4. The chemical nature and physiologic significance of the compounds that make up the cell membrane. 5. The various organelles in cells and the functions of each. 6. The structure of DNA and RNA and the role these nucleotides and other substances in the cell play in the process of protein synthesis. 7. The principal ways that the chemical messengers in the extracellular fluid produce changes inside cells, including changes in gene expression. 8. The role of G proteins as intracellular signaling molecules.	Lectures Books Journals Tutorials Seminars Case study	Written, practical examination Log book

9. The current theories advanced to explain aging. 10. Homeostasis, and give examples of homeostatic mechanisms. **Unit 2: Excitable Tissues (Muscles and Nerve)** 1. Function of various parts of a neuron. 2. Excitation and conduction, and the changes in ionic movements that underlie electrotonic potentials and action potentials. 3. Characteristics of a nerve impulse. 4. Type of nerve fiber in humans, and their significance in the normal and abnormal function of peripheral nerves. 5. Molecular structure of skeletal muscle. 6. The interaction between actin and myosin in skeletal muscle. 7. The sequence of electrical and ionic events leading from an action potential in the motor nerve to contraction of a skeletal muscle, and the significance of each. 8. The difference between isometric and isotonic contractions. 9. Function of dystrophin and the diseases that occur when it is abnormal or		

absent. 10. Sources of energy for muscle contraction, and how energy is transferred to the contractile mechanism. 11. Oxygen debt and its role in muscle function during exercise. 12. The ionic events underlying the action potential in cardiac muscle. 13. Difference between the electrical and mechanical events in smooth and cardiac muscle with those in skeletal muscle, and their responses to acetylcholine and norepinephrine. **Unit 3: Autonomic Nervous System** 1. Functional organization and division of ANS. 2. Chemical transmitters and receptors of ANS. 3. Functions of the ANS division (sympathetic and parasympathetic) in control of visceral functions. 4. Receptors of sympathetic and parasympathetic nervous system. 5. Drugs (agonist and antagonist) acting on ANS. 6. Applied physiology of ANS. 7. Higher integration, roles of the hypothalamus and limbic system in		

control ANS. **Unit 4: Central Nervous System & Special Sense** **A. Demonstrate principles of CNS:** 1. Receptors, types and characteristics. 2. Various classifications of sensations, tracts carrying them. 3. Chemical transmitters (excitatory and inhibitory). 4. Synapses, types and properties. 5. Pain: types and pathways, referred pain and descending control of sensory pathways. 6. Alleviation of pain. 7. Thalamus-functions, thalamic syndrome. 8. Stretch reflex, pathway, types, significance of tendon jerks and muscle tone. 9. Reflexes, classification, pathways and properties, postural reflexes. 10. Motor functions, pyramidal (cortical), extrapyramidal (basal ganglia) and cerebellar. 11. Control of muscle movements. 12. Labyrinth and vestibular functions. Equilibrium, vertigo, motion sickness. Tests of labyrinthine function. 13. Role of vestibular apparatus and cerebellum in posture and maintenance of body balance.		

14. Common neurological abnormalities-neuropathies, root lesions transaction and hemi-section of the spinal cord. 15. Hypothalamus. Its role as a controller of nervous and hormonal functions. 16. Limbic system and emotions. 17. Architectural design of the cerebral cortex and prefrontal cortex and prefrontal cortex. 18. Speech, learning and memory. 19. Sleep. **B. Demonstrate Principles of Special Senses.** 1. The various parts of the eye, and list the functions of each. 2. The neural pathways that transmit visual information from the rods and cones to the visual cortex. 3. Mechanism of how light rays in the environment are brought to a focus on the retina and the role of accommodation in this process. 4. Error of refraction. 5. The electrical responses produced by rods and cones, and explain how these responses are produced. 6. The electrical responses seen in bipolar cells, horizontal cells, amacrine cells, and ganglion cells, and comment on the		

function of each type of cell. 7. The responses of cells in the visual cortex and the functional organization of the dorsal and ventral pathways to the parietal cortex. 8. Dark adaptation and visual acuity. 9. the neural pathways involved in color vision. 10. types of eye movements and the function of each. 11. the way that movements of molecules in the air are converted into impulses generated in hair cells in the cochlea. 12. the path of auditory impulses in the neural pathways from the cochlear hair cells to the auditory cortex, and the function of the auditory cortex. 13. Mechanism of coding of pitch, loudness, and timbre in the auditory pathways. 14. Types of deafness. 15. The olfactory receptors and the way in which impulses are initiated in them. 16. The pathways by which impulses generated in the olfactory mucous membrane reach the cerebral cortex.		

17. Olfactory sensitivity, discrimination, and adaptation. 18. The essential features of the taste buds. 19. Taste pathways. 20. The substances that produce the primary tastes, and the mechanism of transduction of each signal. **C. Demonstrate principles of Higher functions of central nervous system:** 1. Geography of the various areas of the cerebral cortex. 2. Function of associated area. 3. Language expression. Aphasia. 4. Learning, memory and recall. 5. Consciousness. 6. Conditioned reflexes. 7. Electrical activity of the cerebral cortex. 8. Sleep: rapid eye movement (REM) and slow wave (deep) sleep. 9. Corpus callosum; split brain, right and left cerebral hemisphere functions. **Unit 5: Cardiovascular Physiology** 1. Normal arterial blood pressure, heart rates & ECG in humans. 2. The activity of the Baroreceptors on sympathetic and parasympathetic nervous system. 3. Heart muscle; the heart as a pump and		

function of the heart valves. 4. Rhythmical excitation of the heart. 5. The microcirculation and the lymphatic system: capillary fluid exchange, interstitial fluid, and lymph flow. 6. Local and humoral control of blood flow by the tissues. 7. Function of the conduction system of the heart, and the action potentials in each part of it with those in cardiac muscle. 8. Common cardiac arrhythmias.. 9. Sequence the events that occur in the heart during the cardiac cycle. 10. The arterial pulse and jugular venous pulse. 11. Heart sounds and their abnormalities and cardiac innervations. 12. Cardiac output. 13. Oxygen consumption by the heart. 14. The diameter, wall thickness, and total cross-sectional area of the aorta, smaller arteries, arterioles, capillaries, venules, and veins. 15. The relationship between flow, pressure, and resistance in the vascular system. 16. Autoregulation, its role in		

physiology, and the theories that have been advanced to explain its occurrence. 17. Vasodilator metabolites, and their role in the regulation of tissue perfusion. 18. The neural and hormonal mechanisms that control arterial blood pressure and heart rate. 19. The circulation of the brain. 20. The cerebrospinal fluid, the blood–brain barrier, and its importance in clinical medicine. 21. Coronary circulation 22. Hepatic circulation and splanchnic circulation, and its reservoir function. 23. The triple response produced by firmly stroking the skin. 24. The circulatory changes that occur during exercise. 25. Shock. ~~25.~~26. COVID-19, ACE2, and the cardiovascular consequences. **Unit 6: The blood** 1. Types and functions of plasma proteins. 2. Types of blood cells and the precursor cells for each type. 3. The functions of RBCs, WBCs, platelets. 4. Innate and acquired immunity. 5. The common blood types, and describes how blood is typed and cross-matched.		

6. The blood-clotting and anticlotting systems and the clinical importance of each system. 7. Immunity. **Unit 7: Gastrointestinal System** 1. The principal digestive enzymes, their precursors and their actions. 2. The processes involved in the digestion and absorption of dietary carbohydrates, proteins, fats. 3. The structure and function of the enteric nervous system. 4. The basic electric rhythm (BER) and the migrating motor complex (MMC), and describe the function of each in the regulation of gastrointestinal motility. 5. The principal gastrointestinal hormones, the sites where each is secreted, and the main physiologic function of each of these hormones. 6. The functions of the mouth, the salivary glands, and the esophagus. 7. The functional anatomy and histology of the stomach and describe how acid is secreted by cells in the gastric mucosa. 8. The mechanisms that regulate the secretion and motility of the stomach. 9. The main components of pancreatic		

juice, and outline the mechanisms that regulate its secretion. 10. The functional anatomy of the liver, and discuss the formation of bile. 11. The function of the gallbladder and the processes that regulate the passage of bile to the intestinal lumen. 12. The types of movement seen in the small intestine and the function of each 13. The physiologic changes that lead to defacation. **Unit 8: Respiration** 1. Pulmonary ventilation. 2. Pulmonary circulation. 3. Physical principles of gas exchange. 4. Transport of oxygen and carbon dioxide in the blood and tissue fluids. 5. Regulation of respiration. 6. Pathophysiology of respiratory disorders. 7. Deep diving and sport physiology. ~~7.~~8. Innate immune response of human alveolar type II cells infected with severe acute repiratory syndrome-coronavirus. **Unit 9: General Metabolism and Regulation of Body Temperature** 1. Dietary balances. 2. Energy balance & effect of its disturbance.		

3. Metabolic rate & physiological & pathological factors affecting it. 4. Metabolism during muscle exercise. 5. Abnormalities in metabolism. 6. Body temperature, its regulation and its abnormalities. 7. Mechanisms of heat loss & heat gain. **Unit 10: Renal System** 1. Functions of juxtaglomerular apparatus. 2. Mechanism of urine formation. 3. Renal circulation. 4. Urine concentration and dilution. 5. Regulation of electrolyte balance, blood volume and ECF volume. 6. Acid-base regulation. 7. Micturation reflex. 8. Diuretics and pathophysiology of renal disease. **Unit 11: Body Fluids, Electrolytes and Acid Base** 1. Homeostatic mechanisms that maintain the osmolality, volume, and ionic composition of the extracellular fluid within normal limits. 2. Regulation of the tonicity (osmolality) of the extracellular fluid. 3. Regulation of the extracellular fluid volume. 4. The mechanisms that operate to		

maintain the constancy of plasma concentrations of different substances. 5. Acidosis and alkalosis. 6. The principal buffers in blood, interstitial fluid, and intracellular fluid, and, using the Henderson–Hasselbalch equation, describe what is unique about the bicarbonate buffer system. 7. The changes in blood chemistry that occur during acid-base imbalance and the respiratory and renal compensations for these conditions. **Unit 12: Endocrine System and Reproduction** 1. Introduction to endocrinology. 2. Pituitary hormones and their control. 3. Thyroid metabolic hormones. 4. Adrenocortical hormones. 5. Pancreatic hormones and pathophysiology of blood glucose level disorders. 6. COVID-19 and diabetes mellitus: pathophysiology. 7. Parathyroid hormones, calcitonin and vitamin D. 8. Reproductive and hormonal functions of the male. 9. Female physiology before pregnancy and female hormones.		

10. Pregnancy and lactation. 11. Fetal and neonatal physiology.		
C. State update and evidence based Knowledge related to **Medical Physiology.**		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to Medical Physiology.		
E. Mention the basics of quality assurance to ensure good professional skills in his field.		
F. Mention the ethical and scientific principles of medical research		
G. State the impact of common problems related to Medical Physiology on the society and how good practice can improve these problems.		

B. Intellectual outcomes

ILOs	***Methods of teaching/learning***	***Methods of Evaluation***
A. Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to **Medical Physiology.**	Lectures Seminars Presentations	Written, oral examinations.
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance		

to **Medical Physiology**.		
C. Design and present audits, cases, seminars in common problems related to **Medical Physiology**.		
D. Formulate management plans and alternative decisions in different situations in the field of **Medical Physiology.**		

C. <u>Practical skills</u> should be written also for each unit as in log book

ILOs	Methods of teaching/learning	Methods of Evaluation
A. Perform the following basic lab skills essential to the course: • Effect of drugs on actions of ANS on different organs as heart, GIT and uterus, ect. • Isolated perfuse heart (rabbit & frog) experiments. • Recording of normal arterial blood pressure, heart rates & ECG in humans and experimental animals. • Measurement of activity of the baroreceptors on sympathetic and parasympathetic nervous system. • Assessment of hemoglobin	Laboratory training	Practical examination

content, bleeding time, coagulation time, prothrombin time, Erythrocytic sedimentation rate, hematocrite value, blood groups, erythrocytes osmotic fragility. • Assessment of pulmonary function tests in human. • Measurement of body temperature. • Examination of central nervous system (cranial nerves, sensory, motor, co-ordination tests and vestibular apparatus). • Hearing tests and audiometer. • Examination of visual field, Visual acuity, color vision.		
B. Use instruments and devices in evaluation of the conditions mentioned above in A.		
C. Interpret the following non invasive/invasive procedures/ experiments. • Conditions mentioned above in A • Applied electrophysiology, passage of ions though cell membranes. • Assessment of kidney functions as glomerular filtration rate, renal blood flow and kidney tubular functions.		

• Direct and indirect methods for measurement of metabolic rate and measurement of body temperature • Recording of audiogram, EEG, EMG, nerve conduction velocity, visual field and visual acuity.		
E. Write and evaluate of the following reports: Applied electrophysiology, passage of ions though cell membranes.		
E. Develop and/or carry out plans for performing tests.		
F. Perform the following basic experiments in related basic sciences to be utilized in the research work.		
G. Use information technology in recent advances in areas related to medical physiology.		
H. Counsel and educate students, technicians and junior staff, in the lab about conditions related to Medical Physiology including handling of samples, devices, safety and maintenance of laboratory equipments.		
I. Share in providing health care services aimed solving health problems and better understanding of the normal structure and function.		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of	Methods of

	teaching/ Learning	Evaluation
A. Perform practice-based improvement activities using a systematic methodology (audit, logbook).	Oral communication Senior staff experience	Written and oral examinations
B. Appraises evidence from scientific studies.		
C. Participate in one audit or survey related to the course.		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ Learning	Methods of Evaluation
F-Maintain ethically sound relationship with others.	Observation & Supervision Seminars Lectures Hand on workshops	Simulation Record review (report) Log book Check list
G-Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H-Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I-Work effectively with others as a member of a health care team or other professional group.		

J-Present a case.		
K-Write a report.		

Professionalism

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
M-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.	Observation Senior staff experience	Objective structured practical examination survey
N-Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		
O-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
P-Work effectively in relevant health care delivery settings and systems.	Observation, Senior staff experience	Global rating Check list evaluation of live or recorded performance
Q-Practice cost-effective health care and resource allocation that does not compromise quality of care.		
R-Assist patients in dealing with system complexities.		

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: Second part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Unit1: General & Cellular Basis of Medical Physiology.	**A-G**	**A-D**	**A-I**	**A-R**
Unit 2: Excitable Tissues: Muscles & Nerve.	**A-F**	**A-D**	**A-I**	**A-R**
Unit3: Autonomic Nervous system.	**A-G**	**A-D**	**A-I**	**A-R**
Unit 4: Physiology of the Central Nervous System and Special Sense.	**A-C**	**A-D**	**A-I**	**A-R**
Unit 5: Cardiovascular Physiology.	**A**	**A-D**	**A-I**	**A-R**
Unit 6: Blood.	**A-E**	**A-D**	**A-I**	**A-R**
Unit 7: Gastrointestinal physiology.	**A-E**	**A-D**	**A-I**	**A-R**
Unit 8: Respiration.	**A-F**	**A-D**	**A-I**	**A-R**

Unit 9: General Metabolism and Regulation of Body Temperature.	**A-E**	**A-D**	**A-I**	**A-R**
Unit 10: Renal Physiology.	**A-D**	**A-D**	**A-I**	**A-R**
Unit 11: Body fluids, Electrolytes and Acid Base Regulation.	**A-G**	**A-D**	**A-I**	**A-R**
Unit 12: Endocrine System and Reproduction.	**A-G**	**A-D**	**A-I**	**A-R**

5. Course Methods of teaching/learning:

1. Lectures, Books, journals, Tutorials, Seminars, Case study
2. Laboratory training
3. Oral communication & observation Senior staff experience
4. Observation & supervision Seminars, Lectures, Hand on workshops

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial)
2. Extra laboratory work

7. Course assessment methods:

i. Assessment tools:

- Practical examination
- Written examinations.

- Simulation Record review (report), Log book, Chick list,
- Senior staff opinion

ii. Time schedule: second part

iii. Marks: 1200

8. List of references

i. Lectures notes

- Staff members print out of lectures and/or CD copies.
- Seminars.
- Medical physiology books by Staff Members of the Department of Medical physiology -Assiut University

ii. Essential books

- Guyton and Hall Textbook of Medical Physiology: John E Hall and Micheal E Hall; 14 th ed. Saunders, 2020.
- William F. Ganong: Review of Medical Physiology, 26th Edition, McGraw-Hill Companies, 2019.
- USMLE Step 1 Lecture Notes 2021: Physiology by Kaplan Medical.

iii. Recommended books

- Gillian Pocock, Christopher D. Richards: Human Physiology the Basis of Medicine. Oxfordcore texts, 2006,reviewed 2016.
- Robert M. Berne, Matthew N. Levy. Principles of

Physiology. 6th edition, Mosby, 2013.
- Duane E. Haines: Fundamental Neuroscience. 5th edition, Churchill Livingstone, 2017.
- Michael Field, Carol Pollock, David Harris: The Renal System (basic science and clinical conditions). Churchill Livingstone, 2010.
- Vander, Sherman, Luciano: Human Physiology (the mechanisms of body function), 8th edition, Mcgraw Hill, 2004.
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v. Others

9. Signatures

Course Coordinator: - **Principle coordinator: Prof. Ebtihal Anwar** - **Assistant coordinator: Prof.** Saly Anwar	**Head of the Department** Prof. Nashwa Abdel Motaleb
Date:	**Date:**

Annex 2, program academic reference standards

1- Graduate attributes for master degree in medical physiology

***The Graduate (after residence training and master degree years of study) must*:**

1. Have the capability to be a scholar, understanding and applying basics, methods and tools of scientific research and medical audit in the chosen field of Medical Physiology.
2. Appraise and utilise scientific knowledge to continuously update and improve clinical practice in related speciality.
3. Acquire sufficient medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care in the field of Medical Physiology.
4. Dealing with common problems and health promotion using updated information in the field of Medical Physiology.
5. Identify and share to solve health problems in his speciality.
6. Acquire all competencies –including the use of recent technologies- that enable him to provide safe, scientific, and ethical care including update use of new technology in the Medical Physiology field.

7. Demonstrate interpersonal and communication skills that ensure effective information exchange with other health professions, the scientific community, junior students and the public.
8. Function as supervisor, and trainer in relation to colleagues, medical students and other health professions.
9. Acquire decision making capabilities in different situations related to his field of practice.
10. Show responsiveness to the larger context of the related health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.
11. Be aware of public health and health policy issues and share in system-based improvement of his practice and related health care.
12. Show appropriate attitudes and professionalism.
13. Demonstrate skills of lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages in the Medical Physiology or one of its subspecialties.

2- Competency based Standards for basic master degree graduates

2.1- Knowledge and understanding

By the end of the program, the graduate should demonstrate satisfactory knowledge and understanding of

2-1-A- Established basic, biomedical, clinical, epidemiological and behavioral sciences related to the Medical Physiology.

2-1-B- The relation between practice in the speciality and the welfare of society.

2-1-C- Up to date and recent developments in common problems related to the field of Medical Physiology.

2-1-D- Ethical and medicolegal principles relevant to practice in the Medical Physiology field.

2-1-E -Quality assurance principles related to the good medical practice in the Medical Physiology field.

2-1-F- Ethical and scientific basics of medical research.

2.2- Intellectual skills:

By the end of the program, the graduate should be able to demonstrate the following:

2-2-A- Correlation of different relevant sciences in the problem solving and management of common problems of the Medical Physiology.
2-2-B- Problem solving skills based on data analysis and evaluation (even in the absence of some) for common situations related to Medical Physiology.
2.2- C- Demonstrating systematic approach in studying common themes or problems relevant to the Medical Physiology field.
2-2-D- Making alternative decisions in different situations in the field of the Medical Physiology.

2.3- Clinical skills/Practical skills

By the end of the program, the graduate should be able to

2-3-A - Provide practical and or laboratory services that can help patient care, solving health problems and better understanding of the normal structure and function.
2-3-B- Demonstrate practical / laboratory skills relevant to Medical Physiology.
2-3- C- Write and comment on reports for situations related to the field of Medical Physiology.

2.4- General skills

By the end of the program, the graduate should be able to

- ***Competency-based outcomes for practice-based learning and improvement***

2-4-A- Demonstrate practice-based learning and improvement skills that involves investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management.

2-4-B- Use all information sources and technology to improve his practice.

2-4-C- Demonstrate skills of teaching and evaluating others.

- ***Competency-based objectives for interpersonal and communication Skills***

2-4-D- Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, lab technical staff and other health professionals.

- ***Competency-based objectives for Professionalism***

2-4-E- Demonstrate professionalism behaviors, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Competency-based objectives for Systems-based Practice

2-4-F- Demonstrate an awareness of and responsiveness to the larger context and system of health care and academic services and the ability to effectively use system resources to provide care that is of optimal value.

2-4-G- Demonstrate skills of effective time management.

2-4-H- Demonstrate skills of self and continuous learning

Annex 3, Methods of teaching/learning

Annex 3, Methods of teaching/learning

Systems-based practice	Professionalism	Interpersonal and communication skills	Practice-based learning/ Improvement	Medical knowledge	Patient care	
X	X	X		X	X	Didactic (lectures, seminars, tutorial)
			X	X	X	Journal club,
X	X	X	X	X	X	Educational prescription

	X	X	X	X	X	Present a case (true or simulated) in a grand round
X	X	X	X		X	Observation and supervision
X		X	X	X		Conferences
X	X	X	X	X	X	Written assignments
X	X	X	X	X	X	Oral assignments

Teaching methods for knowledge

- Didactic (lectures, seminars, tutorial)
- journal club
- Critically appraised topic
- Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues).
- Present a case (true or simulated) in a grand round
- Others

Teaching methods for patient care

- Observation and supervision /Completed tasks procedure/case logs

- On-the-job" training without structured teaching is not sufficient for this skill (checklists).
- Simulation is increasingly used as an effective method for skill/ teamwork training.

Teaching methods for other skills

- Written communication (e.g., orders, progress note, transfer note, discharge summary, operative reports, and diagnostic reports).

- Oral communication (e.g., presentations, transfer of care, interactions with patients, families, colleagues, members of the health care team) and/or non verbal skills (e.g., listening, team skills)

- Professionalism, including medical ethics, may be included as a theme throughout the program curriculum that includes both didactic and experiential components (e.g., may be integrated into already existing small group discussions of vignettes or case studies and role plays, computer-based modules) and may be modeled by the faculty in clinical practice and discussed with the resident as issues arise during their clinical practice.

Annex 4, Assessment methods

Annex 4, ILOs evaluation methods for Master Degree students.

General skills				Intellectual	K	Practical skills	Method
Systems based practice	Professionalism	Interpersonal and communication skills	Practice based learning/ Improvement	I	K	Patient care	

X	X	X		X	X	X	Record review
		X				X	Checklist
X	X	X	X	X	X	X	Global rating
	X	X	X	X	X	X	Simulations
		X	X	X	X	X	Portfolios
X		X	X	X	X	X	Standardized oral examination
X			X	X	X	X	Written examination
					X	X	Procedure/ case log

Annex 4, Glossary of Master Degree doctors assessment methods

- Record Review – Abstraction of information from patient records, such as medications or tests ordered and comparison of findings against accepted patient care standards.

- Chart Stimulated Recall – Uses the MSc doctor's patient records in an oral examination to assess clinical decision-making.

- Mini clinical evaluation: Evaluation of Live/Recorded Performance (single event) – A single resident interaction with a patient is evaluated using a checklist. The encounter may be videotaped for later evaluation.

- Standardized Patients (SP) – Simulated patients are trained to respond in a manner similar to real patients. The standardized patient can be trained to rate MSc doctor's performance on checklists and provide feedback for history taking, physical examination, and communication skills. Physicians may also rate the MSc doctor's performance.

- Objective Structured Clinical Examination (OSCE) – A series of stations with standardized tasks for the MSc doctors to perform. Standardized patients and other assessment methods often are combined in an OSCE. An observer or the standardized patient may evaluate the MSc doctors.

- Procedure or Case Logs – MSc doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.

- PSQs – Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by a MSc doctors.

- Case /problems – assess use of knowledge in diagnosing or treating patients or evaluate procedural skills.
- Models: are simulations using mannequins or various anatomic structures to assess procedural skills and interpret clinical findings. Both are useful to assess practice performance and provide constructive feedback.
- 360 Global Rating Evaluations – MSc doctors, faculty, nurses, clerks, and other clinical staff evaluate MSc doctors from different perspectives using similar rating forms.
- Portfolios – A portfolio is a set of project reports that are prepared by the MSc doctors to document projects completed during the MSc study years. For each type of project standards of performance are set. Example projects are summarizing the research literature for selecting a treatment option, implementing a quality improvement program, revising a medical student clerkship elective, and creating a computer program to track patient care and outcomes.

- Examination MCQ – A standardized examination using multiple-choice questions (MCQ). The in-training examination and written board examinations are examples.

- Examination Oral – Uses structured realistic cases and patient case protocols in an oral examination to assess clinical decision-making.

- Procedure or Case Logs – MSc doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.

- PSQs – Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by MSc doctors.

Annex 5, Program evaluation tools

Sample	Method	By whom
#	Reports Field visits	Quality Assurance Unit
#	Reports Field visits	External Evaluator (s): According to department council

		External Examiner (s): According to department council
#	Reports Field visits questionnaires	Stakeholders
#	questionnaires	Senior students
#	questionnaires	Alumni

Annex 6, Program Correlations:

مصفوفة توافق المعايير القومية القياسية العامة لبرامج الماجستير مع المعايير الأكاديمية المعتمدة من كلية الطب □ جامعة أسيوط لدرجة الماجستير فى الفسيولوجيا الطبية

I- General Academic Reference Standards (GARS) versus Program ARS

1- Graduate attributes

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
1- Have the capability to be a scholar, understanding and applying basics, methods and tools of scientific research and medical audit in Medical Physiology	١- إجادة تطبيق أساسيات و منهجيات البحث العلمي واستخدام أدواته المختلفة
2- Appraise and utilise scientific knowledge to continuously update and improve clinical practice in the Medical Physiology	٢-تطبيق المنهج التحليلي واستخدامه في مجال التخصص
3- Acquire sufficient medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care in the field of speciality.	٣-تطبيق المعارف المتخصصة و دمجها مع المعارف ذات العلاقة في ممارسته المهنية
4- Dealing with common problems and health promotion using updated information in the field of speciality.	٤-إظهار وعيا بالمشاكل الجارية و الرؤى الحديثة في مجال التخصص
5- Identify and share to solve health problems in his speciality.	٥-تحديد المشكلات المهنية و إيجاد حلولا لها
6- Acquire all competencies that enable him to provide safe, scientific, ethical care including update use of new technology in Medical Physiology	٦-إتقان نطاق مناسب من المهارات المهنية المتخصصة، واستخدام الوسائل التكنولوجيةالمناسبة بما يخدم ممارسته المهنية

1- Graduate attributes <u>(Continuous)</u>

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
7- Demonstrate interpersonal and communication skills that ensure effective information exchange with other health professions, the scientific	٧-التواصل بفاعلية و القدرة على قيادة فرق العمل

community, junior students and the public. 8- Function as supervisor, and trainer in relation to colleagues, medical students and other health professions.	
9- Acquire decision making capabilities in different situations related to Medical Physiology field of practice.	٨-اتخاذ القرار في سياقات مهنية مختلفة
10- Show responsiveness to the larger context of the related health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.	٩- توظيف الموارد المتاحة بما يحقق أعلي استفادة و الحفاظ عليها
11- Be aware of public health and health policy issues and share in system-based improvement of Medical Physiology	١٠-إظهار الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة في ضوء المتغيرات العالمية و الإقليمية
12- Show appropriate attitudes and professionalism.	١١-التصرف بما يعكس الالتزام بالنزاهة و المصداقية و الالتزام بقواعد المهنة
13- Demonstrate skills of lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages in Medical Physiology one of its subspecialties.	١٢-تنمية ذاته أكاديميا و مهنيا و قادرا علي التعلم المستمر

2-Academic standards

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.1. A - Established basic, biomedical, clinical, epidemiological and behavioral sciences related	٢-١-أ-النظريات و الأساسيات المتعلقة

to Medical Physiology	بمجال التعلم وكذا في المجالات ذات العلاقة.
2.1. B- The relation between practice in Medical Physiology and the welfare of society.	٢-١-ب-التأثير المتبادل بين الممارسة المهنية وانعكاسها علي البيئة.
2.1. C- Up to date and recent developments in common problems related to the Medical Physiology	٢-١-ج-التطورات العلمية في مجال التخصص.
2.1. D- Ethical and medicolegal principles relevant to practice in the Medical Physiology field.	٢-١-د-المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص.
2.1. E- Quality assurance principle related to the good medical practice in the Medical Physiology field.	٢-١-هـ- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
2.1. F- Ethical and scientific basics of medical research.	٢-١-و- أساسيات وأخلاقيات البحث العلمي

2-Academic standards (Continuous)

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.2. A- Correlation of different relevant sciences in the problem solving and management of common problems of the Medical Physiology	٢-٢-أ- تحليل و تقييم المعلومات في مجال التخصص والقياس عليها لحل المشاكل

2.2. B- Problem solving skills based on data analysis and evaluation (even in the absence of some) for common situations related to Medical Physiology.	
2.2. B- Problem solving skills based on data analysis and evaluation (even in the absence of some) for common situations related to Medical Physiology	٢-٢-ب- حل المشاكل المتخصصة مع عدم توافر بعض المعطيات
2.2. A- Correlation of different relevant sciences in the problem solving and management of common problems of Medical Physiology	٢-٢-ج- الربط بين المعارف المختلفة لحل المشاكل المهنية
2.2. C- Demonstrating systematic approach in studding common themes or problems relevant to Physiology.	٢-٢-د- إجراء دراسة بحثية و /أو كتابة دراسة علمية منهجية حول مشكلة بحثية
2.4. A- Demonstrate practice-based learning and improvement skills that involve investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management.	٢-٢هـ- تقييم المخاطر في الممارسات المهنية في مجال التخصص
2.4. A- Demonstrate practice-based learning and improvement skills that involve investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management.	٢-٢-و- التخطيط لتطوير الأداء في مجال التخصص

2-Academic standards (Continuous)

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.2. D- Making alternative decisions in different situations in the field of	٢-٢-ز- اتخاذ القرارات المهنية في سياقات مهنية متنوعة

Medical Physiology	
2.3.A- Provide practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function. 2.3. B- Demonstrate practical/laboratory skills relevant to Medical Physiology	٢–٣–أ– إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
2.3. C- Write and comment on reports for situations related to the field Medical Physiology	٢–٣–ب– كتابة و تقييم التقارير المهنية
2.3.A- Provide practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function. 2.3. B- Demonstrate practical / laboratory skills relevant to Medical Physiology	٢–٣–ج– تقييم الطرق و الأدوات القائمة في مجال التخصص

2-Academic standards (Continuous)

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.4. D- Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with	٢–٤–أ–التواصل الفعال بأنواعه المختلفة

patients, their families, lab technical staff and other health professionals.	
2.4. A- Demonstrate Practice-Based learning and Improvement skills that involve investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management. 2.4. B- Use all information sources and technology to improve his practice.	٢-٤-ب- استخدام تكنولوجيا المعلومات بما يخدم الممارسة المهنية
2.4. A- Demonstrate Practice-Based learning and Improvement skills that involve investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management. 2.4. B- Use all information sources and technology to improve his practice. 2.4. E-Demonstrate Professionalism behaviors, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.	٢-٤-ج- التقييم الذاتي وتحديد احتياجاته التعلمية الشخصية

2-Academic standards (Continuous)

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.4. A- Demonstrate Practice-Based learning and Improvement skills that involve investigation and evaluation of their own practice, appraisal and	٢-٤-د- استخدام المصادر المختلفة للحصول على المعلومات و المعارف

assimilation of scientific evidence, improvements in provided services and risk management.	
2.4. C- Demonstrate skills of teaching and evaluating others.	٢-٤-هـ- وضع قواعد ومؤشرات تقييم أداء الآخرين
2.4. F- Demonstrate an awareness of and responsiveness to the larger context and system of health care and academic services and the ability to effectively use system resources to provide care that is of optimal value.	٢-٤-و- العمل في فريق ، وقيادة فرق في سياقات مهنية مختلفة
2.4. G- Demonstrate skills of effective tim management.	٢-٤-ز- إدارة الوقت بكفاءة
2.4. H- Demonstrate skills of self ar continuous learning.	٢-٤-ح- التعلم الذاتي و المستمر

Comparison between ARS & ILOS for master degree

(basic)

(ILOs)	(ARS)

2-1- Knowledge and understanding **2-1-A**- Explain the essential facts and principles of relevant basic sciences including Biochemistry, Pharmacology and related to Medical Physiology. **2-1-B**- Mention essential facts of clinical supportive sciences including Cardiology, Neurology, related to Medical Physiology. **2-1-C-** Demonstrate sufficient knowledge of the main subjects related to Medical Physiology.	***2-1- Knowledge and understanding*** **2-1-A-** Established basic, biomedical, clinical, epidemiological and behavioral sciences related to Medical Physiology.
2-1-H- State the impact of common problems related to the field of Medical Physiology on the society and how good practice can improve these problems.	**2-1-B** The relation between practice in the Medical Physiology and the welfare of society.
2-1-C- Demonstrate sufficient knowledge of the main subjects related to Medical Physiology. **2-1-D-** Give the recent and update developments in the most important themes related to Medical Physiology.	**2-1-C-** Up to date and recent developments in common problems related to the field of Medical Physiology.
2-1-E- Mention the basic ethical and medico-legal principles that should be applied in practice and are relevant to the field of Medical Physiology.	**2-1-D-** Ethical and medico-legal principles relevant to practice in the Medical Physiology field.
2-1-F- Mention the basics and standards of quality assurance to ensure good practice in the field of Medical Physiology.	**2-1-E**-Quality assurance principles related to the good medical practice in the Medical Physiology field.
2-1-G- Mention the ethical and scientific principles of medical research methodology.	**2-1-F-** Ethical and scientific basics of medical research.

2-2- Intellectual skills:	***2-2- Intellectual skills*:**
2-2-A- Correlate the relevant facts of relevant basic and clinically supportive sciences with reasoning, diagnosis and management of common problems of the Medical Physiology.	**2-2-A-**Correlation of different relevant sciences in the problem solving and management of common problems of the Medical Physiology.
2-2-B- Demonstrate an investigatory and analytic thinking approach (problem solving) to common clinical or practical situations related to Medical Physiology.	**2-2-B-**Problem solving skills based on data analysis and evaluation (even in the absence of some) for common situations related to Medical Physiology.
2-2-C- Design and /or present a case or review (through seminars/journal clubs.) in one or more of common themes or problems relevant to the Medical Physiology.	**2-2-C-** Demonstrating systematic approach in studding common themes or problems relevant to the Medical Physiology field.
2-2-D- Formulate management plans and alternative decisions in different situations in the field of the Medical Physiology.	**2-2-D** Making alternative decisions in different situations in the field of the Medical Physiology.
2/3/1/Practical skills)	***2-3- Practical skills:***
2-3-1-A- Demonstrate competently relevant laboratory skills related to Medical Physiology. **2-3-1-B-** Use the up to date technology for the conditions related to Medical Physiology. **2-3-1-C-** Develop plans for performing experiments related to Medical Physiology. **2-3-1-D-** Carry out common experiments related to Medical Physiology. **2-3-1-E-** Counsel and educate students, technicians and junior staff, in the lab about conditions related to Medical Physiology.; including handling of samples, devices, safety and maintenance of laboratory equipments.	**2-3-A-** Provide practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function. **2-3-B-** Demonstrate practical/laboratory skills relevant to that Medical Physiology.

2-3-1-F- Use information technology in some of the situations related to Medical Physiology. **2-3-1-G-** Share in providing health care services aimed supporting patient care ,solving health problems and better understanding of the normal structure and function.	
2-3-1-H Write competently all forms of professional reports related to Medical Physiology (lab reports, experiments reports).	**2-3-C-** Write and comment on reports for situations related to the field Medical Physiology.
2/3/2 General skills **2-3-2-A-** Perform practice-based improvement activities using a systematic methodology (share in audits and risk management activities and use logbooks). **2-3-2-B-** Appraises evidence from scientific studies. **2-3-2-C-** Conduct epidemiological Studies and surveys.	***2-4- General skills*** **2-4-A-** Demonstrate practice-based learning and improvement skills that involves investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management
2-3-2-C- Conduct epidemiological Studies and surveys. **2-3-2-D**-Performdata management including data entry and analysis and Using information technology to manage information, access on-line medical information; and support their own education.	**2-4-B-** Use all information sources and technology to improve his practice.
2-3-2-E- Facilitate learning of students, lab technical staff and other health care professionals including their evaluation and assessment.	**2-4-C-** Demonstrate skills of teaching and evaluating others.
2-3-2-F- Maintain therapeutic and ethically sound relationship with patients, their families, lab	**2-4-D-** Demonstrate interpersonal and communication skills that result in effective information

technical staff and other health professionals. **2-3-2-G-** Elicit information using effective nonverbal, explanatory, questioning, and writing skills. **2-3-2-H-** Provide information using effective nonverbal, explanatory, questioning, and writing skills. **2-3-2-I-** Work effectively with others as a member of a team or other professional group.	exchange and teaming with patients, their families, lab technical staff and other health professionals.
2-3-2-J- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society. **2-3-2-K**- Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices. **2-3-2-L**-Demonstrate sensitivity and responsiveness to others' culture, age, gender, and disabilities.	**2-4-E-**Demonstrate professionalism behaviors, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.
2-3-2-M-Work effectively in relevant academic and health care delivery settings and systems including good administrative and time management. **2-3-2-N-** Adopt cost-effective practice and resource allocation that does not compromise quality of services. **2-3-2-O**- Assist patients in dealing with system complexities.	**2-4-F-** Demonstrate an awareness of and responsiveness to the larger context and system of health care and academic services and the ability to effectively use system resources to provide care that is of optimal value.
2-3-2-M-Work effectively in relevant academic or health care systems including good administrative and time management.	**2-4-G**- Demonstrate skills of effective time management.

2-3-2-A- Perform practice-based improvement activities using a systematic methodology (share in audits and risk management activities and use logbooks).	**2-4-H-** Demonstrate skills of self and continuous learning.

II-Program matrix

Knowledge and Understanding

Course	Program covered ILOs							
	2/1/A	2/1/B	2/1/C	2/1/D	2/1/E	2/1/F	2/1/G	2/1/H
Course 1: Chosen course; Biochemistry	√	√	√	√	√	√	√	
Pharmacology	√	√	√	√	√	√	√	
Neurology	√	√	√	√				
Cardiology	√	√	√	√				
Course 2: Medical Physiology	√	√	√	√	√	√	√	√

Intellectual Outcomes

Course	Program covered ILOs			
	2/1/A	2/1/B	2/1/C	2/1/D
Course 1: Chosen course; Biochemistry	√	√	√	
Pharmacology	√	√	√	
Neurology	√	√	√	
Cardiology	√	√	√	
Course 2: **Medical Physiology**	√	√	√	√

Practical Skills

Course	Program covered ILOs

	2/3/1 /A	2/3/1 /B	2/3/1 /C	2/3/1 /D	2/3/1 /E	2/3/1 /F	2/3/1 /G	2/3/1 /H
Course 1: chosen course; Biochemistry	√			√		√		√
Pharmacology	√			√		√		√
Neurology	√			√		√		√
Cardiology	√			√		√		√
Course 2: **Medical Physiology**	√	√	√	√	√	√	√	√

General Skills

Course	Program covered ILOs							
	2/3/2	2/3/2	2/3/2	2/3/2	2/3/2	2/3/2	2/3/2	2/3/2

	/A	/B	/C	/D	/E	/F	/G	/H
Course 1: chosen course; Biochemistry	√	√	√	√	√	√	√	√
Pharmacology	√	√	√	√	√	√	√	√
Neurology	√	√	√	√	√	√	√	√
Cardiology	√	√	√	√	√	√	√	√
Course 2: Medical Physiology	√	√	√	√	√	√	√	√

General Skills

Course	Program covered ILOs						
	2/3/2/	2/3/2/	2/3/2/	2/3/2/	2/3/2/	2/3/2/	2/3/2/

	I	J	K	L	M	N	O
Course 1: chosen course; Biochemistry	√	√	√	√	√	√	√
Pharmacology	√	√	√	√	√	√	√
Neurology	√	√	√	√	√	√	√
Cardiology	√	√	√	√	√	√	√
Course 2: **Medical Physiology**	√	√	√	√	√	√	√

Annex 7, Additional information:

- **Example:**
- **Department information:**
- **Staff members:**

Head of the Department:

Prof. Nashwa Abdel Motaleb

Emeritus Professors

Prof. Minerva Kamel Fahmy Mikhail

Prof. Mahmoud Raafat Abdel-fadeil Hasan

Prof. Salwa Mohamed Selim

Prof. Ibtisam Mohamed Hassan Ali ElMileegy

Prof. Effat Mohamed Abdel-Moneim Mohamed

Professors

Prof. Enas Ahmed Hamed Omran

Prof. Omyma Galal Ahmed

Prof. Marwa Abdel Aziz

Prof. Ebtihal Anwar Abdel-Aziz Hasan

Prof. Hayam Gaber Sayyed Abdel-Aziz

Prof. Eman Sayed Hasan Abdullah

Prof. Ghada Saad Zaghloul Ahmed

Prof. Dalia Gamal El-Din Mostafa Morsy

Assistant Professors

Dr. Azza Salah El-Din Abdel-Hafiz

Dr. Asmaa Mohamed Sayed Gomaa

Dr. Nasser Sayed Abu Khalil Abdelstar

Dr. Sally Anwar Sayed Mohamed

Lecturers

Dr. Heba Mahmoud Iraqi Mohamed

Dr. Mona Abdel-Azem Mohamed

Dr. Rasha mohamed Ali

Dr. Fatma Yosef Ali

Assistant lecturers

Dr. Aml Ibrahim Gad Allh

Dr. Hanaa Mohamed Mohamed

Dr. Mona Ali

Dr. Fatma AlSayyed

Dr. Hassnaa Mahmoud Abd El Aleem

Demonstrators

Dr. Selvia Saber Samy
Dr. Mennat-Allah Abdelnaser Mahmoud Ahmed
Dr. Shimaa

- **Opportunities within the department:**

- **Department quality control insurance for completing the program:**

- Evaluation by the Department head and staff members.
- Regular assessments.
- Log book monitoring

(End of the program specification)