Medical Doctorate (M.D.) Degree Program and Courses Specifications for Medical Physiology

(According to currently applied Credit point bylaws)

Medical Physiology Department
Faculty of medicine
Assiut University
2021-2022/2022-2023

Contents

M. D. degree of Medical Physiology

A. Basic Information

- **Program Title: MD degree of Medical Physiology.**
- **Nature of the program: Single.**
- **Responsible Department: Medical Physiology.**
- **Program Academic Director (Head of the Department):**

  Prof. Nashwa Abdel Motaleb

- **Coordinator (s):** **Prof. Dr. Omyma Galal Ahmed**
- **Principle coordinator:** **Prof. Dr. Omyma Galal Ahmed**

- Assistant coordinator (s): Dr. Azza Salaheldien Abdelhaffez

Dr. Asmaa Mohamed Sayed Gomaa

- **Internal evaluators: Prof. Dr. Mahmoud Rafaat Abd Elfadeel.**
- **External evaluator :Prof.** 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: 27/11/2022**.
- **Total number of courses: 5 courses and 2 elective courses**.

B. Professional Information

1- Program aims

1-1. To prepare highly qualified physiologists in appropriate fields.

1-2. To introduce 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 to 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 to improve their skills in research and undergraduate teaching.

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

- Have an in-depth knowledge of the cellular basis of Medical Physiology, structure and function of organ systems of the body and the control systems of the human body and various body functions in health and disease.
- Develop knowledge concerning molecular biology & the bases of genetics.
- Understand and get the best of published scientific researches.
- 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.
- Demonstrate skills in oral and written presentations.
- Provide an understanding of quality assurance issues.
- Become acquainted with the methods of consulting the literature and preparing review.
- Develop a professional skills in techniques used for experimental physiology on isolated organs, tissues and

whole animals.

- 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*:

2/1Knowledge and understanding:

A. Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical clinical epidemiological and socio behavioral science relevant to Medical Physiology as well as the evidence –based application of this knowledge to practice including patient care.
B. Explain basics, methodology, tools and ethics of scientific medical, clinical research.
C. Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Medical Physiology.
D. Mention principles and measurements of quality assurance and quality improvement in medical education and in practice of the Medical Physiology.
E. Mention public health and health policy issues relevant to Medical Physiology and principles and methods of system – based improvement related to his practice in the field of Medical Physiology.

2/2 Intellectual outcomes

A. Apply the basic and clinically supportive sciences which are appropriate to Medical Physiology related conditions / problem / topics.

B. Demonstrate an investigatory and analytic thinking “problem – solving “approaches to relevant situations related to Medical Physiology.
C. Plan research projects.
D. Write scientific paper.
E. Participate in clinical or laboratory risk management activities as a part of clinical governance.
F. Plan for quality improvement in the field of medical education and practice in Medical Physiology.
G. Create and innovate plans, systems, and other issues for improvement of performance in his practice.
H. Present and defend his / her data in front of a panel of experts.
I. Formulate management plans and alternative decisions in different situations in the field of the Medical Physiology.

2/3 Skills

2/3/1 Practical skills (Patient Care)

A. Master practical skills relevant to Medical Physiology for all common techniques and /or experiments.
B. Master practical skills with non-routine, laboratory skills and techniques and under increasingly difficult circumstances, while demonstrating, appropriate and effective competency.
C. Master proficiency in performing available complex laboratory techniques and handling unexpected complications.
D. Gather essential and accurate information about practical/laboratory skills of the Medical Physiology related conditions.
E. Make informed decisions about diagnostic laboratory tests for the Medical Physiology related conditions.
F. Develop and carry out diagnostic and teaching plans for all Medical Physiology related conditions / skills.
G. Use information technology to support practical decisions and students education in all Medical Physiology related practical situations.

H. Provide health care or any relevant services aimed at preventing the Medical Physiology related health problems (if applied).
I. Lead other professionals, including those from other disciplines, to provide practical/laboratory-focused care in Medical Physiology related conditions.
J. Write competently all forms of professional reports related to the Medical Physiology (lab reports, experiments reports) including reports evaluating these charts and sheets.

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. Demonstrate the competency of continuous evaluation of different types of practice including service provision to patients in the different areas of his field.
B. Appraise scientific evidence.
C. Continuously improve his practice including service provision to patients based on constant self-evaluation and life-long learning.
D. Participate in medical audits and research projects.
E. Practice skills of evidence-based Medicine (EBM).
F. Educate and evaluate students, mentors and other health professionals.
G. Design logbooks.
H. Design guidelines and standard protocols for different techniques and procedures.
I. Apply knowledge of study designs and statistical methods to the appraisal of Medical Physiology related studies

J. Use information technology to manage information, access on-line medical information; for the important topics.

Interpersonal and Communication Skills

K. Master interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals, including:-
    - Present a case.
    - Write a consultation note.
    - Inform patients of a diagnosis and therapeutic plan, Completing and maintaining comprehensive timely and legible medical records.
    - Teamwork skills.

L. Create and sustain a therapeutic and ethically sound relationship with patients.

M. Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.

N. Work effectively with others as a member or leader of a health care team or other professional group.

Professionalism

O. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.

P. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.

Q. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.

Systems-Based Practice

R. Work effectively in academic and health care delivery .R settings and systems related to specialty including good administrative and time management.

S. Practice cost-effective services provision and resource allocation that does not compromise quality.

T. Advocate for quality patient care and assist patients in dealing with system complexities.

U. Design, monitor and evaluate specification of under and post graduate courses and programs.

V. Act as a chair man for scientific meetings including time management.

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

Academic standards for Medical Doctorate (MD) degree in Medical Physiology

Assiut Faculty of Medicine developed MD 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 3/2010.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

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

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

http://medicine.ksu.edu.sa/index.php?option=com_content&view=article&id=849&Itemid=1183&lang=en

5- Program Structure

A. Duration of program: 4-6 years.

B. Structure of the program:

Total number of credit points: = 420 CP
Master degree: 180 credit point.
Didactic #: 37 (30.8%), practical 83 (69.2%), total: 120 CP
Thesis (80) and researches (40), total: 120 CP (50%).

First part
Didactic 10 (100%), practical 0 (0 %), total: 10 CP
Second part
Didactic 24, (22.4 %), practical 83 (77.6 %), total: 107 CP
Elective courses: 3 credit points
#Didactic (lectures, seminars, tutorial)
According the currently applied bylaws:
Total courses: 120 credit point
Compulsory courses: 117 credit point (97.5%)
Elective courses: 3 credit point (2.5%)

	Credit points	% from total
▪ Basic courses	10	4.1%
▪ Humanity and social courses	3	1.2%
▪ Specialized courses	107	44.6%
▪ Others (Computer, …)		
▪ Field training	83	34.8%
Thesis	80	33.4%
2 published researches	40	16.7%
Master degree	180	

C-Program Time Table

Duration of program 4 years divided into

- Part 1

Program-related essential courses

Program-related essential courses

- Medical statistic

- Research methodology
- Medicolegal Aspects and Ethics in Medical Practice and Scientific Research

Students are allowed to sit the exams of these courses after 6 months from applying to the M D degree.

Students are allowed to sit the exams of the remaining essential courses after 12 months from applying to the MD degree.

Thesis and 2 published researches

For the MD thesis;

MD thesis subject should be officially registered within 1 year from application to the MD degree,

Discussion and acceptance of the thesis should not be set before 24 months from registering the MD subject;

It could be discussed and accepted either before or after passing the second part of examination

- Part 2

Program –related specialized science courses and ILOs

Students are not allowed to sit the exams of these courses before 4 years from applying to the MD degree.

Two elective courses can be set during either the 1st or 2nd parts.

The students pass if they get 50% from the written exams and 60% from oral exams, 60% from clinical exams of each course and 60% of summation of the written exams, oral and clinical exams of each course

Total degrees 1700 marks.

500 marks for first part

1200 for second part

Written exam 40% - 70%.

Clinical and oral exams 30% - 60%.

D-Curriculum Structure: (Courses):

- **Levels and courses of the program:**

Courses and student work load list	Course Code	Core Credit points		
		didactic #	training	total
First Part				
Essential Courses (10 CP) Course 1: Medical Statistics Course 2: Research Methodology Course 3: Medicolegal Aspects & Ethics in Medical Practice and Scientific Research Course 4: Physiology 1 Applied Human Physiology of: Cardiology Neurology Chest	 FAC309A FAC309B FAC310C PHY303A#	 1 1 1 7 2.5 3 1.5		 1 1 1 7
Elective courses*	3 CP			
- Elective course 1 - Elective course 2				
Thesis	80 CP			
Published researches**	40 CP			
Second Part	Specialized courses 24 CP Specialized Practical Work (log Book) 83 CP			
Specialized Courses Course 5 : Physiology 2	PHY303B	24		
Specialized Practical Work (83 CP)	PHY303B	**83**		
Total of second part		**24**	**83**	**107**

#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#:

- Advanced medical statistics.
- Evidence based medicine.
- Advanced infection control.
- Quality assurance of medical education.
- Quality assurance of clinical practice.
- Hospital management

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

3. Thesis / Researches:

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

**Another 40 points are appointed to acceptance or publication of one research from the thesis in international indexed medical journals or publication of 2 researches from the thesis in local specialized medical journals.

Course Physiology 2

Units' Titles' list	% from total Marks	Level (Year)	Core Credit points		
			Didactic	training	Total
1. Unit 1 " Physiology of Muscle and Nerve "	8%	2	3	6	9
2. Unit 2 "Physiology of Cardiovascular System"	17 %	2, 3& 4	3.5	15	18.5
3. Unit 3 " Physiology of Central Nervous System"	17%	2, 3& 4	3	15	18
4. Unit 4 "Physiology of Special Sense"	8 %	3	2	7	9
5. Unit 5 "Physiology of Autonomic Nervous System"	1%	3	1	------	1
6. Unit 6 "Physiology of Endocrine and Reproduction"	14%	2, 3& 4	3.5	11	14.5
7. Unit 7 "Physiology of Digestion"	7%	3& 4	2.5	5	7.5
8. Unit 8 "Physiology of Respiration"	7%	3& 4	2	5	7
9. Unit 9 "Physiology of General Metabolism "	6%	4	1	5	6
10. Unit 10 "Physiology of Blood and Immunity"	9 %	4	1	9	10
11. Unit 11 "Physiology of Kidney and Body Fluids"	6 %	4	1.5	5	6.5
Total No. of Units: 11			24	83	107

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:**
    - **Master degree in the specialty.**
  - **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 MD 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 (Medical statistic, Research methodology and Medicolegal Aspects and Ethics in Medical Practice and Scientific Research) could be set at 6 months from registering to the MD degree.
- Students are allowed to sit the exams of the remaining essential courses of the first part after 12 months from applying to the MD degree.

- Examination of the second part cannot be set before 4 years from registering to the degree.
- Discussion of the MD thesis could be set after 2 years from officially registering the MD subject, either before or after setting the second part exams.
- The minimum duration of the program is 4 years.

The students are offered the degree when:

1. Passing the exams of all essential, elective and specialized 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 MD thesis.
4. Acceptance or publication of one research from the thesis in international indexed medical journals or publication of 2 researches from the thesis in local specialized medical journals.

9-Program assessment methods and rules (Annex IV)

Method	ILOs measured
Written examinations: Structured essay questions Objective questions MCQ Problem solving	K & I
Clinical: Long/short cases OSCE	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 and/or Practical l Exam**		**Total**
First Part					
Essential Courses:					
Medical Statistics	FAC309A	35	15		50
Research Methodology	FAC309B	35	15		50
Medicolegal Aspects & Ethics in Medical Practice and Scientific Research	FAC310C	35	15		50
Physiology 1 **Applied Human Physiology of** **Cardiology** **Neurology** **Chest**	**PHY303A #**	**200** **70** **90** **40**	**75** **30** **25** **20**	**75** **25** **35** **15**	**350** **125** **150** **75**
Total					500
Second Part					
	Course code	written	oral	Practical	Total
Specialized Courses Physiology 2 **Paper 1:** Physiology 2(Muscle And Nerve, Blood ,Cardiovacular System) **Paper 2 :**Physiology 2	**PHY303B**	180 180 180	240	240	1200

(Kidney & Digestion & Respiration) **Paper 3:** Physiology 2 (Central Nervous System And Special Sense, Autonomic Nervous System) **Paper 4:** Physiology 2 (Endocrine & Reproduction & Metabolism)		180			
Total of the second part		720	240	240	1200
Elective course 1		50	50		100
Elective course 2		50	50		100

* 25% of the oral exam for assessment of logbook

500 marks for first part

1200 for second part

Written exam 60% (720 marks).

Clinical and oral exams 40% (480 marks

Elective courses 200

Examination system:

First part:

- Written exam 2 hours in Medical Statistics and Research Methodology + oral examination
- Written exam 1 hours in Medicolegal Aspects and Ethics in Medical Practice and Scientific Research + oral examination

- Written exam 3 hours in Applied Human Physiology (Cardiology, Neurology, Chest + oral examination + Practical exam

➢ **Second part:**

- Written exam four papers, 3 hours for each in Physiology 2 (**Paper 1:** Physiology 2(Muscle And Nerve, Blood ,Cardiovacular System), **Paper 2 :**Physiology 2 (Kidney & Digestion & Respiration), **Paper 3:** Physiology 2 (Central Nervouse System And Special Sense, Autonomic Nervous System), **Paper 4:** Physiology 2 (Endocrine & Reproduction & Metabolism) + oral examination+ Practical exam

➢ **Elective courses**

- Written exam one paper 1 hour in Elective course 1 + Oral & Practical exam
- Written exam one paper 1 hour in Elective course 2 + 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 departmental 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. Dr Omyma Galal Ahmed		
Head of the Responsible Department (Program Academic Director):	Prof. Nashwa Abdel Motaleb		

Annex 1, Specifications for Courses / Modules

Annex 1: specifications for courses/ modules

First Part

Course 1: Medical statistics

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2022-2023

1. Course data

- **Course Title: Medical statistics**
- **Course code: FAC309A**
- **Specialty: offered to all clinical and academic specialties**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course:** Pubic Health and Community Medicine
- **Coordinator (s):**
  - Course coordinator: Prof. Farag Mohammed Moftah
  - Assistant coordinator (s):
    Prof. Medhat Araby Khalil Saleh
- Date last reviewed: January -2022
- **Requirements (pre-requisites) if any:**
  - Completed Master degree in any of the academic or clinical departments of Medicine.

2. Course Aims

Enable gradute students to use statistical principles to improve their professional work and develop the concept of critical interpretation of data

3. Intended learning outcomes (ILOs):To be able to use statistical principals to manage data

A knowledge and understanding

ILOS	Methods of teaching/ learning	Methods of Evaluation
A. List the types of variables	Lecture and discussion	Written examination
B. Identify the methods of data collection	Lecture and discussion	Written examination
C. Describe the different sampling strategies	Lecture and discussion	Written examination
D. Identify types of tabular and graphic presentation of data	Lecture and discussion	Written examination
E. Identify measures of central tendency and dispersion	Lecture and discussion	Written examination
F. Identify the characters of normal distribution curve.	Lecture and discussion	Written examination
G. Detect the difference between parametric and non-parametric tests	Lecture and discussion	Written examination
H. Identify the concepts of correlation and regression	Lecture and discussion	Written examination

B. intellectual

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Describe the normal curves.	Lecture& Discussions	Written examination
B. Describe and summarize data	Lecture& Discussions	Written examination
C. Select the proper test of significance	Lecture& Discussions	Written examination
D. Interpret the proper test of significance	Lecture& Discussions	Written examination
E. Describe the difference between parametric and non-parametric tests	Lecture& Discussions	Written examination

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design data entry files.	Tutorial on SPSS	Assignments SPSS exam
B. Validate data entry.	Tutorial on SPSS	Assignments SPSS exam
C. Manage data files.	Tutorial on SPSS	Assignments SPSS exam
D. Construct tables and graphs.	Tutorial on SPSS	Assignments SPSS exam
E. Calculate measures of central tendency and dispersion.	Tutorial on SPSS	Assignments SPSS exam
F. Select, apply and interpret the proper test of significance.	Tutorial on SPSS	Assignments SPSS exam

D general skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Appraise scientific evidence	Discussions	Research assignment
B. Use information technology to manage information, access on-line medical information; for the important topics.	tutorial	Research and audits' assignment

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skills C	General Skills D
Introduction	A-F	A-D	-	A&B
Tables and graphics	D	A-D	-	A&B
Sampling	C	-	-	A&B
Methodology of data collection	B	-	-	A&B
Type of variables	A	-	-	A&B
Proportion test& Chi-square test	E,F	C&D	-	A&B
Student T test& Paired T test	E,F	C&D	F	A&B
ANOVA test	E,F	C&D	F	A&B
Non parametric tests	E,F	C&D	F	A&B
Discrimination analysis factor analysis	E,F	C&D	-	A&B
SPSS Introduction	A-F	A-D	-	A&B
Data entry and cleaning of data	A	A-D	A-C	A&B
Transforming of variables	A	A&B	A-C	A&B
Descriptive statistics	D	A-D	D&E	A&B
Graphic presentation	D	A&B	D	A&B
Chi square and interpretation of results	E,F	C&D	F	A&B
Correlation Regression	E,F	C&D	F	A&B
Multiple and logistic Regression	E,F	C&D	F	A&B

5. Course Methods of teaching/learning

1. Lectures
2. Assignments
3. Discussions
4. Exercises
5. Tutorial on SPSS v.16

6. Course assessment methods:

i. Assessment tools:

1. Attendance and active participation
2. Assignment
3. Practical SPSS examination
4. Written exam

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

7. List of references

i. Lectures notes

Department lecture notes

ii. Essential books

- Medical Statistics: Book by Ramakrishna HK 2016
- Janet Peacock and Philip Peacock. Oxford Handbook of Medical Statistics (second edition.) Publisher: Oxford University Press, Print Publication Date: Nov 2010 Print ISBN-13: 9780199551286, Published online: Jun 2011. DOI: 10.1093/med/9780199551286.001.0001
- Leslie E. Daly MSc, PhD, Hon MFPHM,, Geoffrey J. Bourke MA, MD, FRCPI, FFPHM, FFPHMI, Interpretation and Uses of Medical Statistics, Fifth Edition, First published:1 January 2000, Print ISBN:9780632047635 |Online ISBN:9780470696750 |DOI:10.1002/9780470696750
- Marcello Pagano, Kimberlee Gauvreau: Principles of Biostatistics second edition published in 2000 by Brooks/Cole and then Cengage Learning. CRC Press, Feb 19, 2018 - Mathematics - 584 pages.

Iii- Recommended books

- Ji-Qian Fang (Sun Yat-Sen University, China) Handbook of Medical Statistics: https://doi.org/10.1142/10259 | September 2017.Pages: 852
- Robert H. Riffenburgh: Statistics in Medicine 4th Edition (2020). EvidenceEvidence Based Medicine How to practice and teach EBM.
- Discovering Statistics Using IBM SPSS Book by Andy Field, 2013.

iii. Periodicals, Web sites, etc

iv. **Periodicals , etc** Statistics in Medicine - Wiley Online Library

v. **Web sites**
https://www.phc.ox.ac.uk/research/medical-statistics

8. Signatures

Course Coordinator: - Farag Mohammed Moftah	**Head of the Department:** - Prof. Eman Morsy Mohamed
Date: 10-1-2022	**Date**: 10-1-2022
Associated Coordinator: Prof. Medhat Araby Khalil Saleh	
Date: 10-1-2022	

Course 2: Research Methodology

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2021-2022

1. Course data

- **Course Title: Research methodology**
- **Course code: FAC309B**
- **Specialty: Offered to all clinical and academic specialties**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course: Department of public health**
- **Coordinator (s):**

  - **Course coordinator:** Prof. Mahmoud Attia

  Assistant coordinator (s): Prof. Ekram Mohamed

  - Prof. Medhat Araby Khalil

- **Date last reviewed:** January 2022
- **Requirements (prerequisites) if any:**
  - **Completed Master degree in any of the academic or clinical departments of Medicine.**

2. Course Aims

To provide graduate students with the skills of:

- planning and implementing sound research
- writing a scientific research proposal

3. Intended learning outcomes (ILOs)

A knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Explain differences between different study designs.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
B. Identify sources and types of bias in research.	Lecture and discussion Practical sessions	Written exam Log book assignments Practical exam
C. Identify methods of data collection.	Lecture and discussion Practical sessions	Written exam Log book assignments
D. Select and design valid measurement tools for research.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
E. Explain ethical issues in conducting research on human subjects.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments
F. List the steps involved in proposal writing.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
G. Identify a research problem within a conceptual framework.	Lecture Discussion	Written exam Log book assignments Practical exam

H. Use the web sources to do a literature search	Practical tutorial on web	Log book assignment
I. Describe the rules of authorship in scientific writing.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments
J. Select the appropriate study design for the research question.	Lecture Practical sessions	Written exam Practical exam
K. Minimize bias in designing research.	Lecture	Written exam
L. Screening & theoretical background	Lectures	Written exam Practical exam
M. Mention the basic ethics for conducting a research and medicolegal principles relevant to data confidentiality.	lectures seminar	Written exam Practical exam

B. intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Apply basic science & knowledge for appraising scientific literature.	Discussions &seminars	Written exam Practical exam
B- Design research and present study data, in seminars.	lecture seminar	log book assignments
C- Design suitable epidemiological study.	lecture seminar	log book assignments
D- Design strategies for resolving ethical concerns in research, law, and regulations.	lecture Workshops	Written exam log book assignments
E- Apply coherently synthesize ideas and integrate lateral and vertical thinking.	lecture Workshops	log book assignments
F- Evaluate screening tests and interpreting their uses in different population.	lecture	Written exam Practical exam

C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Conduct epidemiological studies, screening and surveys.	lectures seminar	written exam log book assignments
B- Identify steps required in fielding the study.	Lecture	Assignments Written exam
C- Managing data collection team.	lectures seminar	log book assignments
D- Identify steps required for calculation sensitivity, specificity, positive predictive value, negative predictive value, accuracy of a screening test.	Lecture Practical sessions	Assignments Written exam Practical exam
E- Be able to define and apply the epidemiologic criteria of causality and be able to distinguish between a measure of association and evidence of causality.	Lecture Practical sessions	Assignments Written exam Practical exam
F- Synthesize information from multiple sources for research writing and the ability to perform paper critique .	Lecture Practical sessions	Assignments Written exam Practical exam
G- Identify bias and confounding in epidemiological study designs, their types and ways to control them in various types of biases.	Lecture Practical sessions	Assignments Written exam Practical exam

D General skills
Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Scientific paper and proposal writing skills: be able to write an introduction, objectives and the methodological section.	Tutorial	Written examination
B- Learn authorship ethical rules.	Tutorial	Written examination
C- Perform practice-based improvement activities using a systematic methodology (audit, logbook, critical appraisal)	- Lectures -Practical sessions - Discussion - Readings	critical appraisal
D- Appraise evidence from scientific studies(journal club)	- Lectures -Practical sessions - Discussion - Readings	critical appraisal
E- Conduct epidemiological studies, screening and surveys.	- Lectures -Practical sessions - Discussion - Readings	attendance and participation
F- Facilitate training of junior students and other health care professionals in different screening activities.	Field work Participation in projects	attendance and participation

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
G- Maintain ethically sound relationship with community members.	- Lectures -Practical sessions - Discussion - Readings	Written exams
H- Provide information using effective nonverbal, explanatory, questioning, and writing skills.	- Lectures -Practical sessions - Discussion - Readings	Written exams Practical exams
I- Present results of researches in seminars.	- Lectures -Practical sessions - Discussion - Readings	Log book assignments

Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity to the needs of society.	- Lectures - Discussion - Readings	Written exams
K- Manage potential conflicts of interest encountered by practitioners, researchers, and organizations.	- Lectures - Discussion - Readings	Written exams
L- Design strategies for resolving ethical concerns in research, law, and regulations.	Lectures - Discussion - Readings	Written exams Practical exams
M- Demonstrate ways to control for confounding in the analysis phase of a study	Lectures - Discussion - Readings	Written exams Practical exams
N- Demonstrate a commitment to ethical principles including confidentiality of participants' information and informed consent.	Lectures - Discussion - Readings	Written exams
O- Assess ethical considerations in developing communications and promotional initiatives.	- Lectures - Discussion - Readings	Written exams

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	**Intellectual B**	**Practical skills C**	**General Skills D**
Over view on research conduction and research ethics	A&E	A-D	A-C	C-G, I,L&M-O
How to write a research proposal	F,I	E	F	A-C&H
Observational study design	A& D	B & C	D	E & F
Experimental study design	A& D	B & C	B	E & F
Evaluation of diagnostic tests (Screening)	L	A	B& E	F
Systematic reviews and meta analysis	G, H & M	E& F	F	C, D
Confounding, bias & effect modification	B & K	D	E & G	M

5. Course Methods of teaching/learning:

1. Lectures
2. Assignments
3. Discussion
4. Exercises

6. Course assessment methods:

i. Assessment tools:

1. Attendance and participation
2. Log book assignments
3. Written examination
4. Practical examination

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

7. List of references

i. Lectures notes

- Department lecture notes

ii. Essential books

- Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition by John W. CreswellSAGE Publications, Inc; 4th edition (January 1, 2014)
- Research methodology: A step – by – step Guide for Beginners. Ranjit Kumar, 2020. Second edition https://books.google.com.eg/books?
- Medical Research Essentials Rania Esteitie, McGraw Hill Professional, third edition, Feb 5, 2014 - Medical - 104 pages
- Research Methodology in the Medical and Biological Sciences Petter Laake, Haakon Breien Benestad, Bjorn R. Reino Olsen, 4th edition , Academic Press, Nov 5, 2007 - Science - 512 pages

iv. Recommended books

- Research Methods in Education 7th Edition, by Louis Cohen, Lawrence Manion, Keith Morrison Publisher: Routledge; (April 22, 2011) www.routledge.com/textbooks/cohen7e.
- Research Methodology: A Practical and Scientific Approach Vinayak Bairagi, Mousami V. Munot · 2019, Research

Methodology: A Practical and Scientific Approach - Google Books

- Based Medicine How to practice and teach EBM. David Sachett, Sharon E. Straus, W. Scott Richardson , William Rosenberg R.Brain Haynes
- Dissertation workshop open courseware JHSPH

8. Signatures

Course Coordinator: Prof.Mahmoud Attia	**Head of the Department:** Prof. Eman Morsy Mohamed
Date: 10-1-2022	**Date**: 10-1-2022

Course 3: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research

Name of department: Forensic medicine and clinical toxicology
Faculty of medicine
Assiut University

1. Course data

- **Course Title: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research**
- **Course code: FAC310C**
- **Speciality: All Academic Departments (1st part).**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course: Forensic Medicine and Clinical Toxicology**
- **Coordinator (s):**
  - **Course coordinator:** Prof. Ghada Omran
  - **Assistant coordinator (s)**. Prof. Zaghloul Thabet

- **Date last reviewed: 17/4/2022.**

- **Requirements (prerequisites) if any :**
  - **Completed Master degree.**

2. Course Aims

To describe the basic ethical and medicolegal principles and bylaws relevant to practice in the field of academic specialties

3. Intended learning outcomes (ILOs):

A. knowledge and understanding

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Mention medical ethics.	Lecture and discussion	Oral &Written exam
B. Explain ethics in research.(human and animal)	Lecture and discussion	Oral &Written exam
C. Mention medical laws.	Lecture and discussion	Oral &Written exam
D. List causes of medical responsibilities.	Lecture and discussion	Oral &Written exam

B. intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A-Design and present case , seminars in common problem In medical responsibilities, medical ethics and ethics in research-	Lecture and discussion	Oral &Written exam

C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Write medical and legal reports.	Discussion	Discussion
B. Identify ethics in research.	Discussion	Discussion
C. Identify medical laws.	Discussion	Discussion
D. Identify medical responsibilities.	Discussion	Discussion

D. General skills

Practice-Based Learning and Improvement

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Make timely and legible medical records	Lecture and discussion	Global rating logbook
B. Acquire the teamwork skills	Lecture and discussion	Global rating logbook

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	**Intellectual** B	**Practical skills** C	**General Skills** D
1. Medical ethics	A,C,D	A	A,C,D	A,B
2. Ethics in research	B,C,D	A	B, ,C,D	A,B

5. Course Methods of teaching/learning:

1. Lectures.
2. Discussions.
3. Exercises.

6. Course assessment methods:

i. Assessment tools:

1. Written examination.
2. Attendance and active participation.
3. Oral examination.

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for oral exam).

7. List of references

i. Lectures notes

- Course notes.
- Staff members print out of lectures and/or CD copies.

ii. Essential books

- Bernard Knight and Pekka Saukko (2015: Knight Forensic Pathology. Hodder Arnold press
- Goldfrank, Lewis R.; Howland, Mary Ann; Hoffman, Robert S.; Nelson, Ewis S.; Lewin, Neal A (2019): Goldfrank's Toxicologic Emergencies, 11th ed. McGraw Hill / Medical.
- Medical Ethics Manual. World medical association. Third edition 2015.
- Medical ethics and law. Dominic Wilkinson, 3rd edition 2019.

iii. Recommended books

- Biswas Gautam (2021): Review of Forensic Medicine & Toxicology. 5th ed. Jaypee Brothers Medical Pub.

iv. Journal and web site

- Journals of all Egyptian Universities of Forensic Medicine and Clinical Toxicology.
- All International Journals of Forensic Medicine and Clinical Toxicology which available in the university network at www.sciencedirect.com. As :
  - Forensic Science International Journal.
  - Toxicology Letter.

v. others

8. Signatures

- **Course Coordinator: Prof. Ghada Omran**	- **Head of the Department: Prof. Randa Hussein Abdelhady**
Date: 17-4-2022	**Date: 17-4-2022**

Course 4: Physiology 1 Human Physiology of Cardiology Neurology and Chest

Course 4: Applied Human Physiology of Cardiology

Name of department: Medical Physiology
Faculty of medicine
Assiut University
2022-2023

I. Course data

- **Unit Title:** Applied Human Physiology of Cardiology
- **Unit code:** PHY303A#
- **Specialty:** Medical Physiology
- **Number of credit points:** 2.5 credit points
- **Department (s) delivering the Unit:** Department of Physiology in conjunction with department of Cardiology - Faculty of Medicine- Assiut- EGYPT
- **Coordinator (s): Staff members of Physiology Department in conjunction with Cardiology Department as annually approved by both departments councils.**
- **Date last reviewed: September 2021**
- **Requirements (prerequisites) if any :**
  - None
- **Requirements from the students to achieve unit ILOs are clarified in the joining log book.**

2. Course Aims

To acquire indepth background of Applied Human Physiology of Cardiology necessary for Medical Physiology.

3. Course intended learning outcomes (ILOs):

A- Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Illustrate *Physiologic* details of: • Anatomy and physiology of coronary circulation, factors affecting the coronary blood flow, coronary reserve, how to asses, the venous and lymphatic drainage of the heart. • The metabolism of both the normal and ischemic heart. • Ultastructure of myocardial cell and its relation to various functions (role of ca). • Normal and abnormal jugular venous pulsations. • Normal ECG , genesis of cardiac arrthymia ,diagnosis of cardiac arrthymia ,mechanism of antiarrthymic drugs • Sleep apnea. • Autnomic dysfunction, autonomic testing hypotension and syncope. • Various methods for evulation of systolic and diastolic functions of the heart. • Cardiac cycle (normal hemodynamics and effect of exercise). • Normal and abnormal cardiac electrophysiology. • Myocardial viability. • emostasis (thrombosis , bleeding). • Endothelium (function and abnormality).	-Didactic (lectures, seminars, tutorial)	- Written and oral examination - Log book

B- Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Apply the basic (physiological) supportive sciences which are appropriate to Applied Human Physiology of Cardiology related problems.	-Didactic (lectures, seminars, tutorial)	-Written and oral examination - Log book
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to common clinical situations related to Applied Human Physiology of Cardiology.		

C- Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Interpret the following: ECG	-Observation and supervision -Written and oral communication	Oral exam Logbook Practical / clinical exam

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
B. Use information technology to manage information, access on-line medical information; and support their own education	-Observation and supervision -Written and oral communication	Oral exam Logbook

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
C. Write a report in common condition mentioned in A.A.	-Clinical round -Seminars -Lectures	-Log book -Check list Oral exam

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
D. Demonstrate a commitment to ethical principles.	- Observation and supervision Written & oral communication	Logbook Oral Exam

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
E. Work effectively in different health care delivery settings and systems.	-Observation -Senior staff experience	-360o global rating

4. Course contents (topics/modules/rotation
Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	**Intellectual** B	**Practical skills** C	**General Skills** D
• Anatomy and physiology of coronary circulation, factors affecting the coronary blood flow, coronary reserve, how to asses, the venous and lymphatic drainage of the heart.	A	A&B	-	A-D
• The metabolism of both the normal and ischemic heart.	A	A&B	-	A-D
• Ultastructure of myocardial cell and its relation to various functions (role of ca).	A	A&B	-	A-D
• Normal and abnormal jugular venous pulsations.	A	A&B	-	A-D
• Normal ECG , genesis of cardiac arrthymia ,diagnosis of cardiac arrthymia ,mechanism of antiarrthymic drugs	A	A&B	A	A-D
• Sleep apnea.	A	A&B	-	A-D
• Autnomic dysfunction, autonomic testing hypotension and syncope.	A	A&B	-	A-D
• Various methods for evulation of systolic and diastolic functions of the heart.	A	A&B	-	A-D
• Cardiac cycle (normal hemodynamics and effect of exercise).	A	A&B	-	A-D
• Normal and abnormal cardiac electrophysiology.	A	A&B	-	A-D

• Myocardial viability.	A	A&B	-	A-D
• emostasis (thrombosis , bleeding).	A	A&B	-	A-D
Endothelium (function and abnormality).	A	A&B	-	A-D
• Anatomy and physiology of coronary circulation, factors affecting the coronary blood flow, coronary reserve, how to asses, the venous and lymphatic drainage of the heart.	A	A&B	-	A-D
• The metabolism of both the normal and ischemic heart.	A	A&B	-	A-D
• Ultastructure of myocardial cell and its relation to various functions (role of ca).	A	A&B	-	A-D

5. Course methods of teaching/learning:

1. Didactic (lectures, seminars, tutorial)
2. Observation and supervision
3. Written & oral communication
4. Senior staff experience

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

1. Extra didactic (lectures, seminars, tutorial)

7. Course assessment methods:

i. Assessment tools:

1. Written ,oral Practical/ clinical examination
2. Log book

ii. Time schedule: After 12 months from applying to the M D degree.

iii. Marks: 125

8. List of references

i. Lectures notes

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

ii. Essential books

- Guyton AC, Hall JE: Textbook of Medical Physiology, 14th ed. Saunders, 2021.
- Mayoclinic Cardiology, Mayo Clinic Scientific Press) 4th ed. Edition.

iii. Recommended books

- Gillian Pocock, Christopher D. Richards: Human Physiology the Basis of Medicine. Oxfordcore texts, 2013.

iv. Periodicals, Web sites, … etc

➢ **Periodicals,**

- American journal of physiology.
- Journal of applied physiology.

v. others : None

Course 4: Applied Human Physiology of Neurology

Name of department: Medical Physiology
Faculty of medicine
Assiut University
2022-2023

1. Course data

- **Unit Title:** Applied Human Physiology of Neurology
- **Unit code:** PHY303A#
- **Specialty** Medical Physiology
- **Number of credit points:** 3 credit point
- **Department (s) delivering the Unit:** Department of Physiology in conjunction with Department of Neurology- Faculty of Medicine- Assiut- EGYPT
- **Coordinator (s): Staff members of Physiology Department in conjunction with Neurology Department as annually approved by both departments councils**

- **Date last reviewed: September 2021**
- **Requirements (prerequisites) if any :**
  - None
- **Requirements from the students to achieve unit ILOs are clarified in the joining log book.**

2. Course Aims

To acquire indepth background of Applied Human Physiology Neurology necessary for Medical Physiology.

3. Course intended learning outcomes (ILOs):

A- Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Illustrate *Physiologic* details of: • Normal EEG. • Normal Different modalities of evoked potentials. • NCVs, F-wave, H -reflexes. • Physiology and patho-physiology of Spinal cord lesions. • Physiology and patho-physiology different levels of hemiplegia. • Physiology and patho-physiology of ataxia (sensory and cerebellar ataxia) • Physiology and patho-physiology of extrapyramidal system lesions. • Normal EMG.	-Didactic (lectures, seminars, tutorial)	- Written and oral examination - Log book

B- Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Apply the basic (physiological) supportive sciences which are appropriate to Applied Human Physiology of Neurology related problems.	-Didactic (lectures, seminars, tutorial)	-Written and oral examination - Log book

B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to common clinical situations related to Applied Human Physiology of Neurology.		

C- Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Interpret the following: EEG EMG	-Observation and supervision -Written and oral communication	Oral exam Logbook Practical / clinical exam

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Use information technology to manage information, access on-line medical information; and support their own education	-Observation and supervision -Written and oral communication	Oral exam Logbook

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
B. Write a report in common condition mentioned in A.A.	-Clinical round -Seminars -Lectures	-Log book -Chick list Oral exam

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
C. Demonstrate a commitment to ethical principles.	- Observation and supervision Written & oral communication	Logbook Oral Exam

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
D. Work effectively in different health care delivery settings and systems.	-Observation -Senior staff experience	-360o global rating

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	**Intellectual** B	**Practical skills** C	**General Skills** D
• Normal EEG.	A	A&B	A	A-D
• Normal Different modalities of evoked potentials.	A	A&B	-	A-D
• NCVs, F-wave, H -reflexes.	A	A&B	-	A-D
• Physiology and patho-physiology of Spinal cord lesions.	A	A&B	-	A-D
• Physiology and patho-physiology different levels of hemiplegia.	A	A&B	A	A-D
• Physiology and patho-physiology of ataxia (sensory and cerebellar ataxia)	A	A&B	-	A-D
• Physiology and patho-physiology of extrapyramidal system lesions.	A	A&B	-	A-D
Normal EMG.	A	A&B	A	A-D

5. Course methods of teaching/learning:

1. Didactic (lectures, seminars, tutorial)
2. Observation and supervision
3. Written & oral communication
4. Senior staff experience

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

1. Extra didactic (lectures, seminars, tutorial)

7. Course assessment methods:

i. Assessment tools:

1. Written ,oral Practical/ clinical examination
2. Log book

ii. Time schedule: After 12 months from applying to the M D degree.

iii. Marks: 150

8. List of references

i. Lectures notes

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

ii. Essential books

- Guyton AC, Hall JE: Textbook of Medical Physiology, 14th ed. Saunders, 2021.
- Spotlights on clinical neurology

iii. Recommended books

- Gillian Pocock, Christopher D. Richards: Human Physiology the Basis of Medicine. Oxfordcore texts, 2013.

iv. Periodicals, Web sites, … etc

➢ **Periodicals,**

- American journal of physiology.
- Journal of applied physiology.

v. others : None

Course 4: Applied Human Physiology of Chest

Name of department: Medical Physiology
Faculty of medicine
Assiut University
2022-2023

1. Course data

- **Unit Title:** Applied Human Physiology of Chest
- **Unit code:** PHY303A#
- **Specialty** Medical Physiology
- **Number of credit points:** 1.5 credit point
- **Department (s) delivering the Unit:** Department of Physiology in conjunction with Department of Chest- Faculty of Medicine- Assiut- EGYPT
- **Coordinator (s): Staff members of Physiology Department in conjunction with Chest Department as annually approved by both departments councils**

- **Date last reviewed: September 2021**
- **Requirements (prerequisites) if any :**
  - None
- **Requirements from the students to achieve unit ILOs are clarified in the joining log book.**

2. Course Aims

To acquire indepth background of Applied Human Physiology Chest necessary for Medical Physiology .

3. Course intended learning outcomes (ILOs):

A- Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Illustrate *Physiologic* details of: • Respiratory cycle, its mechanism, intra-pleural pressure. • Work of breath and surfactant. • Gas transport in blood (oxygen dissociation curve and CO_2 curve). ▪ Regulation of normal respiration. ▪ Disorders of the respiratory system as dyspnea , hypoxia and cyanosis ▪ Pulmonary Blood Flow, and Ventilation-Perfusion Relationships ▪ Hypercapnea. • Acid base balance and Acid-base disturbances.	-Didactic (lectures, seminars, tutorial)	- Written and oral examination - Log book
B. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: ▪ Pneumonia. • Asthma.		

B- Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Apply the basic (physiological) supportive sciences which are appropriate to Applied Human Physiology of Chest related problems.	-Didactic (lectures, seminars, tutorial)	-Written and oral examination - Log book
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to common clinical situations related to Applied Human Physiology of Chest.		

C- Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Interpret the following: ABGs Spirometry	-Observation and supervision -Written and oral communication	Oral exam Logbook Practical / clinical exam

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Use information technology to manage information, access on-line medical information; and support their own education	-Observation and supervision -Written and oral communication	Oral exam Logbook

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
B-Write a report in common condition mentioned in A.A., A.B	-Clinical round -Seminars -Lectures	-Log book -Chick list Oral exam

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
C. Demonstrate a commitment to ethical principles.	- Observation and supervision Written & oral communication	Logbook Oral Exam

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
D. Work effectively in different health care delivery settings and systems.	-Observation -Senior staff experience	-360o global rating

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	**Intellectual** B	**Practical skills C**	**General Skills** D
• Respiratory cycle, its mechanism, intra-pleural pressure.	A	A&B	-	A-D
• Work of breath and surfactant.	A	A&B	-	A-D
Gas transport in blood (oxygen dissociation curve and CO_2 curve).	A	A&B	-	A-D
▪ Regulation of normal respiration.	A	A&B	-	A-D
▪ Disorders of the respiratory system as dyspnea , hypoxia and cyanosis	A	A&B	-	A-D
▪ Pulmonary Blood Flow, and Ventilation-Perfusion Relationships	A	A&B	-	A-D
▪ Hypercapnea.	A	A&B	-	A-D
• Acid base balance and Acid-base disturbances.	A	A&B	A	A-D
• Pneumonia.	B	A&B	A	A-D
• Asthma.	B	A&B	A	A-D

5. Course methods of teaching/learning:

1. Didactic (lectures, seminars, tutorial)
2. Observation and supervision
3. Written & oral communication
4. Senior staff experience

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

Extra didactic (lectures, seminars, tutorial)

7. Course assessment methods:

i. Assessment tools:

1. Written ,oral Practical/ clinical examination
2. Log book

ii. Time schedule: After 12 months from applying to the M D degree.

iii. Marks: 75

8. List of references

i. Lectures notes

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

ii. Essential books

- Guyton AC, Hall JE: Textbook of Medical Physiology, 14th ed. Saunders, 2021.
- Clinical manifestation and assessment of respiratory disorders. (4th edition)

iii. Recommended books

- Gillian Pocock, Christopher D. Richards: Human Physiology the Basis of Medicine. Oxfordcore texts, 2013.

iv. Periodicals, Web sites, … etc

➢ **Periodicals,**

- American journal of physiology.
- Journal of applied physiology.

v. others : None

9. Signatures

Course Coordinators	
Applied Human Physiology of Cardiology **Coordinator: ……**	**Head of the Department:** **……**
Date: ……	**Date: ……**
Applied Human Physiology of Neurology **Coordinator: ……**	**Head of the Department:** **……**
Date: ……	**Date: ……**
Applied Human Physiology of Chest **Coordinator: ……**	**Head of the Department:** **……**
Date: ……	**Date: ……**

Second Part

Course 5: Physiology 2

- **Name of department: Medical Physiology**
- **Faculty of medicine**
- **Assiut University**

2022-2023

1. Course data

- **Course Title: Physiology 2**
- **Course code: PHY303B**
- **Specialty : Medical Physiology**
- **Number of credit point : Didactic 24, (22.4 %), practical 83 (77.6 %), total 107 CP**
- **Department (s) delivering the course: Medical Physiology- Faculty of Medicine- Assiut University- Egypt.**
- **Coordinator (s):**

- **Course coordinator:** : Prof. Dr Omyma Galal Ahmed
- **Assistant coordinator (s) :** Dr Azza Salah El-dien Abdel- Hafeez
  Dr. Asmaa Mohamed Sayed Gomaa

- **Date last reviewed: September 2021**

- **Requirements (prerequisites) if any : None**

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

2. Course Aims

2/1To enable MD candidate to acquire an in-depth knowledge of the cellular basis of medical physiology, structure and function of organ systems of the body and the control systems of the human body and various body functions in health and disease.

2/2-Develop knowledge concerning molecular biology & the bases of genetics.

2/3- Develop a professional skills in techniques used for experimental physiology on isolated organs, tissues and whole animals.

3. Course intended learning outcomes (ILOs): For all units

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Describe in depth common clinical conditions and diseases related to Medical Physiology		
B. Describe In-depth Knowledge of the following conditions: **Unit 1 Physiology of Muscle and nerve** **I- Physiology of the cell** 1-Functional organization of the human body and control of internal environment 2- The cell and its function	Lectures -Books -journals -Tutorials - Seminars -Case study	Written, practical examination *Log book*

3- Genetic control of protein synthesis, cell function and reproduction II- Muscle and nerve-Section 1: Transport of Substances Through the Cell Membrane 1. The Lipid Barrier of the Cell Membrane, and Cell Membrane Transport Proteins 2. Diffusion Through the Cell Membrane 3. "Active Transport" of Substances Through Membranes Section 2: Membrane Potentials and Action Potentials: 1. Basic Physics of Membrane Potentials 2. Measuring the Membrane Potential 3. Resting Membrane Potential of Nerves 4. Nerve Action Potential 5. Roles of Other Ions During the Action Potential 6. Propagation of the Action Potential 7. Re-establishing Sodium and Potassium Ionic Gradients After Action Potentials Are Completed-Importance of Energy Metabolism 8. Plateau in Some Action Potentials 9. Special Characteristics of Signal Transmission in Nerve Trunks		

10. Excitation-The Process of Eliciting the Action Potential 11. Inhibition of Excitability-"Stabilizers" and Local Anesthetics 12. Recording Membrane Potentials and Action Potentials Section 3: Contraction of Skeletal Muscle 1. Physiologic Anatomy of Skeletal Muscle 2. General Mechanism of Muscle Contraction 3. Molecular Mechanism of Muscle Contraction 4. Energetics of Muscle Contraction 5. Characteristics of Whole Muscle Contraction Section 4: Excitation of Skeletal Muscle: Transmission and Excitation-Contraction Coupling 1. Transmission of Impulses from Nerve Endings to Skeletal Muscle Fibers: The Neuromuscular Junction 2. Molecular Biology of Acetylcholine Formation and Release 3. Drugs That Enhance or Block Transmission at the Neuromuscular Junction 4. Myasthenia Gravis 5. Muscle Action Potential		

6. Spread of the Action Potential to the Interior of the Muscle Fiber by Way of "Transverse Tubules " 7. Excitation-Contraction CouplingNeuromuscular Section 5: Contraction and Excitation of Smooth Muscle : 1. Contraction of Smooth Muscle 2. Types of Smooth Muscle 3. Contractile Mechanism in Smooth Muscle 4. Nervous and Hormonal Control of Smooth Muscle Contraction **Unit 2 Physiology of Cardiovascular System** Cardiac muscle; the heart as a pump and function of the heart valves. 1- Physiology of Cardiac Muscle 2- The Cardiac Cycle 3-Relationship of the Heart Sounds to Heart Pumping 4- Work Output of the Heart 5- Chemical Energy Required for Cardiac Contraction: Oxygen Utilization by the Heart		

6- Regulation of Heart Pumping Rhythmical excitation of the heart 1- Specialized Excitatory and Conductive System of the Heart 2- Control of Excitation and Conduction in the Heart The normal electrocardiogram 1- Characteristics of the Normal Electrocardiogram 2- Methods for Recording Electrocardiograms 3- Flow of Current Around the Heart During the Cardiac Cycle Electrocardiographic Leads Electrocardiographic interpretation of cardiac muscle and coronary blood flow abnormalities: vectorial analysis. 1- Principles of Vectorial Analysis of Electrocardiograms 2- Vectorial Analysis of the Normal Electrocardiogram 3- Mean Electrical Axis of the Ventricular QRS—And Its Significance		

4- Conditions That Cause Abnormal Voltages of the QRS Complex 5- Prolonged and Bizarre Patterns of the QRS Complex 6- Current of Injury Cardiac arrythmias and their electrocardiographic interpretation 1- Abnormal Sinus Rhythms 2- Abnormal Rhythms That Result from Block of Heart Signals Within the Intracardiac Conduction Pathways 3- Premature Contractions 4- Paroxysmal Tachycardia 5- Ventricular Fibrillation 6- Atrial Fibrillation 7- Atrial Flutter 8- Cardiac Arrest Biophysics of pressure, flow and resistance 1- Physical Characteristics of the Circulation 2- Basic Theory of Circulatory Function 3- Interrelationships Among Pressure, Flow, and Resistance		

Vascular distensibility and functions of the arterial and venous systems. 1- Vascular Distensibility 2- Arterial and Venous Circulations 3- Arterial Pressure Pulsations 4- Veins and Their Functions The microcirculation and lymphatic system: capillary fluid exchange, interstitial fluid and lymph flow 1- Structure of the Microcirculation and Capillary System 2- Flow of Blood in the Capillaries-Vasomotion 3- Exchange of Water, Nutrients, and Other Substances Between the Blood and Interstitial Fluid 4- The Interstitium and Interstitial Fluid 5- Fluid Filtration Across Capillaries Is Determined by Hydrostatic and Colloid Osmotic Pressures, and Capillary Filtration Coefficient 6- Lymphatic System Local and humeral control of tissue blood flow		

1- Local Control of Blood Flow in Response to Tissue Needs 2- Mechanisms of Blood Flow Control 3- Humoral Control of the Circulation Nervous regulation of the circulation and rapid control of arterial pressure. 1- Nervous Regulation of the Circulation 2- Role of the Nervous System in Rapid Control of Arterial Pressure *3*- Special Features of Nervous Control of Arterial Pressure Dominant Role of the Kidney in Long-Term Regulation of Arterial Pressure and in Hypertension: The Integrated System for Pressure Control 1- Renal-Body Fluid System for Arterial Pressure Control 2- The Renin-Angiotensin System: Its Role in Pressure Control and in Hypertension 3- Angiotensin-converting enzyme-2 (ACE2), SARS-COV-2 and pathophysiology of coronavirus disease (COVID-19)		

4- COVID-19, ACE2, and the cardiovascular consequences Cardiac Output, Venous Return, and Their Regulation 1- Control of Cardiac Output by Venous Return-Role of the Frank-Starling Mechanism of the Heart 2- Pathologically High and Pathologically Low Cardiac Outputs 3- Methods for Measuring Cardiac Output Muscle Blood Flow and Cardiac Output During Exercise; the Coronary Circulation and Ischemic Heart Disease 1- Blood Flow in Skeletal Muscle and Blood Flow Regulation During Exercise 2- Coronary Circulation Cardiac Failure 1- Dynamics of the Circulation in Cardiac Failure 2- Edema in Patients with Cardiac Failure 3- Cardiac Reserve Heart Valves and Heart Sounds Dynamics of Valvular and Congenital Heart Defects		

1- Heart Sounds 2- Abnormal Circulatory Dynamics in Valvular Heart Disease 3- Abnormal Circulatory Dynamics in Congenital Heart Defects 4- Hypertrophy of the Heart in Valvular and Congenital Heart Disease Circulatory Shock and Physiology of Its Treatment 1- Physiologic Causes of Shock 2- Shock Caused by Hypovolemia-Hemorrhagic Shock 3- Neurogenic Shock-Increased Vascular Capacity 4- Anaphylactic Shock and Histamine Shock 5- Septic Shock 6- Physiology of Treatment in Shock 7- Circulatory Arrest **- Unit 3 Physiology of Central Nervous System** 1 Section 1: Organization of the Nervous System, Basic Functions of Synapses, "Transmitter Substances" 1. General Design of the Nervous System		

2. Major Levels of Central Nervous System Function 3. Comparison of the Nervous System with a Computer 4. Central Nervous System Synapses 5. Some special characteristics of synaptic transimission Section 2: Sensory Receptors, Neuronal Circuits for Processing Information: 1. Types of Sensory Receptors and the Sensory Stimuli They Detect. 2. Transduction of Sensory Stimuli into Nerve Impulses 3. Adaptation of Receptors 4. Nerve Fibers That Transmit Different Types of Signals, and Their Physiologic Classification 5. Transmission of Signals of Different Intensity in Nerve Tracts-Spatial and Temporal Summation 6. Prolongation of a Signal by a Neuronal Pool-"Afterdischarge" 7. Instability and Stability of Neuronal Circuit.		

Section 3: Somatic sensation: general organization, the tactile and position sense: 1. Detection and Transmission of Tactile Sensations 2. Sensory Pathways for Transmitting Somatic Signals into the Central Nervous System 3. Transmission in the Dorsal Column-Medial Lemniscal System 4. Somatosensory Cortex 5. Somatosensory Association Areas 6. Transmission of Less Critical Sensory Signals in the Anterolateral Pathway 7. Some Special Aspects of Somatosensory Function Section 4: Somatic Sensations: II. Pain, Headache, and Thermal Sensations: 1. Types of Pain and Their Qualities-Fast Pain and Slow Pain 2. Pain Receptors and Their Stimulation 3. Dual Pathways for Transmission of Pain Signals into the Central Nervous System 4. Pain Suppression System in the Brain and Spinal Cord		

5. Brain's Opiate System-Endorphins and Enkephalins 6. Referred Pain - Visceral Pain 7. Some Clinical Abnormalities of Pain and Other Somatic Sensations 8. Hyperalgesia 9. Brown-Séquard Syndrome 10. Headache 11. Thermal Sensations Section 5: The Nervous System: Motor and Integrative Neurophysiology 1. Motor Functions of the Spinal Cord; the Cord Reflexes 2. Cortical and Brain Stem Control of Motor Function 3. Role of the Brain Stem in Controlling Motor Function 4. Vestibular Apparatus 5. Contributions of the Cerebellum and Basal Ganglia to Overall Motor Control 6. Functions of Specific Neurotransmitter 7. Cerebral Cortex, Intellectual Functions of the Brain, Learning and Memory		

8. Behavioral and Motivational Mechanisms of the Brain-The Limbic System and the Hypothalamus 9. Activating-Driving Systems of the Brain 10. States of Brain Activity-Sleep, Brain Waves, Epilepsy, Psychoses 11. Cerebral Blood Flow, Cerebrospinal Fluid, and Brain Metabolism **Unit- 4 Physiology of Special Sense** Section 1: The Eye: I. Optics of Vision: 1. Physical Principles of Optics 2. Optics of the Eye 3. Ophthalmoscope 4. Fluid System of the Eye-Intraocular Fluid 5. Formation of Aqueous Humor by the Ciliary Body Section 2: The Eye: II. Receptor and Neural Function of the Retina: 1. Anatomy and Function of the Structural Elements of the Retina 2. Photochemistry of Vision 3. Color Vision 4. Neural Function of the Retina		

Section 3: The Eye: III. Central Neurophysiology of Vision: 1. Visual Pathways 2. Organization and Function of the Visual Cortex 3. Neuronal Patterns of Stimulation During Analysis of the Visual Image 4. Fields of Vision; Perimetry 5. Eye Movements and Their Control 6. Fixation Movements of the Eyes 7. Autonomic Control of Accommodation and Pupillary Aperture Section 4: The Sense of Hearing 1. Tympanic Membrane and the Ossicular System 2. Cochlea 3. Central Auditory Mechanisms 4. Hearing Abnormalities: Section 5: The Chemical Senses-Taste and Smell: 1. Sense of Taste 2. Sense of Smell **Unit – 5 Physiology of autonomic nervous system**		

Section 1: The Autonomic Nervous System and the Adrenal Medulla: 1. General Organization of the Autonomic Nervous System 2. Physiologic Anatomy of the Sympathetic Nervous System 3. Preganglionic and Postganglionic Sympathetic Neurons 4. Physiologic Anatomy of the Parasympathetic Nervous System 5. Basic Characteristics of Sympathetic and Parasympathetic Function 6. Cholinergic and Adrenergic Fibers-Secretion of Acetylcholine or Norepinephrine -Receptors on the Effector Organs Section 2: 1. Excitatory and Inhibitory Actions of Sympathetic and Parasympathetic Stimulation 2. Function of the Adrenal Medullae 3. Stimulation of Discrete Organs in Some Instances and Mass Stimulation in Other Instances by the Sympathetic and Parasympathetic Systems		

4. " Alarm" or "Stre7.ss" Response of the Sympathetic Nervous System 5. Medullary, Pontine, and Mesencephalic Control of the Autonomic Nervous System 6. Pharmacology of the Autonomic Nervous System **7.** Autonomic Reflexes **- Unit 6 Physiology of Endocrine and Reproduction** Section 1: Introduction to Endocrinology 1. Coordination of Body Functions by Chemical Messengers. 2. Chemical Structure and Synthesis of Hormones. 3. Hormone Secretion, Transport, and Clearance from the Blood. 4. Mechanisms of Action of Hormones . 5. Measurement of Hormone Concentrations in the Blood Section 2: Pituitary Hormones and Their Control by the Hypothalamus: Section 2: Pituitary Hormones and Their Control by the Hypothalamus:		

1. Pituitary Gland and Its Relation to the Hypothalamus. 2. Hypothalamus Controls Pituitary Secretion 3. Hypothalamic-Hypophysial Portal Blood Vessels of the Anterior Pituitary Gland. 4. Physiological Functions of Growth Hormone . 5. Posterior Pituitary Gland and Its Relation to the Hypothalamus Section3: Thyroid Metabolic Hormones 1. Synthesis and Secretion of the Thyroid Metabolic Hormones. 2. Physiologic Functions of the Thyroid Hormones. 3. Regulation of Thyroid Hormone Secretion. 4. Diseases of the thyroid. Section 4: Adrenocortical Hormones: 1. Synthesis and Secretion of Adrenocortical Hormones. 2. Functions of the Mineralocorticoids-Aldosterone. 3. Functions of the Glucocorticoids. 4. Adrenal Androgens		

5. Abnormalities of Adrenocortical Secretion Section 5: Insulin, Glucagon, and Diabetes Mellitus: 1. Insulin and Its Metabolic Effects. 2. Glucagon and Its Functions. 3. Somatostatin Inhibits Glucagon and Insulin Secretion 4. Summary of Blood Glucose Regulation 5. Diabetes Mellitus Section 6: Parathyroid Hormone, Calcitonin, Calcium and Phosphate Metabolism, Vitamin D, Bone, and Teeth: 1. Overview of Calcium and Phosphate Regulation in the Extracellular Fluid and Plasma 2. Bone and Its Relation to Extracellular Calcium and Phosphate. 3. Vitamin D 4. Parathyroid Hormone. 5. Calcitonin 6. Summary of Control of Calcium Ion Concentration. 7. Physiology of the Teeth		

Section 7: Reproductive and Hormonal Functions of the Male: 1. Physiologic Anatomy of the Male Sexual Organs 2. Spermatogenesis 3. Male Sexual Act 4. Testosterone and Other Male Sex Hormones 5. Abnormalities of Male Sexual Function Pineal Gland-Its Function in Controlling Seasonal Fertility in Some Animals Section 8: Female Physiology Before Pregnancy and Female Hormones: 1. Physiologic Anatomy of the Female Sexual Organs 2. Female Hormonal System . 3. Monthly Ovarian Cycle; Function of the Gonadotropic Hormones 4. Functions of the Ovarian Hormones-Estradiol and Progesterone 5. Regulation of the Female Monthly Rhythm-Interplay Between the Ovarian and Hypothalamic-Pituitary Hormones 6. Abnormalities of Secretion by the Ovaries		

7. Female Sexual Act Female Fertility Animals Section 8: Pregnancy and Lactation: 1. Maturation and Fertilization of the Ovum. 2. Early Nutrition of the Embryo 3. Function of the Placenta. 4. Hormonal Factors in Pregnancy. 5. Response of the Mother's Body to Pregnancy 6. Parturition 7. Lactation Section 9: Fetal and Neonatal Physiology: 1. Growth and Functional Development of the Fetus. 2. Adjustments of the Infant to Extrauterine Life. 3. Special Functional Problems in the Neonate 4. Special Problems of Prematurity. 5. Growth and Development of the Child **Unit 7 Physiology of Digestion** Section 1: General Principles of Gastrointestinal Function-Motility, Nervous Control, and Blood Circulation:		

1. General Principles of Gastrointestinal Motility 2. Neural Control of Gastrointestinal Function-Enteric Nervous System. 3. Functional Types of Movements in the Gastrointestinal Tract 4. Gastrointestinal Blood Flow-"Splanchnic Circulation" Section 2 Propulsion and Mixing of Food in the Alimentary Tract: 1. Ingestion of Food 2. Motor Functions of the Stomach 3. Movements of the Small Intestine 4. Mixing Contractions 5. Movements of the Colon 6. Other Autonomic Reflexes That Affect Bowel Activity Section 3: Secretory Functions of the Alimentary Tract: 1. General Principles of Alimentary Tract Secretion 2. Secretion of Saliva 3. Gastric Secretion		

4. Pancreatic Secretion 5. Secretion of Bile by the Liver; Functions of the Biliary Tree 6. Secretions of the Small Intestine 7. Secretions of the Large Intestine Section 4: Digestion and Absorption in the Gastrointestinal Tract: 1. Digestion of the Various Foods by Hydrolysis 2. Basic Principles of Gastrointestinal Absorption 3. Absorption in the Small Intestine 4. Absorption in the Large Intestine: Formation of Feces Section 5: Physiology of Gastrointestinal Disorders: 1. Disorders of Swallowing and of the Esophagus 2. Disorders of the Stomach 3. Disorders of the Small Intestine 4. Disorders of the Large Intestine 5. General Disorders of the Gastrointestinal Tract		

- **Unit 8 Physiology of Respiration** Section 1: Pulmonary Ventilation 1. Mechanics of Pulmonary Ventilation 2. Pulmonary Volumes and Capacities 3. Minute Respiratory Volume Equals 4. Alveolar Ventilation 5. Functions of the Respiratory Passageways Section 2: Pulmonary Circulation, Pulmonary Edema, Pleural Fluid: 1. Physiologic Anatomy of the Pulmonary Circulatory System 2. Effect of Hydrostatic Pressure Gradients in the Lungs on Regional Pulmonary Blood Flow 3. Pulmonary Capillary Dynamics 4. Pulmonary Edema 5. Fluid in the Pleural Cavity Section 3: Physical Principles of Gas Exchange; Diffusion of Oxygen and Carbon Dioxide Through the Respiratory Membrane 1. Physics of Gas Diffusion and Gas Partial Pressures		

2. Composition of Alveolar Air-Its Relation to Atmospheric Air 3. Diffusion of Gases Through the Respiratory Membrane 4. Effect of the Ventilation-Perfusion Ratio on Alveolar Gas Concentration Section 4: Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids 1. Transport of Oxygen from the Lungs to the Body Tissues . 2. Transport of Carbon Dioxide in the 3. Respiratory Exchange Ratio : Section 5: Regulation of Respiration : 1. Respiratory Center 2. Chemical Control of Respiration 3. Peripheral Chemoreceptor System for Control of Respiratory Activity-Role of Oxygen in Respiratory Control 4. Regulation of Respiration During Exercise 5. Other Factors That Affect Respiration| Section 6: Regulation of Respiration 1. Respiratory Insufficiency-Pathophysiology, Diagnosis, Oxygen Therapy		

2. Physiologic Peculiarities of Specific Pulmonary Abnormalities 3. Hypoxia and Oxygen Therapy Section 7: Physiology of Aviation, Space, and Deep-Sea Diving Physiology 1. Effects of Low Oxygen Pressure on the Body 2. Acute Mountain Sickness and High-Altitude Pulmonary Edema 3. Effects of Acceleratory Forces on the Body in Aviation and Space Physiology 4. Centrifugal Acceleratory Forces 5. Effects of Linear Acceleratory Forces on the Body 6. Artificial Climate" in the Sealed Spacecraft 7. Weightlessness in Space 8. Physiology of Deep-Sea Diving and Other Hyperbaric Conditions Effect of High Partial Pressures of Individual Gases on the Body 9. Effect of High Partial Pressures of Individual Gases on the Body 10. Nitrogen Narcosis at High Nitrogen Pressures 11. Hyperbaric Oxygen Therapy		

12. Sports physiology - **Unit 9 Physiology of General Metabolism** Section 1 &2: 1. Metabolism of Carbohydrates, and Formation of Adenosine Triphosphate 2. Lipid Metabolism 3. Protein Metabolism Section 2: The Liver as an Organ: 1. Physiologic Anatomy of the Live 2. Hepatic Vascular and Lymph Systems 3. Blood Flows Through the Liver from the Portal Vein and Hepatic Artery 4. The Liver Functions as a Blood Reservoir 5. The Liver Has Very High Lymph Flow 6. Regulation of Liver Mass-Regeneration 7. Hepatic Macrophage System Serves a Blood-Cleansing Function 8. Metabolic Functions of the Liver 9. Measurement of Bilirubin in the Bile as a Clinical Diagnostic Tool Section 3: Dietary Balances; Regulation of Feeding; Obesity and Starvation; Vitamins and Minerals:		

1. Energy Intake and Output Are Balanced Under Steady-State Conditions 2. Dietary Balances 3. Energy Available in Foods 4. Methods for Determining Metabolic Utilization of Proteins, Carbohydrates, and Fats 5. Regulation of Food Intake and Energy Storage 6. Neural Centers Regulate Food Intake 7. Obesity 8. Inanition, Anorexia, and Cachexia 9. Starvation 10. Vitamins 11. Mineral Metabolism Section 4: Energetics and Metabolic Rate: 1. Adenosine Triphosphate Functions as an "Energy Currency" in Metabolism 2. Phosphocreatine Functions as an Accessory Storage Depot for Energy and as an "ATP Buffer " 3. Anaerobic Versus Aerobic Energy 4. Control of Energy Release in the Cell		

5. Metabolic Rate 6. Energy Metabolism-Factors That Influence Energy Output Section 5: Temperature, Temperature Regulation, and Fever :Normal Body Temperatures 1. Heat Production 2. Heat Loss 3. Regulation of Body Temperature-Role of the Hypothalamus 4. Abnormalities of Body Temperature Regulation - **Unit 10 Physiology of Blood and Immunity** Section 1: Red Blood Cells, Anemia, and Polycythemia: 1. Red Blood Cells 2. Production of Red Blood Cells 3. Formation of Hemoglobin 4. Iron Metabolism 5. Life Span and Destruction of Red Blood Cells 6. Anemias 7. Polycythemia		

Section 2: Resistance of the Body to Infection: I. Leukocytes, Granulocytes, the Monocyte-Macrophage System, and Inflammation: 1. Leukocytes 2. Neutrophils and Macrophages Defend Against Infections 3. Monocyte-Macrophage Cell System 4. Inflammation: Role of Neutrophils and Macrophages 5. Eosinophils 6. Basophils 7. The Leukemias Section3: Resistance of the Body to Infection: II. Immunity and Allergy : 1. Innate Immunity 2. Acquired Immunity 3. Allergy and hypersensitivity Section 4: Blood Types; Transfusion; Tissue and Organ Transplantation: 1. Antigenicity Causes Immune Reactions of Blood 2. O-A-B Blood Types 3. Rh Blood Types		

4. Rh Immune Response 5. Transfusion Reactions Resulting from Mismatched Blood Types 6. Transplantation of Tissues and Organs Section 5: Hemostasis and Blood Coagulation : 1. Events in Hemostasis 2. Mechanism of Blood Coagulation 3. Conditions That Cause Excessive Bleeding in Human Beings 4. Thromboembolic Conditions in the Human Being 5. Anticoagulants for Clinical Use 6. Blood Coagulation Tests **Unit – 11 Physiology of Kidney and Body Fluids** Section 1: The Body Fluid Compartments: Extracellular and Intracellular Fluids; Interstitial Fluid and Edema 1. Fluid Intake and Output Are Balanced During Steady-State Conditions 2. Body Fluid Compartments 3. Constituents of Extracellular and Intracellular Fluids .		

4. Volume and Osmolality of Extracellular and Intracellular Fluids in Abnormal States 5. Effect of Adding Saline Solution to the Extracellular Fluid 6. Clinical Abnormalities of Fluid Volume Regulation: Hyponatremia and Hypernatremia 7. Edema: Excess Fluid in the Tissues . Section 2: 1. Urine Formation by the Kidneys: I. Glomerular Filtration, Renal Blood Flow, and Their Control: 1. Physiologic Anatomy of the Kidneys 2. Physiologic Anatomy and Nervous Connections of the Bladder 3. Micturition Reflex 4. Urine Formation Results from Glomerular Filtration, Tubular Reabsorption, and Tubular Secretion 5. Glomerular Filtration-The First Step in Urine Formation 6. Determinants of the GFR 7. Renal Blood Flow 8. Renal Blood Flow and Oxygen Consumption		

9. Physiologic Control of Glomerular Filtration and Renal Blood Flow 10. Autoregulation of GFR and Renal Blood Flow Section3: Urine Formation by the Kidneys: II. Tubular Processing of the Glomerular Filtrate: 1. Reabsorption and Secretion by the Renal Tubules 2. Tubular Reabsorption Includes Passive and Active Mechanisms 3. Reabsorption and Secretion Along Different Parts of the Nephron 4. Regulation of Tubular Reabsorption 5. Use of Clearance Methods to Quantify Kidney Function Section4: Regulation of Extracellular Fluid Osmolarity and Sodium Concentration： 1. The Kidneys Excrete Excess Water by Forming a Dilute Urine 2. The Kidneys Conserve Water by Excreting a Concentrated Urine 3. Countercurrent Mechanism Produces a Hyperosmotic Renal Medullary Interstitium.		

4. Control of Extracellular Fluid Osmolarity and Sodium Concentration 5. Estimating Plasma Osmolarity from Plasma Sodium Concentration 6. Osmoreceptor-ADH Feedback System 7. Role of Thirst in Controlling Extracellular Fluid Osmolarity and Sodium Concentration . Section 5: Renal Regulation of Potassium, Calcium, Phosphate, and Magnesium; Integration of Renal Mechanisms for Control of Blood Volume and Extracellular Fluid Volume : 1. Regulation of Potassium Excretion and Potassium Concentration in Extracellular Fluid 2. Control of Renal Calcium Excretion and Extracellular Calcium Ion Concentration 3. Integration of Renal Mechanisms for Control of Extracellular Fluid 4. Nervous and Hormonal Factors Increase the Effectiveness of Renal-Body Fluid Feedback Control 5. Conditions That Cause Large Increases in Blood Volume and Extracellular Fluid Volume		

6. Conditions That Cause Large Increases in Extracellular Fluid Volume but with Normal Blood Volume		
C. Mention the details of different diagnostic tools of diseases related to Medical Physiology.		
D. State update and evidence based Knowledge related to Medical Physiology. Electrophysiology ➢ fetal and neonatal physiology ➢ physiology of gastrointestinal disorders ➢ kidney diseases ➢ immunity and allergy innate immunity ➢ Cardiac failure pathophysiology ➢ intellectual functions of brain, learning and memory.	Lectures -Books -journals -Tutorials - Seminars -Case study	
E. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to Medical Physiology.		
F. Mention the basic ethical and medico legal principles relevant to Medical Physiology.		
G. Explain the basics of quality assurance to ensure good professional skills in his field.		

H. Mention the ethical and scientific principles of medical research		
I. Explain the impact of common health problems in the field of Physiology on the society		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case , seminars in common problem related to Medical Physiology.	Attendance of seminars& lectures. - Presentation of selected points in seminars.	Log book
B. Apply the basic and clinically supportive sciences which are appropriate to the Medical Physiology related conditions / problem / topics.		

C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Medical Physiology.		
D. Conduct or share in research projects.		
E. Write scientific papers.		
F. Participate in the management of risky conditions related to Medical Physiology.		
G. Plan for quality improvement in the field of medical education and professional practice in Medical Physiology.		
H. Create / innovate plans, systems, and other issues for improvement of performance in his practice.		
I. Present and defend his / her data in front of a panel of experts		
J. Formulate management plans and alternative decisions in different situations in the field of the Medical Physiology.		

C-Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform the following basic lab skills essential to the course: • Isolated perfuse heart (rabbit & frog) experiments. • Recording of normal arterial blood pressure, heart rates & ECG in humans and experimental animals (e.g. recording the effect of cholinergic and adrenergic drugs on blood pressure, heart rate, ECG). • Measurement of activity of the Baroreceptors on sympathetic and parasympathetic nervous system. • Assessment of hemoglobin content, bleeding time, coagulation time, prothrombin time, Erythrocytic sedimentation rate, blood groups, blood hemolysis and determination of different blood indices in human • Recording of smooth muscle contractility. Study the effect of autonomic receptors agonist and antagonist on contractility,	Laboratory training	Practical examination

motility and secretion, gastric function tests.		
B. Interpret the following non invasive/invasive procedures/ experiments • Isolated perfuse heart (rabbit & frog) experiments. • Recording of normal arterial blood pressure, heart rates & ECG in humans and experimental animals (e.g. recording the effect of cholinergic and adrenergic drugs on blood pressure, heart rate, ECG). • Measurement of activity of the Baroreceptors on sympathetic and parasympathetic nervous system. • Assessment of kidney functions as glomerular filtration rate, renal blood flow and kidney tubular functions. • Indirect method for measurement of metabolic rate and measurement of body temperature		
A. Use instruments and devices in evaluation of • Isolated perfuse heart (rabbit & frog) experiments.		

• Recording of smooth muscle contractility. Study the effect of autonomic receptors agonist and antagonist on contractility, motility and secretion, gastric function tests. • Assessment of kidney functions as glomerular filtration rate, renal blood flow and kidney tubular functions.		
B. Develop and carry out diagnostic and teaching plans for all Physiology related conditions / skills		
C. Counsel and educate 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.		
D. Use information technology to support patient care decisions and patient education for cell Physiology related conditions.		
E. Provide health care services aimed supporting patient care, solving health problems and better understanding of the normal structure and function.		

F. Work with health care professionals, including those from other disciplines, to provide patient-focused care.		
G. Write and evaluate competently all forms of professional reports related to the Medical Physiology (lab reports, experiments reports,)		

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. perform the following basic lab skills essential to the course: Using SPSS and other statistical programs in the calculation and interpretation of the statistical tests.	Observation Senior staff experience Practice with the academic departments for at least 6 months	Log book Senior staff opinion
B. Perform the following advanced lab skills essential to the course: Using SPSS and other statistical programs in		

the calculation and interpretation of the statistical tests.		
C. Use instruments and devices in evaluation.		
D. Write competently all forms of professional reports related to the Medical Physiology (lab reports and experiments reports).		
E. Perform the basic experiments in related basic sciences to be utilized in the research work:		
F. Use information technology to support decisions in common situations related to Medical Physiology		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
G. Create and sustain a therapeutic and ethically sound relationship with patients	Seminars - Lectures Hand on workshops	Log book Check list Senior staff opinion
H. Perform the oral communications:		
I. Fill the reports:		
J. Work effectively with others as a member or leader of a health care team.		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
K. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation Senior staff experience	1. Objective structured clinical examination 2. Patient survey
L. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
M. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
N. Work effectively in different health care delivery settings and systems.	Observation Senior staff experience	1. 360o global rating
O. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
P. Advocate for quality patient care and assist patients in dealing with system complexities		
Q. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

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

Time Schedule: Second part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skill C	General Skills D
1. Unit 1 " Physiology of the cell and muscle and nerve"	A-I	A-J	A-J	A-Q
2. Unit 2 "Physiology of Cardiovascular System"	A-I	A-J	A-J	A-Q
3. Unit 3 " Physiology of Central Nervous System"	A-I	A-J	A-J	A-Q
4. Unit 4 "Physiology of Special Sense"	A-I	A-J	A-J	A-Q
5. Unit 5 "Physiology of Autonomic Nervous System"	A-I	A-J	A-J	A-Q
6. Unit 6 "Physiology of Endocrine and Reproduction"	A-I	A-J	A-J	A-Q
7. Unit 7 "Physiology of Digestion"	A-I	A-J	A-J	A-Q
8. Unit 8 "Physiology of Respiration"	A-I	A-J	A-J	A-Q
9. Unit 9 "Physiology of General Metabolism "	A-I	A-J	A-J	A-Q
10. Unit 10 "Physiology of Blood and Immunity"	A-I	A-J	A-J	A-Q
11. Unit 11 "Physiology of Kidney and Body Fluids"	A-I	A-J	A-J	A-Q

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 Lectures
2. Assignments
3. Discussion
4. Exercises

7. Course assessment

i. Assessment tools:

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

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

iii. Marks: 1200

8. List of references

i. Lectures notes

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

-Seminars.

ii. Essential books

- Guyton AC, Hall JE: Textbook of Medical Physiology, 14th ed. Saunders, 2021.

- William F. Ganong: Review of Medical Physiology, 26nd Edition, McGraw-Hill Companies, 2019.

iii. Recommended books

- Kaplan Medical's USMLE Step 1 Lecture Notes 2021.
- Gillian Pocock, Christopher D. Richards: Human Physiology the Basis of Medicine. Oxford core texts, 2013.
- Robert M. Berne, Matthew N. Levy. Principles of Physiology. 3th edition, Mosby, 2000.
- Duane E. Haines: Fundamental Neuroscience. 2nd edition, Churchill Livingstone, 2002.
- Michael Field, Carol Pollock, David Harris: The Renal System (basic science and clinical conditions). Churchill Livingstone, 2001.
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v. others

9. Signatures

Course Coordinator: ……	**Head of the Department: ……**
Date: ……..	**Date: ……**

Annex 2,
program Academic Standards

ANNEX 2
Program Academic Reference Standards (ARS)

1- Graduate attributes for medical doctorate in Medical Physiology

***The Graduate (after residence training and medical doctorate years of study) must*:**

1- Demonstrate competency and mastery of basics, methods and tools of scientific research and medical audit in the Medical Physiology field of medicine.

2- Have continuous ability to add knowledge to Medical Physiology through research and publication.

3- Appraise and utilise relevant scientific knowledge to continuously update and improve practical skills.

4- Acquire excellent level of medical knowledge in the basic biomedical, behavioural and related clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in practical skills and scientific research.

5- Function as a leader of a team to provide appropriate, effective and compassionate reaction when dealing with problems related to Medical Physiology

6- Identify and create solutions for health problems related to Medical Physiology

7- Acquire an in depth understanding of common areas of Medical Physiology, from basic practice and related clinical care to

application, and possession of required skills to manage independently all problems in these areas.

8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with other health professions, the scientific community and the public.

9- Function as teacher in relation to colleagues, medical students and other health professions.

10- Master decision making capabilities in different situations related to Medical Physiology field of practice.

11- Show leadership responsiveness to the larger context of the related health care systems, including the organisation, partnership with health care providers and managers, and resource allocations.

12- Demonstrate in depth awareness of public health and related health policy issues including independent ability to improve health care, and identify and carryout system-based improvement of care.

13- Show model attitudes and professionalism.

14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in Medical Physiology

15- Use recent technologies to improve his practice in the Medical Physiology field.

16- Share in updating and improving practical practice in the Medical Physiology field.

2- Competency based Standards for medical doctorate in Medical Physiology

2.1- Knowledge and understanding

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

2-1-A- Established, updated and evidence-based theories, basics and developments of Medical Physiology and relevant sciences.

2-1-B- Basic, methods and ethics of medical research.

2-1-C- Ethical and medicologal principles of medical practice related to Medical Physiology.

2-1-D- Principles and measurements of quality in the Medical Physiology field.

2-1-E- Principles and efforts for maintaining and improvements of public health.

2.2-Intellectual skills

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

2-2-A- Application of basic and other relevant science to solveMedical Physiology related problems.

2-2-B- Problem solving based on available data.

2-2-C- Involvement in research studies related to Medical Physiology

2-2-D- Writing scientific papers.

2-2-E- Risk evaluation in the related clinical practice.

2-2-F- Planning for performance improvement in Medical Physiology field.

2-2-G- Creation and innovation in Medical Physiology field.

2-2-H- Evidence – based discussion.

2-2-I- Decision making in different situations related to Medical Physiology fields.

2.3- Practical skills

By the end of the program, the graduate should be able to Competency-based outcomes for Student Care:-

2-3-A- Provide extensive level of practical and or laboratory services that can help student care ,solving health problems and better understanding of the normal structure and function extensive level means in depth understanding from basic science to evidence – based clinical application and possession of skills to manage independently all problems in Medical Physiology practice.

2-3-B- Master practical / laboratory skills relevant to Medical Physiology.

2-3-C- Write and evaluate 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- Master practice-based learning and improvement skills that involves investigation and evaluation and improvements of their own practice, appraisal and assimilation of scientific evidence and risk management.

2-4-B- Use competently all information sources and technology to improve Medical Physiology practice.

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

Competency-based objectives for Interpersonal and Communication Skills

2-4-D- Master interpersonal and communication skills that result in effective information exchange and teaming with other health professionals.

Competency-based objectives for Professionalism

2-4-E- Master professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles.

Competency-based objectives for Systems-based Practice

2-4-F- Demonstrate the ability to effectively use system resources to provide relevant services and care that is of optimal value.

2-4-G- Participate in improvement of the education system.

2-4-H- Demonstrate skills of leading scientific meetings including time management.

2-4-O- Demonstrate skills of self and continuous learning.

Annex 3, Methods of teaching/learning

Annex 3, Methods of teaching/learning

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

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 MD students.

Method	Practical skills	K	Intellectual	General skills			
	Patient care	K	I	Practice-based learning/ Improvement	Interpersonal and communication skills	Professional ism	Systems-based practice
Record review	X	X	X		X	X	X
Checklist	X				X		
Global rating	X	X	X	X	X	X	X
Simulations	X	X	X	X	X	X	
Portfolios	X	X	X	X	X		
Standardized oral examination	X	X	X	X	X		X
Written examination	X	X	X	X			X
Procedure/ case log	X	X					

Annex 4, Glossary of MD students 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 MD 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 MD doctor's performance on checklists and provide feedback for history taking, physical examination, and communication skills. Physicians may also rate the MD doctor's performance.
- Objective Structured Clinical Examination (OSCE) – A series of stations with standardized tasks for the MD doctors to perform. Standardized patients and other assessment methods often are combined in an OSCE. An observer or the standardized patient may evaluate the MD doctors.

- Procedure or Case Logs – MD 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 MD 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 – MD doctors, faculty, nurses, clerks, and other clinical staff evaluate MD doctors from different perspectives using similar rating forms.
- Portfolios – A portfolio is a set of project reports that are prepared by the MD doctors to document projects completed during the MD 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 – MD 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 MD doctors.

Annex 5, program evaluation tools

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 6, program Correlations:

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

I-General Academic reference standards (GARS) for postgraduates versus Program ARS

NAQAAE General ARS for Postgraduate Programs	Faculty ARS
١-إتقان أساسيات و منهجيات البحث العلمي	1- Demonstrate competency and mastery of basics, methods and tools of scientific research and medical audit in Medical Physiology.
٢-العمل المستمر علي الإضافة للمعارف في مجال التخصص	2- Have continuous ability to add knowledge new developments to Medical Physiology through research and publication.
٣-تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة	3- Appraise and utilise scientific knowledge to continuously update and improve practical skills
٤-دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البينية بينها	4- Acquire excellent level of medical knowledge in the basic biomedical, related clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in practical skills and scientific research.

٥–إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص	5- Function as a leader of a team to provide appropriate, effective and compassionate reaction when dealing with problems related to medical Physiology. 7- Acquire an in depth understanding of common areas of Medical Physiology from basic practice to application, and possession of skills to manage independently all problems in these areas.
٦–تحديد المشكلات المهنية و إيجاد حلولا مبتكرة لحلها	6- Identify and create solutions for health problems related to Medical Physiology .
٧–إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص	7- Acquire an in depth understanding of common areas of Medical Physiology from basic practice and related clinical care to application, and possession of skills to manage independently all problems in these areas.

1- Graduate attributes (Continuous)

NAQAAE General ARS for Postgraduate Programs	Faculty ARS
٨- التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية	16- Share in updating and improving practical practice in the Medical Physiology. 9- Function as teacher in relation to colleagues, medical students and other health professions.
٩-استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية	15- Use recent technologies to improve his practice in Medical Physiology.
١٠-التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة	8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with other health professions, the scientific community and the public. 5- Function as a leader of a team to provide appropriate, effective and compassionate reaction when dealing with problems related to Medical Physiology .

١١–اتخاذ القرار في ظل المعلومات المتاحة	10- Master decision making capabilities in different situations related to Medical Physiology.
١٢–توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة	11- Show leadership responsiveness to the larger context of the related health care system, including the organisation, partnership with health care providers and managers, and resource allocations.
١٣–الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة	12- Demonstrate in depth awareness of public health and related health policy issues including independent ability to improve health care, and identify and carryout system-based improvement of care.
١٤–التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة	13- Show model attitudes and professionalism.
١٥–الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين	14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in Medical

	Physiology or one of its subspecialties. 15- Use recent technologies to improve his practice in the Physiology

2- Academic standards

NAQAAE General ARS for Postgraduate Programs	Faculty ARS
٢-١-أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة	2.1. A- Established updated and evidence-based theories, basics and developments of Medical Physiology and relevant sciences.
٢-١-ب - أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة	2.1. B- Basic, methods and ethics of medical research.
٢-١-ج- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص	2.1. C- Ethical and medicologal principles of medical practice related to Medical Physiology.
٢-١-د مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص	2.1. D- Principles and measurements of quality in Medical Physiology.

٢-١-هـــ - المعارف المتعلقة بآثار ممارسته المهنية على البيئة وطرق تنمية البيئة وصيانتها	2.1. E- Principles and efforts for maintaining and improvements of public health.
٢-٢-أ -تحليـل و تقييم المعلومـات في مجـال التخصص و القياس عليها و الاستنباط منها	2.2. A- Application of basic and other relevant science to solve Medical Physiology related problems.
٢-٢-ب -حل المشاكل المتخصصة استنادا علي المعطيات المتاحة	2.2. B- Problem solving based on available data.
٢-٢-ج -إجراء دراسات بحثية تضيف إلى المعارف	2.2. C- Involvement in researc studies related to Medical Physiology.
٢-٢-د- صياغة أوراق علمية	2.2. D- Writing scientific papers.
٢-٢-هـ تقييم المخاطر في الممارسات المهنية	2.2. E- Risk evaluation in the related practice.
٢-٢-و -التخطيط لتطوير الأداء في مجـال التخصص	2.2. F- Planning for performance improvement in the Medical Physiology field.

٢-٢-ز- الابتكار /الإبداع	2-2-G- Creation and innovation in the Medical Physiology .
٢-٢-ح- الحوار والنقـاش المبنـي علـي البراهين والأدلة	2.2. H- Evidence – based disc
٢-٢-ط -اتخاذ القرارات المهنية في سـياقات مهنية مختلفة	2.2. I- Decision making in different situations related to Medical Physiology.
٢-٣-أ -إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص	2.3. A- Provide extensive level of practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function extensive level means in depth understanding from basic science to

	evidence – based clinical application and possession of skills to manage independently all problems in his field of Medical Physiology . 2.3. B- Master practical / laboratory skills relevant to Medical Physiology.
٢-٣-ب- كتابة و تقييم التقارير المهنية.	2.3. C- Write and evaluate reports for situations related to Medical Physiology.

2- Academic standards (Continues)

NAQAAE General ARS for Postgraduate Programs	Faculty ARS
٢-٣-ج -تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص	2.4. A-Master practice-based learning and improvement skills that involves investigation and evaluation and improvements of their own practice, appraisal and assimilation of scientific evidence and risk management.
٢-٣-د - استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية	2.4. B- Use competently all information sources and technology to improve his practice.
٢-٣-هـ -التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين	2.4. A-Master practice-based learning and improvement skills that involves investigation and evaluation and improvements of their own practice, appraisal and assimilation of scientific evidence and risk management. 2.4. G- Participate in improvement of the education system.

2- Academic standards (Continues)

NAQAAE General ARS for Postgraduate Programs	Faculty ARS
٢-٤-أ التواصل الفعال بأنواعه المختلفة	2.4. D- Master interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, technicians and other health professionals.
٢-٤-ب - استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية	2.4. B- Use competently all information sources and technology to improve his practice.
٢-٤-ج - تعليم الآخرين وتقييم أداءهم	2.4. C- Master skills of teaching and evaluating others. 2.4.G- Participate in improvement of the education system.
٢-٤-د - التقييم الذاتي والتعلم المستمر	2.4. E- Master professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to

	ethical principles, and sensitivity to a diverse patient population. 2.4.0- Demonstrate skills of self and continuous learning.
٢-٤-هـــ - استخدام المصادر المختلفة للحصول على المعلومات و المعارف	2.4. C- Master skills of teaching and evaluating others.
٢-٤-و - العمل في فريق وقيادة فرق العمل	2.4. F- Demonstrate the ability to effectively use system resources to provide relevant services and care that is of optimal value.
٢-٤-ز - إدارة اللقاءات العلمية والقدرة علي إدارة الوقت	2.4.H- Demonstrate skills of leading scientific meetings including time management

II-Program ARS versus program ILOs

Comparison between ARS and ILOS for medical doctorate in Medical Physiology

(ILOs)	(ARS)
2-1- Knowledge and understanding **2-1-A**- Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical, clinical epidemiological and socio behavioral science relevant to Medical Physiology as well as the evidence – based application of this knowledge to Medical Physiology practice.	***2-1- Knowledge and understanding*** **2-1-A-** Established, updated and evidence-based theories, basics and developments of Medical Physiology and relevant sciences.
2-1-B- Explain basics, methodology, tools and ethics of scientific medical, clinical research.	**2-1-B** Basic, methods and ethics of medical research. .
2-1-C- Mention ethical, medico logical principles and bylaws relevant to Medical Physiology practice.	**2-1-C-** Ethical and medicologal principles of medical practice related to Medical Physiology field.
2-1-D- Mention principles and measurements of quality assurance and quality improvement in medical education and in Medical Physiology practice.	**2-1-D-** Principles and measurements of quality in Medical Physiology field.

2-1-E- Mention public health and health policy issues relevant to Medical Physiology and principles and methods of system –based improvement of Medical Physiology practice.	**2-1-E**-Principles and efforts for maintaining and improvements of public health.

Continuous ***(ILOs)***	**continuous** ***(ARS)***
2-2- Intellectual skills:	***2-2- Intellectual skills*:**
2-2-A- Apply the basic and clinically supportive sciences which are appropriate to the Medical Physiology related conditions / problem / topics.	**2-2-A-**Application of basic and other relevant science to solve Medical Physiology related problems.
2-2-B- Demonstrate an investigatory and analytic thinking "problem – solving "approaches to relevant situations related to Medical Physiology.	**2-2-B-**Problem solving based on available data.
2-2-C- Plan research projects.	**2-2-C-** Involvement in research studies related to the Medical Physiology.
2-2-D- Write scientific paper.	**2-2-D** Writing scientific papers.
2-2-E- Participate in laboratory risk management activities as a part of clinical governance.	**2-2-E-**Risk evaluation in the related practice.
2-2-F- Plan for quality improvement in the field of medical education and practice in Medical Physiology.	**2-2-F-**Planning for performance improvement in the Medical Physiology field.
2-2-G- Create / innovate plans, systems, and other issues for improvement	**2-2-G-**Creation and innovation in the Medical Physiology field.

of performance in Medical Physiology practice.	
2-2-H- Present and defend his / her data in front of a panel of experts.	**2-2-H-**Evidence – based discussion.
2-2-I- Formulate management plans and alternative decisions in different situations in the field of the Medical Physiology	**2-2-I-**Decision making in different situations related to the Medical Physiology field.

(ILOs) continuous	(ARS) continuous
2/3/1/Practical skills (Patient care :)	***2-3- Clinical skills/Practical skills***
2-3-1-A- Master practical skills relevant to that Medical Physiology for all common techniques and /or experiments including.	**2-3-A-** provide extensive level of practical and or laboratory services that can help solving health problems and better understanding of the normal structure and function extensive level means in depth understanding from basic science to evidence – based clinical application and possession of skills to manage independently all problems in Medical Physiology field of practice.
2-3-1-B- Master practical skills with non-routine, laboratory skills and techniques and under increasingly difficult circumstances, while demonstrating, appropriate and effective competency including.	
2-3-1-C- Master proficiency in performing available complex laboratory techniques.	
2-3-1-D- Gather essential and accurate information about practical/laboratory skills related of the Medical Physiology.	**2-3-B-** Master practical/laboratory skills relevant to Medical Physiology
2-3-1-F- Develop and carry out diagnostic and teaching plans for all Medical Physiology / skills	

including slide projector, data show and monitors. **2-3-1-G-** Use information technology to support practical decisions and students education in all Medical Physiology practice including power point presentations. **2-3-1-I-** Lead other professionals, including those from other disciplines, to provide practical/laboratory-focused care in Medical Physiology related conditions including.	
2-3-1-J- Write competently all forms of professional reports related to the Medical Physiology (lab reports, experiments reports,) including reports evaluating these charts and sheets.	**2-3-C-** Write and evaluate reports for situations related to the Medical Physiology.

continuous ***(ILOs)***	**Continuous** ***(ARS)***
2/3/2 General skills **2-3-2-A-** Demonstrate the competency of continuous evaluation of different types of Medical Physiology practice including sectioning and processing of specimens. **2-3-2-B-** Appraise scientific evidence. **2-3-2-C-** Continuously improve his practice based on constant self-evaluation and life-long learning. **2-3-2-D**- Participate in medical audits and research projects. **2-3-2-E-** Practice skills of evidence-based Medicine (EBM). **2-3-2-G-** Design logbooks. **2-3-2-H-** Design guidelines and standard protocols for different techniques and procedures.	***2-4- General skills*** **2-4-A-** Master Practice-Based Learning and Improvement skills that involves investigation and evaluation and improvements of their own practice, appraisal and assimilation of scientific evidence and risk management.
2-3-2-I- Apply knowledge of study designs and statistical methods to the appraisal of	**2-4-B-** Use competently all information sources and technology to improve Medical Physiology practice.

Medical Physiology related studies. **2-3-2-J**- Use information technology to manage information, access on-line medical information; for the important topics.	
2-3-2-F- Educate and evaluate students.	**2-4-C-** Master skills of teaching and evaluating others.
2-3-2-K- Master interpersonal and communication skills that result in the effective exchange of information and collaboration with students including:- share in teaching small groups of students. • Present a seminar. • Write a paper. • Teamwork skills. **2-3-2-L-** Create and sustain an ethically sound relationships with students. **2-3-2-M**- Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.	**2-4-D-** Master interpersonal and communication Skills that result in effective information exchange and teaming with other health professionals.

2-3-2-N- Work effectively with others as a member or leader of a health care team or other professional group.	
2-3-2-O- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of students and society. **2-3-2-P-** Demonstrate a commitment to ethical principles including provision or withholding of student information. **2-3-2-Q-** Demonstrate sensitivity and responsiveness to students' culture, gender, and disabilities.	**2-4-E-** Master Professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse student population.
2-3-2-R- Work effectively in academic and health care delivery settings and systems related to histology including good administer and time management. **2-3-2-S-** Practice cost-effective services provision and resource allocation that does not compromise quality.	**2-4-F-** Demonstrate the ability to effectively use system resources to provide relevant services and care that is of optimal value. **2-4-G**- Participate in improvement of the education system.

2-3-2-T- Advocate for quality student care. **2-3-2-U-** Design, monitor and evaluate specification of under and post graduate courses and programs.	
2-3-2-V- Act as a chair man for scientific meetings including time management **2-3-2-R-** Work effectively in academic and health care delivery settings and systems related to Medical Physiology including good administrative and time management.	**2-4-H-** Demonstrate skills of leading scientific meetings including time management
From A to H**.**	**0-** 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
Course 1: Medical statistics.		✓			
Course 2: Research methodology		✓			
Course 3: Medicolegal Aspects& Ethics in Medical Practice and Scientific Research			✓		
Course 4: Physiology 1 - Applied Human Physiology of Cardiology Neurology and Chest	✓				
Course 5: Physiology 2	✓	✓	✓	✓	✓

Intellectual Outcomes

Course	Program covered ILOs								
	2/2/A	2/2/B	2/2/C	2/2/D	2/2/E	2/2/F	2/2/G	2/2/H	2/2/I
Course 1: Medical statistics.			✓	✓					
Course 2: Research methodology			✓	✓					
Course 3: Medicolegal Aspects& Ethics in Medical Practice and Scientific Research								✓	
Course 4: Physiology 1 - Applied Human Physiology of Cardiology Neurology and Chest	✓	✓							
Course 5: Physiology 2	✓	✓	✓	✓	✓	✓	✓	✓	✓

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	2/3/1/I
Course 1: Medical statistics.									
Course 2: Research methodology									
Course 3: Medicolegal Aspects& Ethics in Medical Practice and Scientific Research				✓					✓
Course 4: Physiology 1 - Applied Human Physiology of Cardiology Neurology and Chest					✓				
Course 5: Physiology 2	✓	✓	✓	✓	✓	✓	✓	✓	✓

General Skills

Course	Program covered ILOs							
	2/3/2 /A	2/3/2 /B	2/3/2 /C	2/3/2 /D	2/3/2 /E	2/3/2 /F	2/3/2 /G	2/3/2 /H
Course 1: Medical statistics.		✓						
Course 2: Research methodology								
Course 3: Medicolegal Aspects& Ethics in Medical Practice and Scientific Research								
Course 4: Physiology 1 - Applied Human Physiology of Cardiology Neurology and Chest								
Course5: Physiology 2	✓	✓	✓	✓	✓	✓	✓	✓

General Skills

Course	Program covered ILOS						
	2/3/2/ I	2/3/2/ J	2/3/2/ K	2/3/2/ L	2/3/2/ M	2/3/2/ N	2/3/2/ O
Course 1: Medical statistics.		✓					
Course 2: Research methodology	✓						
Course 3: Medicolegal Aspects& Ethics in Medical Practice and Scientific Research							
Course 4: Physiology 1 - Applied Human Physiology of Cardiology Neurology and Chest	✓	✓				✓	
Course 5: Physiology 2	✓	✓	✓	✓	✓	✓	✓

Course	Program covered ILOs						
	2/3/2 / P	2/3/2 / Q	2/3/2 /R	2/3/2 /S	2/3/2 /T	2/3/2 /U	2/3/2 /V
Course 1: Medical statistics.							
Course 2: Research methodology							
Course 3: Medicolegal Aspects& Ethics in Medical Practice and Scientific Research							
Course 4: Physiology 1 - Applied Human Physiology of Cardiology Neurology and Chest		✓					
Course 5: Physiology 2	✓	✓	✓	✓	✓	✓	✓

Annex 7,
Additional information:

Department information:

- Stuff members: 24
- Associated lecturers: 6
- Demonstrators: 3
- Research laboratory rooms: 3
- Student laboratory rooms: 4
- Small group teaching tutorial rooms: 2
- Secretary members: 3
- Technicians: 5

Staff members:

Chairman

Prof. Nashwa Ali Abdelmottelb Hussein.

Emeritus Professors

Prof. Dr. Minerva Kamel Fahmy Mikhail

Prof. Dr. Mahmoud Raafat Abdel-fadeil Hasan

Prof. Dr. Salwa Mohamed Selim

Prof. Dr. Ibtisam Mohamed Hassan Ali ElMileegy

Dr. Mona Farouk Mohamed Hasan Elkarn

Dr. Effat Mohamed Abdel-Moneim Mohamed

Professors

Dr. Enas Ahmed Hamed Omran

Dr. Omyma Galal Ahmed

Dr. Asmaa Farghaly Hasan Mohamed

Dr. Marwa Abdel-Aziz Ahmed Mohamed

Dr. Nashwa Ali Abdelmottelb Hussein

Dr. Ebtihal Anwar Abdel-Aziz Hasan

Dr. Hiam Gaber Sayed Abdel-Aziz

Dr. Eman Sayed Hasan Abdullah

Dr. Ghada Saad Zaghloul Ahmed

Dr. Dalia Gamal El-Din Mostafa Morsy

Assistant Professors

Dr. Salwa Ismail Ahmed Wasfi

Dr. Azza Salah El-Din Abdel-Hafiz

Dr. Manal Mohamed Kamal Abdel-Sameea

Dr. Asmaa Mohamed Sayed Gomaa

Dr. Nasser Sayed Abu Khalil Abdelstar

Dr. Sally Anwar Sayed Mohamed

Dr. Nesreen Mahmoud Abdel Radi

Dr. Heba Mohamed Galal 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. Maha bghdadi Tohamy

Dr. Fatma El-sayed Mostafa

Dr. Hasnaa Mahmoud AbdElaleam

Demonstrators

Dr. Slevia Saber Samy

Dr. Mennat Allah Abdelnaser Mahmoud

Dr. Shaimaa Abdel Gawad Ahmed

Opportunities within the department:
Training on different lab instruments, learning how to design a research protocol.

Department quality control insurance for completing the program:

- Enough stuff members
- Examinations
- Log book
- Communication with hospital
- Presence of instruments and equipped laboratory to do research work.

(End of the program)