Human Physiology Log Book

" كراســـــة الأنشـــــطة "

اللازمة لحصول المتدرب على درجة الدكتوراه
فى علم وظائف الأعضاء

2022-2023

Contents

Personal Data:

Name…….

Gender …….

Nationality …….

Date of birth……..

Address……

Place of work……

Telephones………

Mobile phone(s)……..

E mail……

Academic Information:

MBBCh University …….. ……/……/……

Grade ……

Date of MD degree registration: ……/……/……

Grade of Internal Medicine course on graduation ……..

Others:

…….. University …….. ……/……/……

…….. University …….. ……/……/……

…….. University …….. ……/……/……

* Aim of the activities book

To provide one source of evidence for the assessment committee that you attained the desired level of competency required to gain the award.

In this book you will document all clinical, academic and other experiences and skills you attained during your training.

Sections of the book

For each module / course / rotation

You should fill the following sections:-

1- Clinical/Practical experiments presentation log

1- You will first find list with all required cases/ or experiments in the concerned module and the minimum number of cases/ or experiments you must get exposed to and level of participation you should achieve for each type of cases/ or experiments.

2- You should record all clinical cases or experiments done in the module and each case/ or experiment should be signed by you trainer.

2- Clinical/Practical case presentation log

Record the cases or experiments related to the module that you have presented in a seminar or other activity.

3- Procedures log

1- You will find a list for required procedure and level of desired performance you should achieve at the end of training.

2- You will find empty tables to write down the procedure, your level of participation and date and signature of supervisor.

4- Rotation / attendance proof

You should have evidence of achievement the required training hours within each module.
For the whole program fill the following sections.

1- Academic activities

A- Document all academic activities e.g. lecture journal clubs, workshops, conferences, services attended. This documentation should include the level of participation " attendance, preparation, presentation,……"

2- Academic achievements

A- Document all outcomes you achieved in the field of:-
- Audit participation
- Research "clinical trial" participation.
- Evidence- based medicine "generation of guidelines" protocols
- ……..

3- Formative assessment log

This document all types of formative assessment attended e.g.:-
- Mini clinical examination
- Quieses

5- Program Structure

Program Time Table

Duration of program up to 4 years (could be extended to 6 years) divided into

- Part 1

Program-related essential courses
- Medical statistics
- 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.

- Thesis and 2 published researches

  For the M D 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 M D 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.

First Part

Essential Courses

Name of the course	Course
Medical statistics	Course 1
Research methodology	Course 2
Medicolegal Aspects and Ethics in Medical Practice and Scientific Research	Course 3
Physiology 1 (Applied Human Physiology of Cardiology, Neurology and Chest)	Course 4

Medical statistics

Requirements

- **Credit points: 1 credit point**
- Minimal rate of attendance 80%

Name of the course	Credit points	Responsible department	Attendance	Practical	Percentage of Achieved points
Medical statistics	1 credit point	Pubic Health & Community Medicine			100%
	0.1		Introduction 1 hour	SPSS Introduction 2H	10%
	0.1		Tables and graphics 1 Hour	Data entry and cleaning of data 2H	10%
	0.1		Sampling 1 Hour	Transforming of variables 2H	10%
	0.1		Methodology of data collection 1 Hour	Descriptive statistics 2 H	10%
	0.1		Type of variables 1 Hour	Graphic presentation 2 H	10%
	0.1		Proportion test Chi-square test 1 Hour	Chi square and interpretation of results 2 H	10%
	0.1		Student T test Paired T test 1 Hour	Student, Paired and ANOVA tests 2H	10%
	0.1		ANOVA test 1 Hour	Correlation Regression 2 Hour	10%
	0.1		Non parametric tests 1 Hour	Multiple and logistic Regression 2 H	10%
	0.1		Discrimination analysis factor analysis 1 Hour	Non parametric tests 2 H	10%
			Revision 1 H	Revision 2H	
Student signature			Principle coordinator signature		Head of the department signature

Medical Statistics

Lectures and tutorials

Date	Attendance	Topic	Signature

Research Methodology

Requirements

- **Credit points: 1 credit point**
- Minimal rate of attendance 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Research Methodology	1 credit point	Pubic Health & Community Medicine		100%
	0.15		4 hours Introduction & proposal writing	15%
	0.15		4 hours Epidemiological study designs	15%
	0.15		4 hours Screening & theoretical background	15%
	0.24		6 hours Screening practical	24%
	0.15		4 hours Sample size calculation	15%
	0.08		2 hours Research bias	8%
	0.08		2 hours Ethics in research	8%
	-		2 hours Revision	-
Student signature			**Principle coordinator signature**	**Head of the department signature**

Research Methodology

Lectures and tutorials

Date	Attendance	Topic	Signature

Course 3

Medicolegal Aspects and Ethics in Medical Practice and Scientific Research

Requirements

- **Credit points: 1 credit point**

Minimal rate of attendance 80%

Name of the course	Credit point	Credit point	Attendance	Percentage of Achieved points
Medicolegal Aspects and Ethics in Medical Practice and Scientific Research	1 credit point	Responsible department	10 hours	100
	0.5		5 hours Ethics in research	50%
	0.5		5 hours Medical ethics in practice.	50%
Student signature			Principle coordinator signature	Head of the department signature

Medicolegal Aspects and Ethics in Medical Practice and Scientific

Lectures and tutorials

Date	Attendance	Topic	Signature

Course 4

Physiology 1

(Applied Human Physiology of Cardiology, Neurology& Chest)

7 Credit points for didactic
Minimal rate of attendance 80%

Applied Human Physiology of Cardiology

Requirements

- **Credit points: 2.5 credit point**
- Minimal rate of attendance 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Physiology 1 Applied Cardiology	2.5 credit point	Cardiology		
	0. 5		5 hours • 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 (2hrs). • The metabolism of both the normal and ischemic heart (2 hrs). • Ultastructure of myocardial cell and its relation to various functions (role of ca) (1 hr).	20%
	0.5		5 hours • Normal and abnormal jugular venous pulsations (2hrs) • Normal ECG , genesis of cardiac arrthymia ,diagnosis of cardiac arrthymia ,mechanism of antiarrthymic drugs (2hrs) • Sleep apnea (1 hr)	20%
	0.5		5 hours • Autnomic dysfunction , autonomic testing hypotension and syncope (2hrs). • Various methods for evulation of systolic and diastolic functions of the heart (2hrs). • Cardiac cycle (normal hemodynamics and effect of exercise) (1 hr).	20%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
	0.5		5 hours • Normal and abnormal cardiac electrophysiology (2 hrs). • Myocardial viability (3 hrs).	20%
	0.5		5 hours • Hemostasis (thrombosis , bleeding) (2hrs). • Endothelium (function and abnormality) (3hrs)	20%
Student signature			Principle coordinator Signature	Head of the department signature

Applied Human Physiology of Cardiology (Lectures)

Date	Attendance	Topic	Signature

Applied Human Physiology of Neurology

Requirements

- **Credit points: 3 credit point**
- Minimal rate of attendance 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Physiology 1 Neurology	1	Neurology	10 hours - Normal EEG. - Normal Different modalities of evoked potentials.	33.3%
	0.5		5 hours - NCVs, F-wave, H -reflexes.	16.7%
	0.5		5 hours - Physiology and patho-physiology of Spinal cord lesions. - Physiology and patho-physiology different levels of hemiplegia.	16.7%
	0.5		5 hours - Physiology and patho-physiology of ataxia (sensory and cerebellar ataxia) - Physiology and patho-physiology of extrapyramidal system lesions.	16.7%
	0.5		5 hours - Normal EMG.	16.6%
Student signature			Principle coordinator signature	Head of the department signature

Applied Human Physiology of Neurology (Lectures)

Date	Attendance	Topic	Signature

Applied Human Physiology of Chest

Requirements

- **Credit points: 1.5 credit point**
- Minimal rate of attendance 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Physiology 1 Chest	0.5	Chest	5 hours - Respiratory cycle, its mechanism, intra-pleural pressure. - Work of breath and surfactant. - Gas transport in blood (oxygen dissociation curve and CO_2 curve).	33.3%
	0.5		5 hours - Regulation of normal respiration. - Disorders of the respiratory system as dyspnea , hypoxia and cyanosis - Pneumonia. - Asthma.	33.3%
	0.5		5 hours - Pulmonary Blood Flow, and Ventilation-Perfusion Relationships - Hypercapnea. - Acid base balance and Acid-base disturbances.	33.3%
Student signature			Principle coordinator signature	Head of the department signature

Applied Human Physiology of Chest (Lectures)

Date	Attendance	Topic	Signature

Physiology 2

Units' Titles' list	% from total Marks	Level (Year)	Core Credit points		
			Didactic	training	Total
1) Unit 1 "The cell and General Physiology"	0.93%	2	1	-----	1
2) Unit 2 "Physiology of Cardiovascular System"	17.28%	2, 3& 4	3.5	15	18.5
3) Unit 3 "Physiology of Muscle and Nerve"	7%	2	1.5	6	7.5
4) Unit 4 " Physiology of Central Nervous System"	16.8%	2, 3& 4	3	15	18
5) Unit 5 "Physiology of Special Sense"	8.41%	3	2	7	9
6) Unit 6 "Physiology of Autonomic Nervous System"	0.93%	3	1	------	1
7) Unit 7 "Physiology of Endocrine and Reproduction"	13.55%	2, 3& 4	3.5	11	14.5
8) Unit 8 "Physiology of Digestion"	7%	3& 4	2.5	5	7.5
9) Unit 9 "Physiology of Respiration"	6.07%	3& 4	1.5	5	6.5
10) Unit 10 "Aviation, High-Altitude, and Space Physiology"	0.46%	4	0.5	-----	0.5
11) Unit 11 "Physiology of General Metabolism "	5.6%	4	1	5	6
12) Unit 12 "Physiology of Blood and Immunity"	9.57%	4	1.25	9	10.25
13) Unit 13 "Physiology of Kidney and Body Fluids"	6.07%	4	1.5	5	6.5
14) Unit 14 "Sports Physiology"	0.23%	4	0.25	-----	0.25
Total No. of Units: 14			24	83	107

Unit (Module) 1
The cell
and
General Physiology

Requirements

- **Credit points:** 1 credit point for didactic (lectures, seminars, tutorial) and 0 point for training.

- Minimal rate of attendance 80% of training and didactic

(Didactic 1 credit point)

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Cell physiology	1	**Physiology department**	Year 2	
	0.25		2.5 hours by the candidate ➢ 1-Functional organization of the human body and control of internal environment.	25%
	0.25		2.5 hours ➢ 2- The cell and its function	25%
	0.5		5 hours ➢ 3- Genetic control of protein synthesis, cell function and reproduction	50%
Student signature			Principle coordinator Signature	Head of the department Signature

The cell and general physiology (Lectures)

Date	Attendance	Topic	Signature

Unit (Module) 2

Cardiovascular system

3.5 credit points for didactic

15 credit points for training

Minimal rate of attendance 80%

Year 2, 3 & 4

(3.5 credit points for didactic)

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Cardio-vascular system	3.5	Physiology		
			Topics and attendance	
			Year 2	
	0.25		1.25 hours by the candidate 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	7.14%
	0.25		2.5 hours 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 4- Electrocardiographic Leads 5-	7.14%
	0.25		2.5 hours 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	7.14%

	0.25		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 2.5 hours 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	7.14%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit2			**Year 3**	
	0.25		2.5 hours 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	7.14%
	0.25		2.5 hours 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	7.14%
	0.25		2.5 hours Nervous regulation of the circulation and rapid control of arterial pressure. 1- Nervous Regulation of the Circulation	7.14%

	0.25		2- Role of the Nervous System in Rapid Control of Arterial Pressure 3- Special Features of Nervous Control of Arterial Pressure 2.5 hours 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	7.14%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
			Year 4	
	0.25		2.5 hours 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	7.14%
	0.25		2.5 hours 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	7.14%
	0.25		2.5 hours Cardiac Failure 1- Dynamics of the Circulation in Cardiac Failure 2- Edema in Patients with Cardiac Failure 3- Cardiac Reserve	7.14%
	0.25		1.25 hours by the candidate Heart Valves and Heart Sounds Dynamics of Valvular and Congenital Heart Defects 1- Heart Sounds 2- Abnormal Circulatory Dynamics	7.14%

			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	
	0.25		**Seminars** ➢ Attendance of at least 50% of the clinical seminars ➢ Presentation of at least 1 time in the seminar	**7.16%**
	0.25		**Formative assessment (year2,3,&4)**	**7.16%**
Student signature			Principle coordinator Signature	Head of the department Signature

Cardiovascular system (Lectures)

Date	Attendance	Topic	Signature

Year 2 (Training 5 credit points)

Clinical training	Credit points	Responsible department	Attendance	Clinical training
Clinical training in Physiology department	2	Physiology department	Attendance in the lab for at least 6 days per week for 2 weeks to perform the following tests and experiments: ➢ Isolated perfuse heart (rabbit & frog) experiments and determined factors affecting them ➢ Recording of arterial blood pressure in humans and experimental animals. ➢ Recording of heart rates in humans and experimental animals. ➢ Recording of normal electrocardiograph (ECG) in humans and experimental animals. ➢ Recording of abnormal electrocardiograph (ECG) in humans and experimental animals. ➢ Recording the effect of cholinergic and adrenergic drugs on blood pressure, heart rate, ECG in experimental animals. ➢ Procedures log as mentioned below	40%
		1	➢ Attendance of at least 2 weeks in the department (3 hours /day) for recording of ECG.	20%
		1.5	☒ Attend academic teaching for students 2 hours /week for 22 weeks. Pacemaker of the heart. Extracystole., Heart block. & ECG	30%
		0.5	☒ Formative assessment	10%
Student signature			Principle coordinator Signature	Head of the department Signature

Year 3 (Training 5 credit points)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in Physiology department	2	Physiology department	Attendance in the lab for at least 6 days per week for 2 weeks to perform the following tests and experiments: ➢ Isolated perfuse heart (rabbit & frog) experiments and determined factors affecting them ➢ Recording of arterial blood pressure in humans and experimental animals. ➢ Recording of heart rates in humans and experimental animals. ➢ Recording of normal electrocardiograph (ECG) in humans and experimental animals. ➢ Recording of abnormal electrocardiograph (ECG) in humans and experimental animals. ➢ Recording the effect of cholinergic and adrenergic drugs on blood pressure, heart rate, ECG in experimental animals. ➢ Procedures log as mentioned below	40%
	1		➢ Attendance of at least 2 weeks in the department (3 hours /day) for recording of ECG.	20%
	1.5		☒ Attend academic teaching for students 2 hours /week for 22 weeks. Pacemaker of the heart. Extracystole., Heart block. & ECG	30%
	0.5		☒ Formative assessment	10%
Student signature			Principle coordinator Signature	Head of the department signature

Year 4 (Training 5 credit points)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in Physiology department	2	Physiology department	Attendance in the lab for at least 6 days per week for 2 weeks to perform the following tests and experiments: ➢ Isolated perfuse heart (rabbit & frog) experiments and determined factors affecting them ➢ Recording of arterial blood pressure in humans and experimental animals. ➢ Recording of heart rates in humans and experimental animals. ➢ Recording of normal electrocardiograph (ECG) in humans and experimental animals. ➢ Recording of abnormal electrocardiograph (ECG) in humans and experimental animals. ➢ Recording the effect of cholinergic and adrenergic drugs on blood pressure, heart rate, ECG in experimental animals. ➢ Procedures log as mentioned below	40%
	1		➢ Attendance of at least 2 weeks in the department (3 hours /day) for recording of ECG.	20%
	1.5		☒ Attend academic teaching for students 2 hours /week for 22 weeks. Pacemaker of the heart. Extracystole., Heart block. & ECG	30%
	0.5		☒ Formative assessment	10%
Student signature			Principle coordinator Signature	Head of the department signature

Procedures log of (year 2, 3&4)

Case	Number
➢ Isolated perfuse heart (rabbit & frog) experiments and determined factors affecting them	5 experiments
➢ Recording of arterial blood pressure in humans and experimental animals.	5 experiments
➢ Recording of heart rates in humans and experimental animals.	5 experiments
➢ Recording of normal electrocardiograph (ECG) in humans and experimental animals.	5 experiments
➢ Recording of abnormal electrocardiograph (ECG) in humans and experimental animals.	5 experiments
➢ Recording the effect of cholinergic and adrenergic drugs on blood pressure, heart rate, ECG in experimental animals.	5 experiments

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

A- Independent performance

B- Performance under supervision

C- Observed

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

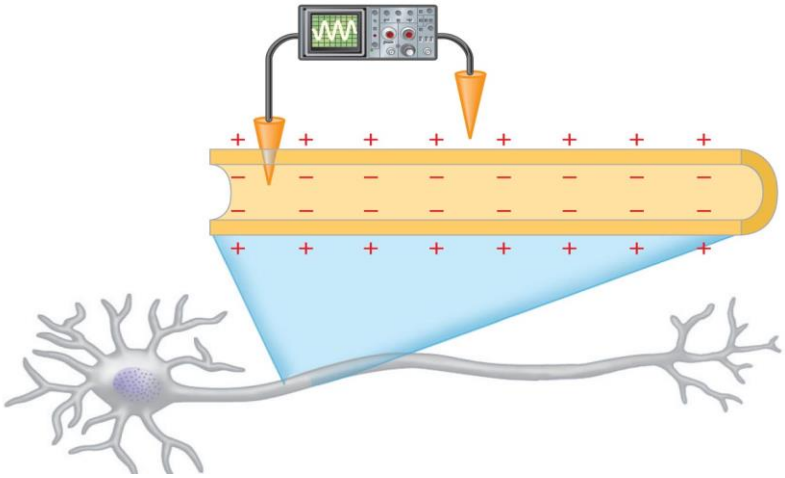
A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 3

Muscle and nerve



Year 2

1.5 credit point for didactic

6 points for training

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 3 muscle and nerve	1.5	Physiology	Year 2	
			Topics and attendance	
	0.25		1.25 hours by the candidates 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	16.7%
	0.5		5 hours 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	33.3 %

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 6	0.25	Physiology	2.5 hours Section 4: 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	16.7%
	0.25		2.5 hours Section 5: Excitation of Skeletal Muscle: Neuromuscular 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 Coupling	16.7%
	0.25		2.5 hours 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	16.6%
Student signature			Principle coordinator Signature	Head of the department signature

Muscle and nerve (Lectures)

Date	Attendance	Topic	Signature

Year 2 (6 credit point for training in Unit 3)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in Physiology department	3	Physiology department	Attendance of physiology lab for 2 days /week for 9 weeks to perform the following experiments ➢ Preparation of model of nerve and muscle. ➢ Studying different factors affecting nerve excitation and skeletal muscles contraction. ➢ Procedures log as mentioned below	50%
	2		☒ Attend academic teaching for students 2 hours /week for 30 weeks. - Simple muscle twitch. - Factors affecting simple muscle twitch. - Effect of two & multiple successive stimuli. - Factors affecting clonus.	33.3 %
	1		☒ Formative assessment	16.7%
Student signature			Principle coordinator Signature	Head of the department signature

Procedures log of:

Case	Number
➢ Preparation of model of nerve and muscle.	5 experiments
➢ Factors affecting simple muscle twitch.	5 experiments
➢ Effect of two & multiple successive stimuli.	5 experiments
➢ Factors affecting clonus.	5 experiments

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

A- Independent performance

B- Performance under supervision

C- Observed

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 4

Physiology

of central nervous system

3 credit points for didactic

15 credit point for training

Minimal rate of attendance 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 4	3	Physiology		
			Topics	
			Year 2	
	0.25		1.25 hours by the candidate 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	8.3 %
	0.25	Physiology	2.5 hours 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.	8.3 %
	0.5	Physiology	5 hours Section 3: Somatic sensation: general organization, the tactile and position sense: 1. Detection and Transmission of Tactile Sensations 2. Sensory Pathways for Transmitting	16.7%

			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	

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
CNS		Physiology	**Topics**	
			Year 3	
	0.5		5 hours 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	16. 7%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
CNS		Physiology	**Topics**	
			Year 4	
	1		10 hours 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	33.3 %
	0.25		**Seminars** ➢ Attendance of at least 50% of the clinical seminars ➢ Presentation of at least 1 time in the seminar	8.3%
	0.25		**Formative assessment**	8.4%
Student signature			Principle coordinator Signature	Head of the department signature

CNS (Lectures)

Date	Attendance	Topic	Signature

Year 2 (5 credit point for training in Unit 4)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in Physiology department	2	Physiology department	Attendance of physiology lab for 2 days /week for 6 weeks and performing the following experiments: ➢ Examination of cranial nerves ➢ Examination of sensory nervous system ➢ Examination of motor nervous system ➢ Co-ordination tests and tests of examination of vestibular apparatus.	40%
	1.5		➢ Attend academic teaching for students 2 hours /week for 22 weeks (Examination of cranial nerves, sensory, motor nervous system. ➢ Co-ordination tests and tests of examination of vestibular apparatus.	30%
	1.5		➢ Attendance of at least 4 weeks in the department (2 hours /day) for recording of : ➢ Recording of normal electro-encephalograph ➢ Recording of abnormal electro-encephalograph ➢ Recording of normal electro-myograph ➢ Recording of abnormal electro-myograph ➢ Recording of nerve conduction velocity	30%
Student signature			Principle coordinator Signature	Head of the department signature

Year 3 (5 credit point for training in Unit 4)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in Physiology department	2	Physiology department	Attendance of physiology lab for 2 days /week for 4 weeks and performing the following experiments: ➢ Examination of cranial nerves ➢ Examination of sensory nervous system ➢ Examination of motor nervous system ➢ Co-ordination tests and tests of examination of vestibular apparatus.	40%
	1.5		➢ Attend academic teaching for students 2 hours /week for 22 weeks (Examination of cranial nerves, sensory, motor nervous system. ➢ Co-ordination tests and tests of examination of vestibular apparatus.	30%
	1.5		➢ Attendance of at least 4 weeks in the department (2 hours /day) for recording of : ➢ Recording of normal electro-encephalograph ➢ Recording of abnormal electro-encephalograph ➢ Recording of normal electro-myograph ➢ Recording of abnormal electro-myograph ➢ Recording of nerve conduction velocity	30%
Student signature			Principle coordinator Signature	Head of the department signature

Year 4 (5 credit point for training in Unit 4)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in Physiology department	2	Physiology department	Attendance of physiology lab for 2 days /week for 4 weeks and performing the following experiments: ➢ Examination of cranial nerves ➢ Examination of sensory nervous system ➢ Examination of motor nervous system ➢ Co-ordination tests and tests of examination of vestibular apparatus.	40%
	1.5		➢ Attend academic teaching for students 2 hours /week for 22 weeks (Examination of cranial nerves, sensory, motor nervous system. ➢ Co-ordination tests and tests of examination of vestibular apparatus.	30%
	1.5		➢ Attendance of at least 4 weeks in the department (2 hours /day) for recording of : ➢ Recording of normal electro-encephalograph ➢ Recording of abnormal electro-encephalograph ➢ Recording of normal electro-myograph ➢ Recording of abnormal electro-myograph ➢ Recording of nerve conduction velocity	30%
Student signature			Principle coordinator Signature	Head of the department signature

Procedure cases log (year 2, 3 and 4)

Log of:

Case	Number
➢ Recording of normal electro-encephalograph	5 experiments
➢ Recording of abnormal electro-encephalograph	5 experiments
➢ Recording of normal electro-myograph	5 experiments
➢ Recording of abnormal electro-myograph	5 experiments
➢ Recording of nerve conduction velocity	5 experiments

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 5

Physiology of special sense

2 credit points for didactic

7 credit points for training

Minimal rate of attendance 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 5	0.25	Physiology	2.5 hours 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	12.5%
	0.5	Physiology	5 hours 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	25%
	0.25	Physiology	2.5 hours 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	12.5%
	0.75	Physiology	7.5 hours Section 4: The Sense of Hearing 1. Tympanic Membrane and the Ossicular System 2. Cochlea 3. Central Auditory Mechanisms 4. Hearing Abnormalities:	37.5%
	0.25		2.5 hours by the candidate Section 5: The Chemical Senses-Taste and Smell: 1. Sense of Taste 2. Sense of Smell	12.5%
Student signature			Principle coordinator Signature	Head of the department signature

Special sense (Lectures)

Date	Attendance	Topic	Signature

Year 3

(7 credit points for training in Unit 5)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	4	physiology department	Attendance of physiology Lab for 4weeks and performing the following experiments: ➢ Examination of extra-ocular muscles ➢ Examination of visual field ➢ Determination of visual acuity ➢ Examination of the fundus ➢ Examination of intra-ocular pressure ➢ Examination of color vision ➢ Examination of hearing tests by tuning fork ➢ Recording of audiometer	57.1%
	2		➢ Attend academic teaching for students 4 hours /week for 15 weeks for: ➢ Examination of extra-ocular muscles ➢ Examination of visual field ➢ Determination of visual acuity ➢ Examination of the fundus ➢ Examination of intra-ocular pressure ➢ Examination of color vision ➢ Examination of hearing tests by tuning fork	28.6%
	1		☒ Formative assessment	14.3%
Student signature			Principle coordinator Signature	Head of the department signature

Procedure cases log

Log of:

Case	Number
➢ Examination of extra-ocular muscles	5 experiments
➢ Examination of visual field	5 experiments
➢ Determination of visual acuity	5 experiments
➢ Examination of the fundus	5 experiments
➢ Examination of intra-ocular pressure	5 experiments
➢ Examination of color vision	5 experiments
➢ Examination of hearing tests by tuning fork	5 experiments
➢ Recording of audiometer	5 experiments

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 6

Physiology of autonomic nervous system

1 credit point for Didactic

0 points for training

Minimal rate of attendance 80%

Year 3

(1 credit point)

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 6	0.5	Physiology	5 hours by the candidate 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	50%
	0.5	Physiology	5 hours 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 "Stress" 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	50%
Student signature			Principle coordinator Signature	Head of the department signature

Autonomic nervous system (Lectures)

Date	Attendance	Topic	Signature

Unit (Module) 7

"Physiology of Endocrine and Reproduction"

3.5 credit points for didactic

11 credit points for training

Minimal rate of attendance 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 7	3.5	Physiology		
			Topics	
			Year 2	
	0.25		1.25 hours by the candidate 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	7.1%
	0.5	Physiology	5 hours 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	14.3%
	0.25	Physiology	2.5 hours 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.	7.1%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 7		Physiology	**Topics**	
			Year 3	
	0.25		2.5 hours Section4: 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	7.1%
	0.5		5 hours 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 6. COVID-19 and diabetes mellitus: pathophysiology	14.3%
	0.25	Physiology	2.5 hours 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	7.1 %

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 7		Physiology	**Topics**	
			Year 4	
	0.5		5 hours 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 6. Pineal Gland-Its Function in Controlling Seasonal Fertility in Some Animals	14.3%
	0.5	Physiology	5 hours 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 8. Female Fertility Animals	14.3%
	0.25	Physiology	1.25 hours by the candidate 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	7.2%

			7. Lactation	
	0.25	Physiology	2.5 hours 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	7.2%
Student signature			Principle coordinator Signature	Head of the department signature

Endocrine and reproduction (Lectures)

Date	Attendance	Topic	Signature

Year 2

(3.6 credit point for training in Unit 7)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	2.6	Physiology department	Attendance of physiology lab for 3 days/week for 5 weeks and performing the following experiments: ➢ Measurement of different hormones. ➢ Assessment of functions of different hormones. ➢ Methods of determination of testicular function tests. ➢ Methods of determination of ovulation time. ➢ Methods of determination of pregnancy.	72.2%
	0.5		Attend academic teaching for students 4 hours /week for 4 weeks for: ➢ Methods of determination of testicular function tests ➢ Methods of determination of ovulation time ➢ Methods of determination of pregnancy	13.9%
	0.5		☒ Formative assessment	13.9%
Student signature			Principle coordinator Signature	Head of the department signature

Year 3 (3.6 credit point for training in Unit 7)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	2.6	Physiology department	Attendance of physiology lab for 3 days/week for 5 weeks and performing the following experiments: ➢ Measurement of different hormones. ➢ Assessment of functions of different hormones. ➢ Methods of determination of testicular function tests. ➢ Methods of determination of ovulation time. ➢ Methods of determination of pregnancy.	72.2%
	0.5		Attend academic teaching for students 4 hours /week for 4 weeks for: ➢ Methods of determination of testicular function tests ➢ Methods of determination of ovulation time ➢ Methods of determination of pregnancy	13.9%
	0.5		☒ Formative assessment	13.9%
Student signature			Principle coordinator Signature	Head of the department signature

Year 4 (3.6 credit point for training in Unit 7)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	2.6	Physiology department	Attendance of physiology lab for 3 days/week for 5 weeks and performing the following experiments: ➢ Measurement of different hormones. ➢ Assessment of functions of different hormones. ➢ Methods of determination of testicular function tests. ➢ Methods of determination of ovulation time. ➢ Methods of determination of pregnancy.	72.2%
	0.5		Attend academic teaching for students 4 hours /week for 4 weeks for:: ➢ Methods of determination of testicular function tests ➢ Methods of determination of ovulation time ➢ Methods of determination of pregnancy	13.9%
	0.5		☒ Formative assessment	13.9%
Student signature			Principle coordinator Signature	Head of the department signature

Procedure cases log

Log of (year 2, 3 and 4):

Case	Number
➢ Measurement of different hormones.	5 experiments
➢ Assessment of functions of different hormones.	5 experiments
➢ Methods of determination of testicular function tests.	5 experiments
➢ Methods of determination of ovulation time.	5 experiments
➢ Methods of determination of pregnancy.	5 experiments

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

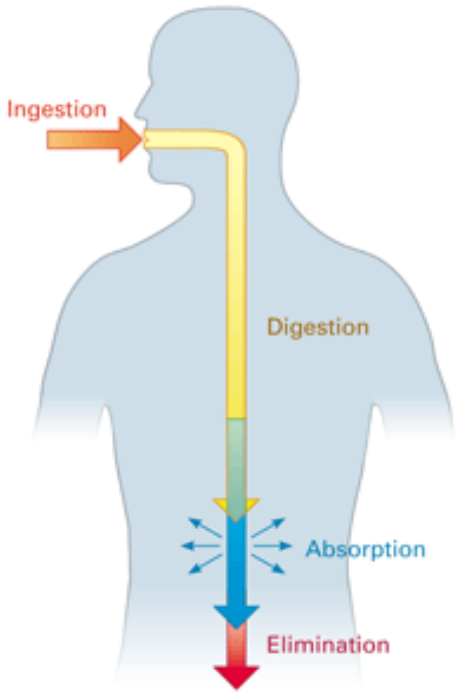
A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 8

"Physiology of Digestion"



2.5 credit point for didactic

5 credit point for training

Minimal rate of attendance is 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 8	2.5	Physiology		
			Topics	
			Year 3	
	0.5		2.5 hours by the candidate 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"	20%
	0.5	Physiology	5 hours 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	20%
	0.5	Physiology	5 hours Section3: 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	20%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 8		Physiology	**Topics**	
			Year 4	
	0.5	Physiology	5 hours Section4: 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	20%
	0.5	Physiology	5 hours 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	20%
Student signature			Principle coordinator Signature	Head of the department signature

Digestion (Lectures)

Date	Attendance	Topic	Signature

Year 3

(2.5 credit point for training in Unit 8)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	2	Physiology department	Attendance of physiology lab for 2 weeks to perform the following: ➢ Making different models of gastrointestinal tract (5 times). ➢ Recording factors affecting GIT contractility, secretion and motility (5 experiments).	80%
	0.5		☒ Formative assessment	20%
Student signature			Principle coordinator Signature	Head of the department signature

Year 4 (2.5 credit point for training in Unit 8)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	2	Physiology department	Attendance of physiology lab for 2 weeks to perform the following: ➢ Making different models of gastrointestinal tract (5 times). ➢ Recording factors affecting GIT contractility, secretion and motility (5 experiments).	80%
	0.5		☒ Formative assessment	20%
Student signature			Principle coordinator Signature	Head of the department signature

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

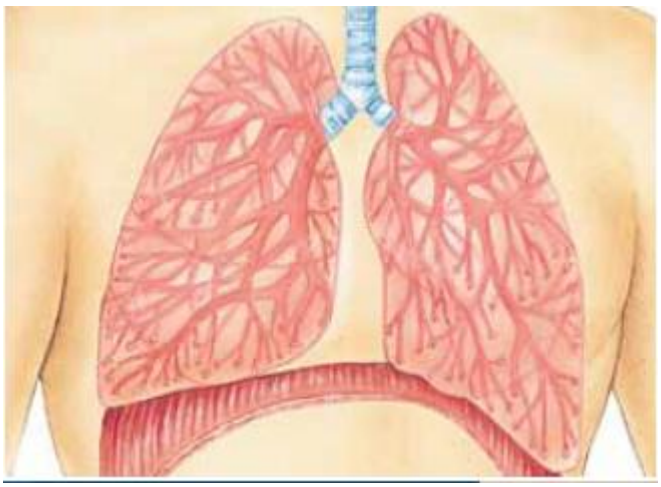
A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 9

"Physiology of Respiration"



1.5 credit point for didactic

5 credit points for training

Minimal rate of attendance is 80%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 9	1.5	Physiology		
			Topics	
			Year 3	
	0.25		1.25 hours by the candidate 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	16.7%
	0.25	Physiology	2.5 hours 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	16.7%
	0.25	Physiology	2.5 hours Section3: 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	16.7%

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 9		Physiology	**Topics**	
			Year 4	
	0.25	Physiology	2.5 hours Section4: 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	16.7%
	0.25	Physiology	2.5 hours Section 5: Regulation of Respiration : Respiratory Center Chemical Control of Respiration Peripheral Chemoreceptor System for Control of Respiratory Activity-Role of Oxygen in Respiratory Control Regulation of Respiration During Exercise Other Factors That Affect Respiration	16.6%
	0.25	Physiology	2.5 hours Section 6: Regulation of Respiration : 1. Respiratory Insufficiency-Pathophysiology, Diagnosis, Oxygen Therapy 2. Physiologic Peculiarities of Specific Pulmonary Abnormalities 3. Hypoxia and Oxygen Therapy 4. Pathophysiology of COVID-19 on respiratory system 5. Respiratory function in patients post infection by COVID-19 6. Physiological disorders of COVID-19 associated with acute respiratory distress syndrome.	16.6%

Respiration (Lectures)

Date	Attendance	Topic	Signature

Year 3 (2.5 credit points)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	1	Physiology department	Attendance of physiology lab for 1 week and perform the following tests ➢ Pulmonary functions tests in human and experimental animals (5 times)	40%
	1		Attend academic teaching for students 4 hours /week for 7. 5 weeks for: ➢ Pulmonary functions tests in human and experimental animals	40%
	0.5		☒ Formative assessment	20%
Student signature			Principle coordinator Signature	Head of the department signature

Year 4 (2.5 credit points)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	1	Physiology department	Attendance of physiology lab for 1 week and perform the following tests ➢ Pulmonary functions tests in human and experimental animals (5 times)	40%
	1		➢ Attend academic teaching for students 4 hours /week for 7. 5 weeks for: ➢ Pulmonary functions tests in human and experimental animals	40%
	0.5		☒ Formative assessment	20%
Student signature			Principle coordinator Signature	Head of the department signature

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 10

"Physiology of Aviation, Space, and Deep-Sea Diving Physiology"

0.5 Credit point for didactic

0 points for training

Minimal rate of attendance 80%

Year 4

0.5 credit points

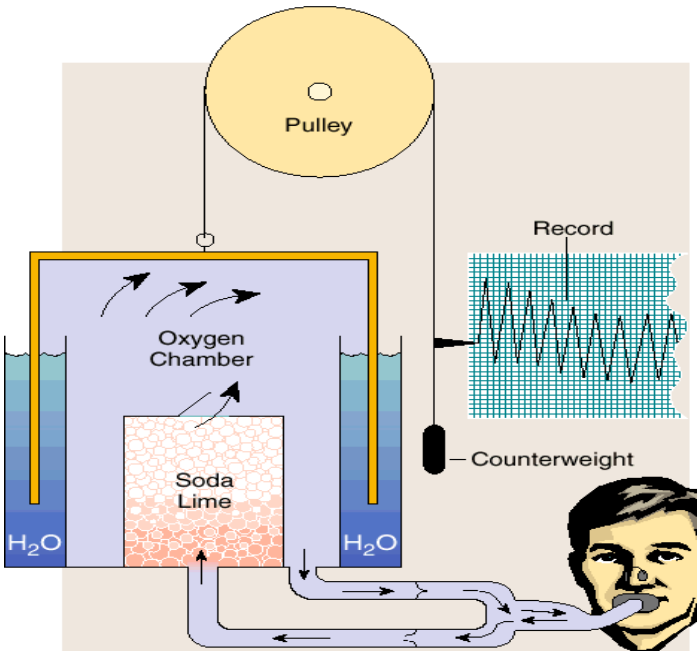
Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 10	0.5	Physiology	5 hours Section 1: Aviation, Space, and Deep-Sea Diving Physiology: 1. Effects of Low Oxygen Pressure on the Body 2. Acute Mountain Sickness and High-Altitude Pulmonary Edema 3. Effects 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 Section 2: Physiology of Deep-Sea Diving and Other Hyperbaric Conditions: 1. Physiology of Deep-Sea Diving and Other Hyperbaric Conditions Effect of High Partial Pressures of Individual Gases on the Body 2. Effect of High Partial Pressures of Individual Gases on the Body 3. Nitrogen Narcosis at High Nitrogen Pressures 4. Hyperbaric Oxygen Therapy	100%
Student signature			Head of the department signature	Principle coordinator Signature

Aviation, Space, and Deep-Sea Diving Physiology (Lectures)

Date	Attendance	Topic	Signature

Unit (Module) 11

"Physiology of Metabolism & REGULATION OF BODY TEMPERATURE"



1 credit point for didactic

5 credit point for training

Minimal rate of attendance

Year 4

1 credit points

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 7	0.25	Physiology	2.5 hours by the candidate 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	25%
	0.25	Physiology	2.5 hours Section3: 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	25%

			8. Inanition, Anorexia, and Cachexia 9. Starvation 10. Vitamins 11. Mineral Metabolism	
	0.25	Physiology	2.5 hours Section4: 1. 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	25%
	0.25	Physiology	2.5 hours 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	25%
Student signature			Head of the department signature	Principle coordinator Signature

Physiology of General Metabolism (Lectures)

Date	Attendance	Topic	Signature

Year 4 (5 credit points)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	2	Physiology department	Attendance of physiology lab for 2 weeks and performing the following ➢ Estimation of indirect basal metabolic rate (5 times)	40%
	2		➢ Attend academic teaching for students 8 hours /week for 7.5 weeks for: Estimation of direct and indirect basal metabolic rate	40%
	1		☒ Formative assessment	20%
Student signature			Principle coordinator Signature	Head of the department signature

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

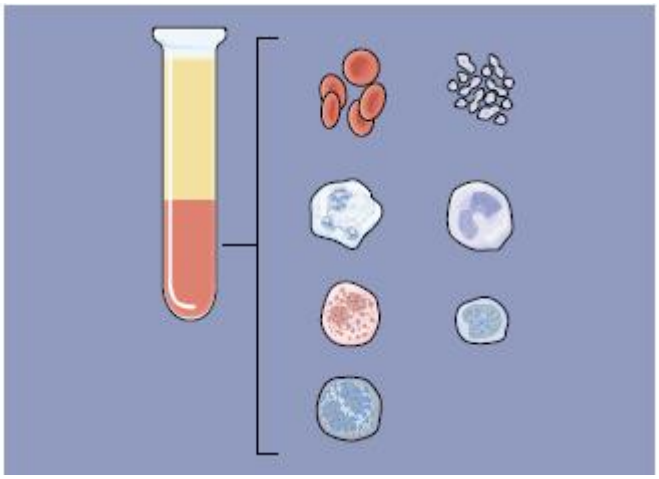
A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 12

Blood and immunity



1.25 credit point for didactic

9 credit point for training

Minimal rate of attendance is 80%

Year 4

1.25 credit points for didactic

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 12	0.25	Physiology	2.5 hours 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	20%
	0.25	Physiology	2.5 hours 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	20%
	0.25	Physiology	2.5 hours Section3: Resistance of the Body to Infection: II. Immunity and Allergy : 1. Innate Immunity 2. Acquired Immunity 3. Allergy and hypersensitivity	20%
	0.25	Physiology	2.5 hours Section4: Blood Types; Transfusion; Tissue and Organ Transplantation: 1. Antigenicity Causes Immune Reactions of Blood 2. O-A-B Blood Types 3. Rh Blood Types	20%

			4. Rh Immune Response 5. Transfusion Reactions Resulting from Mismatched Blood Types 6. Transplantation of Tissues and Organs	
	0.25	Physiology	2.5 hours 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	20%
Student signature			Head of the department signature	Principle coordinator Signature

Physiology of Blood & immunity (Lectures)

Date	Attendance	Topic	Signature

Year 4 (9 credit points for training)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in physiology department	6	Physiology department	Attendance of physiology lab for 6 weeks to perform the following experiments ➢ Assessment of hemoglobin contents (5 times). ➢ Assessment of bleeding time, coagulation time, prothrombin time (5 times). ➢ Assessment of Erythrocytic sedimentation rate (5 times). ➢ Determination of blood groups (5 times). ➢ Assessment of blood hemolysis (5 times). ➢ Determination of different blood indices in human (5 times).	66.7%
	2		Attend academic teaching for students 8 hours /week for 8 weeks for: ➢ Estimation of hemoglobin contents. ➢ Assessment of bleeding time, coagulation time, prothrombin time. ➢ Assessment of Erythrocytic sedimentation rate. ➢ Determination of blood groups. ➢ Assessment of osmotic fragility test.	22.2%
	1		☒ Formative assessment	11.1%
Student signature			Principle coordinator Signature	Head of the department signature

Procedure cases log

Log of:

Case	Number
➢ Assessment of hemoglobin contents.	5 experiments
➢ Assessment of bleeding time, coagulation time, prothrombin time.	5 experiments
➢ Assessment of Erythrocytic sedimentation rate .	5 experiments
➢ Determination of blood groups .	5 experiments
➢ Assessment of blood hemolysis .	5 experiments
➢ Determination of different blood indices in human.	5 experiments

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 13

"Physiology of Kidney and Body Fluids"

1.5 credit point for didactic

5 credit points for training

Minimal rate of attendance 80%

Year 4

1.5 credit points for didactic

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 13	0.25	Physiology	2.5 hours 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 .	16.6%
	0.25	Physiology	2.5 hours 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	16.6%

			10. Autoregulation of GFR and Renal Blood Flow	
	0.25	Physiology	2.5 hours 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	16.7%
	0.25	Physiology	2.5 hours 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 .	16.7%
	0.25	Physiology	2.5 hours 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	16.7%

			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	
	0.25	Physiology	2.5 hours Section 6: Regulation of Acid-Base Balance: 1. Bicarbonate Buffer System 2. Phosphate Buffer System 3. Proteins: Important Intracellular Buffers 4. Respiratory Regulation of Acid-Base Balance 5. Renal Control of Acid-Base Balance 6. Quantifying Renal Acid-Base Excretion 7. Renal Correction of Acidosis 8. Renal Correction of Alkalosis- 9. Clinical Causes of Acid-Base Disorders 10. Treatment of Acidosis or Alkalosis Section 7: Kidney Diseases and Diuretics: 1. Diuretics and Their Mechanisms of Action 2. Acute Renal Failure 3. Chronic Renal Failure	16.7%
Student signature			Head of the department signature	Principle coordinator Signature

Year 4 (5 credit points for training)

Clinical training	Credit points	Responsible department	Attendance	Percentage of Achieved points
Clinical training in Physiology department	4	Physiology department	Attendance of physiology lab for 4 weeks to perform the following tests ➢ Assessment of kidney functions as urine and blood analysis and clearance tests. ➢ Measurement of glomerular filtration rate. ➢ Measurement of renal blood flow. ➢ Assessment of tubular functions.	80%
	0.5		Attend academic teaching for students 2 hours /week for 8 weeks. Assessment of kidney functions as urine and blood analysis and clearance tests.	10%
	0.5		Formative assessment	10%
Student signature			Principle coordinator Signature	Head of the department signature

Procedures log of:

Case	Number
➢ Assessment of kidney functions as urine and blood analysis and clearance tests.	5 experiments
➢ Measurement of glomerular filtration rate.	5 experiments
➢ Measurement of renal blood flow .	5 experiments
➢ Assessment of tubular functions.	5 experiments

Procedures log book

NO	Procedure	Level of competency*	Location	Signature

* Level of competency

A- Independent performance

B- Performance under supervision

C- Observed

Unit (Module) 14

"Sport Physiology "

0.25 Credit point for didactic

Year 4

0.25 credit points

Name of the course	Credit points	Responsible department	Attendance	Percentage of Achieved points
Unit 14	0.25	Physiology	2.5 hours Section 1: sport physiology	100%

Attendance

Date	Attendance	Topic	Signature

B- Seminars log book

First: Attendance

Date	Attendance	Topic	Signature

Post graduate teaching

First: lectures

Date	Title of lecture	Signature of Staff member

Post graduate teaching

First: lectures

Date	Title of lecture	Signature of Staff member

Post graduate teaching
Second: Tutorial

Date	Title of Tutorial	Signature of Staff member

Post graduate teaching
Second: Tutorial

Date	Title of Tutorial	Signature of Staff member

Post graduate teaching
Practical Teaching

Date	Title of Clinical Teaching	Signature of Staff member

Post graduate teaching
Third: practical Teaching

Date	Title of Clinical Teaching	Signature of Staff member

Practical Teaching for undergraduate Students

Date	Title of practical section	Signature of Staff member

Practical Teaching for undergraduate Students

Date	Title of practical section	Signature of Staff member

Practical Teaching for undergraduate Students

Date	Title of practical section	Signature of Staff member

Practical Teaching for undergraduate Students

Date	Title of practical section	Signature of Staff member

Practical Teaching for undergraduate Students

Date	Title of practical section	Signature of Staff member

Practical Teaching for undergraduate Students

Date	Title of practical section	Signature of Staff member

Postgraduate student's program
Rotation in training assessment

**** Name:***

**** Period of training From:***

To:

**** Site:***

****Rotation***

General skills	could not judge (0)	strongly disagree(1)	(2)	(3)	(4)	(5)	(6)	strongly agree (7)
Demonstrate the competency of continuous evaluation of different types of care provision to patients in the different area of his field.								
Appraise scientific evidence.								
Continuously improve patient care based on constant self-evaluation and life long learning.								
Participate in clinical audit and research projects.								

General skills	could not judge (0)	strongly disagree(1)	(2)	(3)	(4)	(5)	(6)	strongly agree (7)
Practice skills of evidence-based Medicine (EBM).								
Educate and evaluate students, residents and other health professionals.								
Design logbooks.								
Design clinical guidelines and standard protocols of management.								
Appraise evidence from scientific studies related to the patients' health problems.								
Apply knowledge of study designs and statistical methods to the appraisal of clinical studies.								
Use information technology to manage information, access on- line medical information; for the important topics.								
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.								

General skills	could not judge (0)	strongly disagree(1)	(2)	(3)	(4)	(5)	(6)	strongly agree (7)
Create and sustain a therapeutic and ethically sound relationship with patients.								
Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.								
Work effectively with others as a member or leader of a health care team or other professional group.								
Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.								
Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.								
Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.								
Work effectively in health care delivery settings and systems related to specialty including good administrative and time management.								
Practice cost-effective healthcare and resource allocation that does not compromise quality of care.								

General skills	could not judge (0)	strongly disagree(1)	(2)	(3)	(4)	(5)	(6)	strongly agree (7)
Advocate for quality patient care and assist patients in dealing with system complexities.								
Design, monitor and evaluate specification of under and post graduate courses and programs.								
Act as a chair man for scientific meetings including time management								

Elective Course 1

Requirements

- **Credit points:** 1.5 credit point.

- Minimal rate of attendance 80% of lectures and 80% of training

One of these courses

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

Name of the elective course: ----------

Elective Course Lectures

Date	Attendance	Topic	Signature

Elective Course Practical skills

Date	Attendance	Topic	Signature

Elective Course 2

Requirements

- **Credit points:** 1.5 credit point.

- Minimal rate of attendance 80% of lectures and 80% of training

One of these courses

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

Name of the elective course: ----------

Elective Course Lectures

Date	Attendance	Topic	Signature

Elective Course Practical skills

Date	Attendance	Topic	Signature

Academic activities

Lecture, journal club, conference, workshop

Signature of supervisor	Date	Your role **	Activity

** Your role:-

A- Attendance

B- Organization

C- Presentation

Formative assessment and MCQ

Signature	Date	Grade*	Score	Exam

*Degree

A- Excellent

B- Very good

C- Good

D- Pass

الرسائل العلمية

عنوان الرسالة

عربـــــــــــــــــــي :

انجلـــــــــــــــــــيزي :

المشرفـــــــــــــــون :

1- .....

2- .....

3 .....

4- .....

تاريخ القيــد لدرجــة : ..... / /

تاريخ التسجيل الموضوع: .....

المتابعة الدوريـــــــــة : .....

التاريخ	ما تم انجازه من بروتوكول البحث	المتبقي	توقيع المشرفين

Declaration

Course Structure Mirror	Responsible (Course) Coordinator Name:	Signature	Date
First Part			
-Course 1: Medical statistics			
-Course 2: Research methodology			
-Course 3: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research			
-Course 4: Physilogy 1 Applied cardiology, neurology and chest physiology			
Second Part			
Course 4: Physilogy2			
Unit (Module)1			
Unit(Module) 2			
Unit (Module)3			
Unit (Module)4			
Unit (Module)5			
Unit (Module)6			
Unit (Module)7			
Unit (Module)8			
Unit (Module)9			
Unit (Module)10			
Unit (Module)11			
Unit (Module)12			
Unit (Module)13			
Unit (Module)14			
- Elective Course (1) Certificate Dates:			
- Elective Course (2) Certificate - Dates:			
- M. D. Thesis Acceptance Date:			
- Fulfillment of required credit points prior to final examination			
Physiology M.D. Degree Principle Coordinator:			
Date approved by Physiology Department Council:			

يعتمد ،

رئيس القسم

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