ABBOTTABAD INTERNATIONAL MEDICAL COLLEGE ABBOTTABAD

DEPARTMENT OF PHYSIOLOGY

Post office Abbottabad public school islamkot main mansehra road Abbottabad
Phone: +92+992-406612-15 E-mail: info@aimi.edu.pk
Web Site: www.aimi.edu.pk.

INTRODUCTION OF PHYSIOLOGY DEPARTMENT

It is located on 1st Floor on right side of the stairs. It consists of three offices and a students Lab. One office for HOD Dr Tariq Mehmood Khan. One for other faculty members & one for lab staff. Lab is well equipped with required instruments and is spacious and well Ventilated.

Physiology is the science of life which aims to understand the mechanisms of living things, from basis of cell function at the ionic and molecular level to the integrated behaviour of whole body.

Physiology is ever extending field. The latest trends in physiology has made the medical science towards new discoveries in managing and diagnostic consultation.

COURSE DISTRIBUTION

1ST YEAR (UNITS INCLUDED)

1. CELL
2. NERVE AND MUSCLE
3. HEART
4. CIRCULATION BLOOD
5. RESPIRATION

2ND YEAR (UNITS INCLUDED)

1. ENDOCRINOLOGY
2. REPRODUCTION
3. CENTRAL NERVOUS SYSTEM
4. KIDNEY
5. ACID BASE BALANCE
6. GASTRO INTESTINAL PHYSIOLOGY

SYLLABUS

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PART-I

Basic Concepts	Clinical/Applied Concepts
General Physiology/Cell	
Functional organization of human body	Abnormalities of the cell and its organelles
Homeostasis	
Control systems in the body	
Cell membrane and its functions	
Intercellular Connections	
Cell organelles	
Transport through cell membrane	
Genetics	
Blood	
Composition and General Functions	
Plasma Proteins	
Red Blood Cell (Erythropoiesis)	Anaemia
Haemoglobin & Blood Indices,	Blood indices in various
Iron metabolism, Fate of Hb.	disorders
White Blood Cells,	Leucopaenia, Leucocytosis
Leucopoiesis,functions	
Platelets	Thrombocytopaenia
Haemostasis	Clotting disorders (Haemophilia etc.)
Blood Groups,	Blood grouping/cross
Blood Transfusion & complications	matching &
Reticuloendothelial System – Spleen	significance Immunity
Nerve and muscle	
The neuron-structure & functions	
Properties of Nerve Fibres	Nerve conduction studies
Physiology of action Potential including compound action potentials	EMG

Conduction of Nerve Impulse, Nerve Degeneration and regeneration	Nerve Injury
Synapses	
Structure of the Muscle	
Skeletal muscle contraction	Rigor Mortis & Contractures
Isometric and isotonic contraction	
Smooth muscle contraction	
Neuromuscular Transmission	Myasthenia Gravis
Excitation — contraction coupling	Myopathies/Neuropathies
Motor Unit	

Neuromuscular Blockers

Gastrointestinal Tract

Structure and General Functions	
Enteric nervous system (Gut Brain)	
Mastication, Swallowing and their control	Dysphagia, achlasia of Esophagus
Functions and movements of stomach	Examination of abdomen, peptic Ulcer, Pancreatitis
Functions and movements of small intestine	Gastric function tests
Functions and movements of large intestine	
Hormones of GIT	
Vomiting and its pathway	Vomiting and effects
Defecation and its pathway	Diarrhoea, Constipation
Functions of Liver	Jaundice, Liver functions tests

Cardiovascular system

Introduction to heart & circulation	Correlation of cardiac cycle with ECG & heart sounds
Physiology of cardiac muscle	
Action potential in atrial & ventricular muscle and pace-maker potential	
Regulation of cardiac functions	
Cardiac impulse-origin & propagation	Significance of Apex beat/abnormalities
Cardiac cycle – various events	
ECG-Recording & interpretation	ECG interpretation in cardiac muscle abnormalities and cardiac arrhythmias
Arrhythmias- mechanism of development	Flutter, Fibrillation-Ectopics
Functional types of blood vessels	
Haemodynamics of blood flow	
Local control of blood flow	Conduction defects
Systemic circulation, characteristics & Control	
Regulation of peripheral resistance	
Arterial pulse	Jugular venous pulse
Arterial blood pressure (short/long term regulation)	Radial/other pulses
Cardiac output (regulation/measurement)	Hypertension, types & effects
Heart Sounds/murmurs	
Venous return & its regulation	Clinical evaluation of heart sounds and murmurs

Coronary circulation
Splanchnic circulation
Pulmonary circulation
Cerebral circulation
Fetal circulation and readjustments at birth
Cardiovascular changes during exercise

Ischemic Heart Disease
Heart Failure
Echocardiogram

Respiratory System

Organization/functions of Respiratory Tract
Functions of Lungs (respiratory & non respiratory)

Mechanics of Breathing
Surfactant and Compliance

Protective reflexes
Lung volumes and capacities

Dead space
Diffusion of Gases (gas laws, composition)
Ventilation/perfusion

Transport of O2 in blood
Transport of CO2 in blood
Regulation of respiration (Nervous/Chemical)
Abnormal breathing
Hypoxia-types and effects
Physiology of Cyanosis
Physiology of high altitude, space, deep sea Diving
Oxygen debt
Respiratory changes during exercise

Examination of Chest
Types of respiration (Intrapleural pressure, pneumothorax, effusion)
Atelactasis
Lung function tests (Spirometry)

Obstructive/Restrictive lung disease (FEV1/FVC)

Abnormal Ventilation/Perfusion

Respiratory failure

Asphyxia
Hypoxia, cyanosis, dyspnoea
Artificial respiration
Oxygen therapy

Caisson's disease

Nervous system

Organization of Nervous system	Significance of Dermatomes
Classification of nerve fibres	
Properties of Synaptic transmission	
Neurotransmitters and neuropeptides	
Types and function of sensory receptors	Receptors & Neurotransmitters (applied aspect)
Functions of spinal cord, ascending tracts	
Reflex action/ reflexes	Interpretation of Reflexes
Muscle spindle / muscle tone	UMN/LMN Lesion-features and localization
Tactile, temperature and pain sensations	Injuries and diseases of spinal cord, Analgesia system
Structure of cerebral cortex	Disorders of cranial nerves
Sensory Cortex	
Motor Cortex	
Motor pathways, (Pyramidal & extra pyramidal)	Hemiplegia/Paraplegia
Basal Ganglia, connections and functions	Parkinsonism & other lesions of basal ganglia
Cerebellum, connections and functions	Cerebellar Disorders
Vestibular Apparatus/Regulation of Posture & Equilibrium	Sleep Disorders
Reticular formation	
Physiology of sleep/EEG	
Physiology of memory	Higher mental function Assessment
Physiology of speech	Abnormalities of speech
Thalamus-Nuclei & functions	Thalamic syndrome
Hypothalamus & limbic System	Lesion of Hypothalamus
Cerebrospinal fluid	

Regulation of body temperature
Functions of skin
Autonomic Nervous System
Physiology of aging

Hydrocephalus

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PART-II

Body fluids and Kidneys

Compartments of body fluids & measurement
Tissue and lymph fluids

Structure of Kidney/Nephron
General functions of kidney
GFR-factors regulating
Formation of urine, filtration, reabsorption, secretion
Plasma Clearance
Plasma Concentration & Dilution of urine
Electrolyte Balance
Water Balance
Regulation of blood pressure by kidneys
Hormones of kidneys
Acidification of urine
Acid Base balance
Micturition

Renal function tests

Fluid Excess/depletion

Renal failure/uraemia

Nephrotic syndrome

Artificial kidney/Hemodialysis
Metabolic acidosis/alkalosis
Abnormalities of micturition including incontinence

Special senses

Structure & functions of eye-ball	Intraocular pressure & Glaucoma
Optical Principles	
Accommodation of eye	
Errors of refraction	Visual acuity
Photochemistry of vision	
Colour vision/night blindness	Colour blindness, fundoscopy
Dark and light adaptation	
Neural function of Retina	
Visual pathway, light reflex and pathway	Field of vision and lesions of
Visual cortex	visual pathway
Intraocular fluids	Visual evoked potentials and
Eye movements and control	Electroretinogram
Physiological anatomy of cochlea	
Functions of external & middle Ear	
Functions of inner Ear-Organ of Corti	
Auditory pathway	Hearing test audiometry
Physiology of smell- receptors and pathway	Types of deafness
Physiology of taste	Auditory evoked potentials
	Olfaction/taste abnormalities

Endocrinology

General principles(classification, mechanism of action, feed back control)	Acromegaly, Giantism
Biosynthesis, transport, metabolism, actions and control of secretion of hormones of:	Hormonal assay
Hypthalamus	
Anterior Pituitary	Dwarfism
Posterior Pituitary	Panhypopituitarism
Thyroid gland	Sheehan's syndrome
Parathyroid, calcitonin	Diabetes insipidus
Adrenal Medulla	Syndrome of inappropriate ADH secretion
Andrenal Cortex	Myxoedema, Cretinism, Thyrotoxicosis
Pancreas	
GIT	Pheochromocytoma
Pineal gland	Cushing's syndrome, Conn's Syndrome

Thymus	Addision's disease, Adrenogenital syndrome
Kidney	Diabetes Mellitus &Hypoglycemia
Physiology of growth	Zollinger Ellison's syndrome

Reproduction

Functional anatomy of Male reproductive system	Chromosomal abnormalities
Spermatogenesis	
Semen analysis	Male infertility
Erection and ejaculation	
Testosterone	
Male puberty	
Oogenesis and functional anatomy of female gonads	
Oestrogen & Progesterone	Female infertility
Menstrual cycle	Contraception
Puberty and Menopause	Pregnancy Tests
Pregnancy — Physiological changes in mother during pregnancy	
Placenta	
Parturition	
Lactation	
Neonatal Physiology	

EXPERIMENTAL PHYSIOLOGY

Haematology

Study of the microscope
Determination of:
- Haemoglobin (Hb%)
- Erythrocyte sedimentation Rate (ESR)
- Packed cell volume (PCV)/Haematocrit
- Bleeding Time (BT)
- Clotting Time
- (CT) Blood
- Groups

Study of Neubauer chamber
RBCs Count
Red cell indices
WBCs Count
Differential leucocyte Count
(DLC) Osmotic fragility of RBCs
Demontration of prothrombin time and thrombin time

Respiratory System

Clinical examination of chest
Measurement of Pulmonary volumes and capacities (Spirometry)
Stethography

Nervous System

Examination of superficial reflexes
Examination of deep reflexes
Examination of sensory, motor system
Clinical examination of cranial nerves

Cardiovascular system

Examination of arterial pulse
ECG recording/interpretation
Measurement of arterial blood pressure
Effect of exercise & posture on BP
Examination of Apex Beat

Special Senses

Field of vision by confrontation method
Field of vision by Perimetry
Light reflex
Ophthalmoscopy
Visual acuity
Colour Vision
Hearing tests
Audiometry
Taste Sensation
Olfaction sensation

Miscellaneous

Recording of body temperature
Pregnancy tests

Rota of Faculty Members
For Lectures

S.No	Day	Time	Name
1	Monday	10:30 to 11:30	Dr. Sumera/ Dr. Maheen
2	Tuesday	09:00 to 10:00	Dr. Inayat / Dr. Tariq
3	Wednesday	08:00 to 09:00	Dr. Inayat / Dr. Masood
4	Thursday	10:30 to 11:30	Dr. Fouzia
5	Friday	11:00 to 12:00	Dr. Maheen / Dr. Fouzia
6	Saturday	09:00 to 10:00	Dr. Khateeb

Time Table 2019

2nd Year MBBS

Days	08:00 to 09:10			10:00 - 10:30	10:30 - 11:30	11:30 - 12:30	12:30 - 01:30	01:30 - 02:30
Monday	A	B	C	Break	Physiology	Biochemistry	Dissection	Dissection (Batches A, B & C)
	Biochemistry	Histology	Physiology					
Tuesday	08:00 - 09:00	09:00 - 10:00			A	B	C	Dissection		Dissection (Batches A, B & C)
	Biochemistry	Physiology			Physiology	Biochemistry	Histology			
Wednesday	08:00 - 09:00	09:00 - 10:00			10:30 - 11:30	11:30 - 12:30	12:30 - 01:30	
	Physiology	Embryology			Histology	Dissection	Dissection (Batches A, B & C)	
Thursday	08:00 to 10:00				10:30 - 11:30	11:30 - 12:30	12:30 - 01:30	01:30 - 02:30
	A	B	C		Physiology	Islamiyat	Dissection	Dissection (Batches A, B & C)
	Histology	Physiology	Biochemistry					
Friday	08:00 - 09:00	09:00 - 10:00		10:00 - 11:00	11:00 - 12:00	Off		
	Dissection	Dissection (Videos)		Gross Anatomy	Biochemistry			
Saturday	08:00 - 09:00	09:00 - 10:00		**Break**	10:30 - 12:30		12:30 - 01:30	01:30 - 02:30
	Biochemistry	Physiology			Seminars/Tutorials Anatomy/Physiology/Biochemistry (As per Separate Schedule) (Combined)		Dissection	Dissection (Batches A, B & C)

ABBOTTABAD INTERNATIONAL MEDICAL COLLEGE
Time Table 2018

1st Year MBBS

Days	08:00 - 09:00	09:00 - 10:00	10:00 - 10:30	10:30 - 11:30	11:30 - 12:30	12:30 -02:00
Monday	Biochemistry	Physiology	Break	Dissection	Dissection (Vedios)	PRACTICALS A: Histology B: Physiology C: Biochemistry
Tuesday	Dissection	Dissection (Videos)		Physiology	Histology	PRACTICALS A: Physiology B: Biochemistry C: Histology
Wednesday	Dissection	Dissection (Videos)		Biochemistry	Physiology	PRACTICALS A: Biochemistry B: Histology C: Physiology
Thursday	Dissection			G. Anatomy	Physiology	12:30 - 01:30 Physiology
Friday	Physiology	G. Anatomy		Biochemistry		**HALFDAY**
Saturday	Dissection	Dissection (Videos)		Embryology	Pak.Studies	Seminars/Tutorials Anatomy/Physiology/Biochemistry (As Per Separate Schedule) Supervisor: (Anatomy) (Bio) (Physiology)

Assessment

Criteria for Internal Assessment

1. Attendance

< 50	1
51 – 59	2
60 – 69	3
70 – 79	4
80 – 89	5
≥ 90	6

2. Stages

Appear	1
Failed with ≥ 40	2
Pass	3
Position	4

3. Total Marks 30
4. Formula for calculation of Internal Assessment

$$\frac{\text{Obtained Marks x 10}}{30}$$

Learning sites

Our 1st year and 2nd year MBBS lectures, seminars and tutorials are conducted in lecture hall 1 and 2 located at ground floor.

Practical classes are conducted in physiology lab situated on 1st floor.

Reference books;

1.) Text book of medical Physiology Guyton and Hall

2.) Ganongs,s Review of medical Physiology

3.) Essentials of medical physiology

4.) Human physiology by lauralee Sherwood

5.) Blood physiology