SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY

INTEGRATED CURRICULUM

for

MBBS

Curriculum Committee

Curriculum Committee for the development of Modular System at undergraduate level of all Medical and Dental Colleges affiliated with Shaheed Zulfiqar Ali Bhutto Medical University consists of following members:

• Prof. Khalid Hassan	Chairman	Islamabad Medical and Dental College
• Prof. Tanwir Khaliq	Member	Shaheed Zulfiqar Ali Bhutto Medical University
• Prof. Zarmina Saga	Member	Rawal Institute of Health Sciences
• Prof. Inam Mirza	Member	Rawal Institute of Health Sciences
• Prof. Khalid Hussain	Member	Islamabad Medical and Dental College
• Prof. Sabiha Haq	Member	HBS Medical and Dental College
• Prof. Haroon Shuja Qazi	Member	Islamabad Medical and Dental College
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• Dr. Fouzia Sultana	Member	Shaheed Zulfiqar Ali Bhutto Medical University
• Dr. Zainab Abdullah	Member	Shaheed Zulfiqar Ali Bhutto Medical University

Modular Curriculum Development Committee

The Integrated Modules for 1st and 2nd year MBBS classes have been developed by the following faculty members:

- **DEPARTMENTS OF PHYSIOLOGY**

1.	Prof Idrees Farooq Butt	HoD	Yusra Medical and Dental College
2.	Prof. Abdul Majid	HoD	Islamabad Medical and Dental College
3.	Prof. M. Owais Ahmed	HoD	HBS Medical and Dental College
4.	Prof. Farmanullah Wazir	HoD	Federal Medical and Dental College
5.	Dr. Mahvash Khan		Rawal Institute of Health Sciences

- **DEPARTMENTS OF ANATOMY**

1.	Prof. Zarmina Saga	HoD	Rawal Institute of Health Sciences
2.	Prof. Sabiha M Haq	HoD	HBS Medical and Dental College
3.	Prof. Saffia Shaukat	HoD	Islamabad Medical and Dental College
4.	Prof. Mohammed Aziz	HoD	Yusra Medical and Dental College
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- **DEPARTMENTS OF BIOCHEMISTRY**

1.	Prof. Ijaz Ahmad	HoD	Yusra Medical and Dental College
2.	Prof. Hasnain Naqvi	HoD	HBS Medical and Dental College
3.	Asst. Prof.Naveeda Zaigham	HoD	Islamabad Medical and Dental College
4.	Prof. Hamid Mahmood	HoD	Federal Medical and Dental College
5.	Dr. Ambreen Faisal		Rawal Institute of Health Sciences

SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY
CURRICULUM FRAMEWORK: MBBS 1-5 YEARS

Year	Block - I			Block – II			Block - III			Send up & Final Exams
1	Module 1	Module 2	Exam Block I	Module 3	Module 4	Exam Block II	Module 5	Module 6	Exam Block III	
	Foundation 6 Weeks	Musculoskeletal I 6 Weeks		Hematology & Immunology 6 Weeks	Musculoskeletal II 6 Weeks		Cardiovascular 7 weeks	Respiratory 5 weeks		
2	Block – IV			Block – V			Block - VI			
	Module 7	Module 8	Exam Block IV	Module 9	Module 10	Exam Block V	Module11	Module 12	Exam Block VI	
	Gastrointestinal 6 Weeks	Renal 6 Weeks		Endocrine 4 Weeks	Reproductive 6 Weeks		Neuroscience 8 Weeks	Special Senses 6 Weeks		
3										
4										
5										

BLOCK I

MODULE 1 FOUNDATION 6WEEKS

MAIN CONTENT AREAS

ANATOMY

General Anatomy:

- Terminology for direction and movement
- Integumentary system
- Gross Structures(dissection)

Histology:

- Epithelium
- Skin

Embryology:

- Gametogenesis, 1 week
- 2nd week
- 3rd week
- Embryonic period
- Integumentary system

PHYSIOLOGY

- Functional organization of the human body and control of internal environment(homeostasis)
- Cell organelles and their functions
- Genetic control of cell functions
- Transport of substances through cell membrane
- Practical on lab protocols, Microscope, drawing blood sample, ESR, hemoglobin, hematocrit/PCV, RBCs, and WBCs counting

BIOCHEMISTRY

- Introduction/ cell biochemistry
- Biological membranes
- Physiochemical principles
- Chemistry of nucleotides and nucleic acids
- Physiochemical reactions

MODULE 11 MUSCULOSKELETAL 1 6 WEEKS

MAIN CONTENT AREAS

ANATOMY

General Anatomy:

- Bones
- Joints
- cartilage
- Muscles

Histology:

- Connective tissue
- Bone
- Cartilage
- Muscle

Embryology:

- Development of axial system excluding skull

Gross Anatomy of lower limb

- Gluteal region
- Thigh
- Leg
- foot

PHYSIOLOGY

- Membrane potential and action potential
- Contraction of skeletal muscles
- Excitation of skeletal muscle, neuromuscular transmission and excitation contraction coupling
- Excitation and contraction of smooth muscle
- Nerve regeneration and degeneration

BIOCHEMISTRY

- Chemistry of proteins
- Body fluids and tissue

EXAM BLOCK

BLOCK 2

Module 111 Hematology and Immunology 6 weeks

MAIN CONTENT AREAS

ANATOMY

General Anatomy:

- lymph and pattern of lymph flow

Histology:

- Microscopic structures of lymph node, spleen, thymus and tonsils

E**mbryology**:

- Development of blood and lymphoid organs
- Fetal period and placenta, multiple pregnancy
- Teratogenesis

Gross Anatomy:

- Gross anatomy of lymphoid organs (spleen, thymus, and tonsils)

PHYSIOLOGY

- RBCs, physiology and anemia, polycythemia
- White Blood cells and immunity
- Allergy, hypersensitivity and transplant rejection
- Hemostasis
- Blood group and blood transfusion
- Hemorrhagic and hemostatic disorders
- Immune system and disorders

BIOCHEMISTRY

- Heme metabolism, porphyrins, porphyria's
- Jaundice
- Hemoglobin and Myoglobin
- Plasma protein and immunoglobulins
- Urine examination

MODULE IV MUSCULOSKELETAL II 6 WEEKS

MAIN CONTENT AREAS

ANATOMY

General Anatomy:

- General organization of nervous system
- Peripheral nervous system, ANS

Histology:

- Adipose tissue
- Nerve and ganglia

Embryology:

- Development of limb and muscles

Gross Anatomy of Upper limb

- Axilla
- Upper arm
- Forearm
- Hand

PHYSIOLOGY

- Cardiac muscle, properties of heart as a pump and functions of heart valves
- Rhythmical excitation of heart- cardiac impulse
- Cardiac cycle
- Electrocardiographic interpretation and vectorial analysis
- Cardiac arrhythmias and their ECG interpretation

BIOCHEMISTRY

- Chemistry of Carbohydrates
- Minerals and trace elements

EXAM BLOCK 2

BLOCK 3

MODULE V CARDIOVASCULAR 7 WEEKS

MAIN CONTENT AREAS

Anatomy

General Anatomy:

- Circulatory system

Histology:

- Blood vessels and heart

Embryology:

- Development of heart and vessels
- Fetal circulation

Gross:

- Heart and great vessels
- Mediastinum

Physiology

- Overview of circulation, biophysics of pressure, flow and resistance
- Vascular distensability and function of arterial and venous system
- Microcirculation, lymphatic system, capillary fluid exchange, interstitial fluid and lymph flow
- Local and humoral control of tissue blood flow
- Nervous regulation of circulation and rapid control of arterial pressure
- Role of kidney in long term control of arterial pressure and hypertension: the integrated system for arterial blood pressure regulation.
- Cardiac output, venous return, and their regulation
- Muscle blood flow, cardiac output during exercise, the coronary circulation and Ischemic Heart Disease
- Cardiac failure, heart valves, heart sounds, valvular and congenital heart defects, circulatory shock and its treatment

BIOCHEMISTRY

- Chemistry of lipids
- Enzymes

Module VI RESPIRATION 5 WEEKS

MAIN CONTENT AREAS

ANATOMY

Histology:

- Trachea
- Lungs
- Larynx

Embryology:

- Development of body cavities and diaphragm
- Development of respiratory system excluding nose
- Larynx

Gross Anatomy:

- Thorax and back
- Trachea
- Lungs
- Pleura
- Larynx
- Diaphragm

PHYSIOLOGY

- Pulmonary ventilation
- Pulmonary circulation, edema, pleural fluid
- Principles of gas exchange, diffusion and transport of oxygen and carbon dioxide in blood, tissue fluid
- Regulation of respiration
- Aviation, high altitude and space physiology
- Physiology of deep sea diving and other hyperbaric condition, hypoxia

BIOCHEMISTRY

- Vitamin,
- Nutrition

EXAM BLOCK 3

MODULE VII GASTROINTESTINAL 06 WEEKS

MAIN CONTENT AREAS

ANATOMY

Histology:

- Oral cavity and tongue
- Salivary glands
- Esophagus
- Stomach
- Small intestine
- Large intestine
- Anal canal
- Liver
- Gall bladder
- Pancreas (exocrine)

Embryology:

- Development of gastrointestinal tract and related glands and tongue

Gross Anatomy:

- Oral cavity (tongue), pharynx, salivary glands, anterior abdominal wall
- Abdominal cavity, GIT and related glands
- Abdomen
- Peritoneum
- Rectum and anal canal

PHYSIOLOGY

- General principles of gastrointestinal functions, motility, nervous, hormonal control and blood circulation
- Digestion and absorption
- Propulsion and mixing of food in the alimentary tract
- Pathophysiology of gastrointestinal disorders
- Hepato billiary system

BIOCHEMISTRY

- Biochemistry of digestive tract
- Bioenergetics and biological oxidation

MODULE VIII RENAL 6 WEEKS

MAIN CONTENT AREAS

ANATOMY

Histology:

- Kidney
- Ureter
- Urinary bladder

Embryology:

- Development of urinary system

Gross Anatomy:

- Posterior abdominal wall
- Kidney
- Ureter
- Urinary bladder, urethra

PHYSIOLOGY

- Body fluids compartments, intracellular fluid, extracellular fluid, edema
- Urinary system, functional anatomy and urine formation by kidney
- Glomerular filtration, renal blood flow and control
- Renal tubular reabsorption and secretion
- Urine concentration and dilution, regulation of extracellular fluid, osmolality and Na concentration
- Renal regulation of K, Ca, PO4, Mg, integration of renal mechanism for control of blood volume and extracellular fluid volume
- Acid base regulation
- Diuretics, kidney diseases
- Micturition and disorders of micturition

BIOCHEMISTRY

- Metabolism of carbohydrates
- Biochemistry of water and electrolyte imbalance and acid base balance

EXAM BLOCK 4

BLOCK 5

MODULE IX ENDOCRINES 04WEEKS

MAIN CONTENT AREAS

ANATOMY

General Anatomy:

- Endocrine System

Histology:

- Pituitary gland
- Thyroid gland
- Parathyroid gland
- Pancreas

- Adrenals

Embryology:

- Pituitary gland
- Thyroid gland
- Parathyroid
- Pancreas
- Adrenals
- Pharyngeal apparatus excluding face and palate

Gross Anatomy:

- Triangles of neck and deep cervical fascia
- Hypothalamo-pituitary axis and portal system
- Pituitary gland
- Thyroid gland
- Parathyroids
- Adrenals
- Cervical vertebrae
- Pancreas

PHYSIOLOGY

- Introduction of endocrine physiology
- Pituitary hormones and their control by hypothalamus
- Thyroid metabolic hormones
- Adrenocortical hormones
- Insulin, glucagon, diabetes mellitus
- Parathyroid hormone; calcitonin, calcium phosphate metabolism; vitamin D, bone and tooth physiology

BIOCHEMISTRY

- Biochemistry of endocrine system

MODULE X REPRODUCTION 06 WEEKS

MAIN CONTENT AREAS

ANATOMY

General Anatomy:

Histology:

- Ovaries
- Fallopian tubes
- Uterus
- Vagina
- Testes
- Seminal vesicles
- Prostate
- Breast

Embryology:

- Development of male and female genital system and external genitalia

Gross Anatomy:

- Female genital system including breast
- Male genital system
- Pelvic wall and cavity
- Perineum
- Ischiorectal Fossa

PHYSIOLOGY

- Reproductive and hormonal functions in male
- Physiology in pregnancy and female hormones
- Pregnancy and lactation
- Fetal and neonatal physiology

BIOCHEMISTRY

- Metabolism of proteins and amino acids

EXAM BLOCK 5

BLOCK 6

MODULE XI NEUROSCIENCES 8 WEEKS

MAIN CONTENT AREAS

ANATOMY

Histology:

- Cerebrum
- Cerebellum
- Spinal cord

Embryology:

- Development of nervous system and skull

Gross Anatomy:

- Brain
- Cranial nerves and cranial cavity
- Spinal cord

PHYSIOLOGY

- **Organization of** nervous system, basic function of synapses and neurotransmitter
- **Se**nsory receptors, neuronal circuit for processing information
- Somatic sensation
    1. General organization, the tactile and position sense
    2. Pain, headache, and thermal sensation
- Motor function of spinal cord
- Cortical and brain stem control of motor function
- Contribution of cerebellum and basal ganglia to overall motor control
- Cerebral cortex, intellectual functions of brain, learning and memory
- Behavioral and motivational mechanism of brain –the limbic system and hypothalamus
- State of brain activity, sleep, brain waves, epilepsy, psychosis and dementia
- Autonomic nervous system and adrenal medulla
- Cerebral blood flow, CSF and brain metabolism
- Higher mental functions, speech, memory

BIOCHEMISTRY

- Metabolism of lipids
- Integration of metabolism

MODULE XII SPECIAL SENSES O6 WEEKS

MAIN CONTENT AREAS

ANATOMY

Histology:

- Special senses (Eye, Ear)
- Olfactory mucosa

Embryology:

- Nose and paranasal sinuses
- Ear
- Eye
- Face
- Palate

Gross Anatomy:

- Skull normal and fossa under the skull
- Mandible
- Face and scalp including special senses

PHYSIOLOGY

THE EYE

- Optics of vision
- Receptors, neuronal function of retina
- Neurophysiology of vision
- Sense of hearing
- Chemical sense of taste and smell

BIOCHEMISTRY

- Metabolism of nucleotides

- Biochemical genetics (informational flow in the cell)

EXAM BLOCK 6