T.C.

LOKMAN HEKIM UNIVERSITY

FACULTY OF MEDICINE

PHASE – II

2023 – 2024 EDUCATION TEACHING GUIDE

T.R.
LOKMAN HEKIM UNIVERSITY FACULTY OF MEDICINE

PHASE II COURSES and ECTS

CODE	COMPULSORY COURSES	T	P	C	ECTS
	BASIC MEDICAL SCIENCE – II (Phase II)	**523**	**96**	**619**	**55**
21020001	*Nervous System and Special Senses*	*86*	*24*	*110*	*11*
21020002	*Circulatory, Respiratory and Lymphatic Systems*	*107*	*20*	*127*	*12*
21020003	*Gastrointestinal System and Metabolism*	*90*	*14*	*104*	*10*
21020004	*Urogenital and Endocrine Systems*	*76*	*14*	*90*	*8*
21020005	*Basis of Diseases*	*87*	*10*	*97*	*10*
21020006	*Scientific and Clinical Approaches*	*77*	*14*	*91*	*4*
	TOTAL ECTS COMPULSORY				**55**

CODE	ELECTIVE COURSES	T	P	C	ECTS
	University Elective 1	2	2	3	3
	University Elective 2	2	2	3	3
	University Elective 3	2	2	3	3
	University Elective 4	2	2	3	3
	Faculty Elective 1	2	0	2	4
	Faculty Elective 2	3	0	3	4
	Faculty Elective 3	1	1	2	4
	Faculty Elective 4	2	0	2	4
	TOTAL ECTS TO BE COLLECTED AS ELECTIVES				**12**
	TOTAL ECTS TO BE COLLECTED IN PHASE II				**67**

PHASE II OBJECTIVES AND LEARNING OUTCOMES

Aim:

In this phase, the main subjects are the organ systems of the human body. The students will learn the anatomy, development, histology, physiology, biochemistry, molecular biology, immunology, and biophysics of the organs. They will also get the basic theoretical information about the microbial agents settled in these systems and will form the basis of clinical courses by making practical applications. It is aimed to enable them to recognize the infectious and non-infectious diseases of the systems and to have basic knowledge about diseases. This phase is also providing students to improve the ability of biostatistical analysis and reasoning on the data related to clinical applications.

Learning Objectives:

1. Defines the anatomy, embryology, histology, physiology, and biophysics of the structures that make up the nervous system and special senses.
2. Explains the embryological development, histological and anatomical structures, physiological and biophysical features, functions of the cells, tissues and organs that make up the circulatory system, respiratory system and lymphatic system, and the relations of these systems with each other, respectively.
3. Defines the anatomical, developmental, histological, physiological, and biochemical features of the urogenital and endocrine systems.
4. Defines the anatomical, developmental, histological, physiological, and biochemical features of the gastrointestinal system and metabolism.
5. Defines the common and different characteristics of microorganisms that can cause infectious diseases in the gastrointestinal tract.
6. Learns basic biochemical, biological, pharmacological, microbiological, and pathological information for clinical and laboratory evaluations of diseases.
7. Explains the basic biostatistics techniques on research in the field of health.

NERVOUS SYSTEM AND SPECIAL SENSES COURSE COMMITTEE

COURSES	THEORETICAL COURSE DURATION (h)	PRACTICAL COURSE DURATION(h)	TOTAL COURSE DURATION(h)
21020001-01 Introduction to Committee	2	0	2
21020001-02 Anatomy	33	10	43
21020001-03 Biophysics	10	0	10
21020001-04 Physiology	28	10	38
21020001-05 Histology and Embryology	13	4	17
TOTAL	**86**	**24**	**110**

AIMS AND LEARNING OBJECTIVES OF THE COMMITTEE

Aim:

In this committee, students learn the structures of the nervous system and the sensory organs, as well as the development of these structures and their functions by using basic physical approaches.

Learning Objectives:

1. Defines spinal cord morphology, functions, reflexes, lesions and ascending and descending pathways.

2. Defines the differences between presynaptic and postsynaptic potentials and the action potentials.

3. Defines the development of the nervous system and the development of the sensory organs, their functions, structures, and developmental anomalies of the cells of the sensory organs.

4. Defines the anatomy of the diencephalon, cranial nerves and autonomic nervous system, the brain stem, reticular formation, cerebellum, and the basic physics principles underlying the formation and measurement of biomedical potentials.

5. Defines the anatomy of the brain hemispheres, the relations between the sensory and motor cortex and basal ganglia, theories about EEG and sleep physiology, basic signal processing concepts and terminology.

6. Explains the meninges and sinuses, the vessels of the nervous system, the cerebrospinal fluid and its formation, possible ways of processing information in the central nervous system.

7. Defines the anatomy of eye and visual pathways, ear and auditory pathways, pain, touch, vibration, pressure senses and the mechanisms of recognizing objects.

8. Defines the biophysical processes that occur in the visual and auditory pathways.

TOPICS

ANATOMY		
Topic	**Type**	**Time**
Introduction to the anatomy of the nervous system	Theoretical	1
Spinal cord	Theoretical	1
Truncus encephali (brain stem): medulla oblongata (bulbus), pons	Theoretical	1
Truncus encephali (brain stem): mesencephalon and cerebellum	Theoretical	2
Ascending tracts	Theoretical	1
Descending tracts	Theoretical	1
Diencephalon (midbrain): thalamus, subthalamus, epithalamus, hypothalamus, pituitary	Theoretical	2
Cranial nerves: I-VI	Theoretical	1
Cranial nerves: VII-XII	Theoretical	1
Vessels of the nervous system	Theoretical	2
Autonomic nervous system: sympathetic system	Theoretical	1
Autonomic nervous system: parasympathetic system	Theoretical	1
Meninges (cerebral membranes), sinus durae matrix (dural sinuses), cerebral ventricles and cerebrospinal fluid circulation	Theoretical	2
Epidural, subdural and subarachnoid spaces, cisternae subarachnoideae (subarachnoid cisterns)	Theoretical	1
Cerebral hemispheres: cerebral cortex, Brodmann areas	Theoretical	2
White matter and basal nuclei	Theoretical	2
Limbic system and the olfactory brain, sense of taste	Theoretical	2
Orbit and its contents	Theoretical	2
Eyeball and accessory structures of the eye	Theoretical	1
Visual pathways	Theoretical	1
Ear: External ear and middle ear	Theoretical	3
Ear: Internal ear, auditory and balance pathway	Theoretical	2
Spinal cord, Diencephalon, brainstem, cerebellum, cranial nerves	Practical	2
Meninges, dural venous sinuses, ventricles of the brain, epidural-subdural-subarachnoid spaces, and subarachnoid cisterns	Practical	2
Cerebral hemisphere, white matter, basal nuclei and the limbic system Vessels of the nervous system	Practical	2
Orbit and its contents, eyeball and accessory structures of the eye	Practical	2
Ear: External, middle, internal ear	Practical	2

BIOPHYSICS		
Topic	**Type**	**Time**
Biophysical understanding of the concept of compound action potential and the process of recording it from the body	Theoretical	1
Mechanisms of formation of synaptic auditoria's	Theoretical	1
Differences of pre- and post-synaptic potentials and action potentials	Theoretical	1
Biophysical principles of vision	Theoretical	1
Physical basis of color vision	Theoretical	1
Photoreceptors and electrophysiological processes	Theoretical	1
Basic physical concepts in hearing	Theoretical	1
Biophysical processes in the sense of hearing	Theoretical	1
Formation and characteristics of brain potentials	Theoretical	1
Spontaneous and stimulated electrical activities of the brain (EEG)	Theoretical	1
PHYSIOLOGY		
Topic	**Type**	**Time**
Basic functions of synapses and neurotransmitters	Theoretical	1
Sensory receptors and neuron circuits in the processing of information	Theoretical	1
Motor functions of the spinal cord, spinal reflexes	Theoretical	1
Somatic senses	Theoretical	3
Control of motor function by the cortex	Theoretical	2
Cerebellum and motor functions	Theoretical	2
Basal ganglia and motor functions	Theoretical	1
Cerebral cortex	Theoretical	1
Learning and memory	Theoretical	2
Autonomic nervous system and adrenal medulla	Theoretical	2
Thalamus, hypothalamus, and limbic system	Theoretical	2
Physiology of vision	Theoretical	2
Physiology of central vision	Theoretical	1
Physiology of hearing	Theoretical	2
Physiology of balance	Theoretical	2
Physiology of taste and smell	Theoretical	2
Brain activity states – sleep, brain waves	Theoretical	1
Spinal cord reflexes	Practical	2
Reaction time	Practical	2
EEG	Practical	2
Vision tests	Practical	2
Hearing tests	Practical	2
HISTOLOGY and EMBRYOLOGY		

Topic	Type	Time
Histology of central nervous system	Theoretical	3
Histology of peripheral nervous system and sensory receptors	Theoretical	2
Development of nervous system	Theoretical	3
Development and histology of eye globes and lids	Theoretical	3
Development and histology of ears	Theoretical	2
Practice: Histology of central nervous system	Practical	2
Practice: Histology of peripheral nervous system and sensory organs	Practical	2

CIRCULATORY, RESPIRATORY AND LYMPHATIC SYSTEMS COMMITTEE

COURSES	THEORETICAL COURSE DURATION (h)	PRACTICAL COURSE DURATION (h)	TOTAL COURSE DURATION (h)
21020002-01 Introduction to Committee	1	0	1
21020002-02 Anatomy	17	6	23
21020002-03 Biophysics	12	0	12
21020002-04 Physiology	37	8	45
21020002-05 Histology and Embryology	20	6	26
21020002-06 Medical Microbiology	20	0	20
TOTAL	**107**	**20**	**127**

AIMS AND LEARNING OBJECTIVES OF THE COMMITTEE

Aim:

This committee aims to explain the human circulatory system, respiratory system and lymphatic system and embryological development of cells, tissues and organs related with these systems, histological and anatomical structures, physiological characteristics, functions and mechanisms and their responses to changes in internal and external environmental conditions. It also aims to understand the infectious and non-infectious diseases related with these systems, and to have ability to interpret all basic sciences to the clinical courses.

Learning Objectives:

1. Explains the development and developmental anomalies of the circulatory system and the histological features of the cells of this system.

2. Explains regulation of the blood pressure, the anatomy and physiology of venous, lymphatic, coronary and pulmonary circulations.

3. Explain the excitability and contractility of the heart, the basic waves seen in the ECG and the cardiac cycle.

4. Learns the ECG measurements, pulse wave and heart sounds simultaneously throughout the cardiac cycle and the relationship between them.

5. Explains respiratory dynamics, alveolar ventilation, and ventilation mechanics with basic physics principles.

6. Explains the anatomy of the thoracic wall, the parts of the thoracic cavity, the main vessels, the lungs, the pleura, and the anatomy of the respiratory tract.

7. Explains the functions of the respiratory tract, the forces that provide inspiration and expiration, and the ventilation-perfusion relationship in the lungs.
8. Explains the effects of changes in respiration in different atmospheric pressures.
9. Explains the immune system and the immune cells.
10. Explains the anatomy of the lymphatic system and the embryology and histology of primary and secondary lymphoid organs.
11. Explains MHC molecules, endogenous and exogenous antigen presenting cells and vaccines.
12. Defines the immunogenetic structure of the lymphatic system.
13. Defines infectious diseases affecting the respiratory system and immune system cells.

TOPICS

ANATOMY		
Topic	**Type**	**Time**
Lymphatic system and spleen	Theoretical	2
Heart and pericardium	Theoretical	2
Heart and pericardium, main vessels, fetal circulation, pulmonary circulation, systemic circulation	Theoretical	2
Thoracic wall and diaphragm	Theoretical	2
Root of the neck	Theoretical	2
The nose and paranasal sinuses	Theoretical	2
Larynx	Theoretical	2
Trachea and lungs	Theoretical	2
Mediastinum	Theoretical	1
Lab: Heart, pericardium, and main vessels	Practical	2
Lab: Thoracic wall, diaphragm, and root of neck	Practical	2
Lab: The nose, paranasal sinuses, and larynx Trachea, lungs, mediastinum	Practical	2
BIOPHYSICS		
Topic	**Type**	**Time**
Biophysical properties of the heart muscle and contraction – relaxation processes	Theoretical	2
Biophysical bases of the formation of the heart dipole and ECGs	Theoretical	1
Biophysical discussion of the concepts of inotropy, preload and afterload in the heart	Theoretical	2
Circulation dynamics: Bernoulli and Poiseuille principles	Theoretical	1
Properties of blood as fluid and the concept of viscosity	Theoretical	1
Features of flexibility in the circulatory system	Theoretical	1
Biophysical properties of the respiratory system	Theoretical	1

Factors affecting respiratory dynamics	Theoretical	1
Alveolar mechanics and surface tension processes	Theoretical	1
Respiratory work, concepts of resistance and compliance	Theoretical	1
PHYSIOLOGY		
Topic	**Type**	**Time**
General information about circulatory physiology	Theoretical	2
Physiological features of the heart muscle	Theoretical	2
Cardiac activity and its regulation	Theoretical	2
Heart valves and heart sounds	Theoretical	2
Heart cycle	Theoretical	3
Electrocardiogram (ECG)	Theoretical	4
Cardiac output and venous return	Theoretical	2
Blood pressure and pulse	Theoretical	2
Principles of hemodynamics	Theoretical	1
Local control of blood flow	Theoretical	2
Capillary circulation	Theoretical	1
Lymphatic circulation	Theoretical	1
General information about respiratory physiology	Theoretical	1
Alveolar ventilation	Theoretical	2
Ventilation – perfusion	Theoretical	2
Transport of oxygen and carbon dioxide	Theoretical	2
Regulation of respiration	Theoretical	2
Pulmonary function tests	Theoretical	2
Respiration at high altitude	Theoretical	1
Respiratory and cardiovascular regulation during exercise	Theoretical	1
Lab: ECG	Practical	2
Lab: Measurement of blood pressure and pulse	Practical	2
Lab: Pulmonary function tests	Practical	2
Lab: Heart sounds	Practical	2
HISTOLOGY and EMBRYOLOGY		
Topic	**Type**	**Time**
Histology of immune system cells and primary lymphoid organs	Theoretical	2
Histology of secondary lymphoid organs and tissues	Theoretical	3
Histology of heart and vessels	Theoretical	3
Development of the heart	Theoretical	2
Development of the vessels and fetal circulation	Theoretical	2
Development of pharyngeal complex	Theoretical	2
Development of face and palate	Theoretical	2

Development of respiratory system	Theoretical	1
Histology of respiratory system	Theoretical	2
Development of the diaphragm, pericardium, and pleura	Theoretical	1
Practice: Histology of lymphoid organs and tissues	Practical	2
Practice: Histology of heart and vessels	Practical	2
Practice: Histology of respiratory system	Practical	2
MEDICAL MICROBIOLOGY		
Topic	**Type**	**Time**
Immune system organs	Theoretical	1
Immune response stages	Theoretical	1
Cytokines	Theoretical	1
Developmental stages of immune cells	Theoretical	1
Immune cells-1 (lymphoid series)	Theoretical	1
Immune cells-2 (myeloid series, neutrophils, acute inflammation)	Theoretical	1
Immune cells-3 (myeloid series, other granulocytes, monocyte-macrophage and dendritic cells)	Theoretical	1
Antigen presenting cells	Theoretical	1
Antigen, immunogen	Theoretical	1
Antibodies	Theoretical	1
Complement system	Theoretical	1
MHC molecules	Theoretical	1
Endogenous and exogenous antigen presentation	Theoretical	1
Hypersensitivity reactions	Theoretical	2
Vaccines	Theoretical	2
Mycobacteriaceae	Theoretical	2
Retroviridae	Theoretical	1

GASTROINTESTINAL SYSTEM AND METABOLISM COMMITTEE

COURSES	THEORETICAL COURSE DURATION (h)	PRACTICAL COURSE DURATION (h)	TOTAL COURSE DURATION (h)
21020003-01 Introduction to Committee	1	0	1
21020003-02 Anatomy	20	4	24
21020003-03 Physiology	15	0	15
21020003-04 Histology and Embryology	14	6	20
21020003-05 Medical Biochemistry	20	2	22
21020003-06 Medical Microbiology	20	2	22
TOTAL	**90**	**14**	**104**

AIMS AND LEARNING OBJECTIVES OF THE COMMITTEE

Aim:

In this committee, students will learn the anatomy, development, histology, physiology, and biochemistry of the gastrointestinal system and understand the basics of metabolism. It also explains the microorganisms that can cause infectious diseases in the system.

Learning Objectives:

1. Explains the details of the anatomical structures related to the gastrointestinal system and metabolism.
2. Describes the hormones, biomolecules, and the biochemical mechanisms.
3. Explains the physiology and the anatomy of the system and related organs.
4. Explains the histology and embryological development of the system.
5. Learns microbiological organisms which cause diseases in the system.

TOPICS

ANATOMY		
Topic	**Type**	**Time**
Mouth anatomy, tongue, teeth, soft palate, and salivary glands	Theoretical	2
Temporal fossa, parotid region, and salivary glands	Theoretical	1
Infratemporal fossa, pterygopalatine fossa, and masticatory muscles	Theoretical	2
Pharynx, oesophagus, and stomach	Theoretical	2
Anterior abdominal wall, inguinal canal, rectus sheath	Theoretical	2

Peritoneum, omental bursa, greater omentum, and lesser omentum	Theoretical	2
Small intestine	Theoretical	1
Large intestine and anal canal	Theoretical	2
Liver, gallbladder, and biliary tract	Theoretical	2
Pancreas and spleen	Theoretical	1
Posterior abdominal wall and main vessels, spinal nerve plexuses	Theoretical	2
The portal system, porto-caval anastomosis, and cava-caval anastomosis	Theoretical	1
Lab: Temporal fossa, parotid region, salivary glands, infratemporal fossa, pterygopalatine fossa, and masticatory muscles	Practical	1
Lab: Mouth anatomy, tongue, teeth, soft palate, salivary glands, pharynx, oesophagus, and stomach	Practical	1
Lab: Anterior abdominal wall, inguinal canal, rectus sheath, peritoneum, omental bursa, greater omentum, and lesser omentum	Practical	1
Lab: Small intestine, large intestine, anal canal, liver, gall bladder, biliary tract, pancreas, and spleen, posterior abdominal wall and main vessels	Practical	1
PHYSIOLOGY		
Topic	**Type**	**Time**
General principles: motility, electrical activity, and motor functions	Theoretical	2
General principles: GI control and hormones	Theoretical	2
Chewing and swallowing	Theoretical	1
Digestive tract secretory functions: small and large intestine	Theoretical	2
Exocrine secretions of the pancreas	Theoretical	2
Functions of the liver	Theoretical	2
Digestion and absorption in the gastrointestinal tract	Theoretical	2
Hunger, satiety, appetite, nausea, and thirst	Theoretical	2
BIOCHEMISTRY		
Topic	**Type**	**Time**
Digestion and absorption of proteins	Theoretical	1
Digestion and absorption of carbohydrates and lipids	Theoretical	2
Metabolism of pancreatic gland hormones	Theoretical	1
Carbohydrate metabolism and regulation	Theoretical	2
Lipid metabolism	Theoretical	2
Amino acid and protein metabolism	Theoretical	2
Integration of metabolism: biochemical response in fasting and satiety	Theoretical	1
Micronutrients: Minerals	Theoretical	1
Metabolism of inorganic compounds	Theoretical	2
Detoxification mechanisms	Theoretical	2

Metabolism and acid-base balance	Theoretical	2
Metabolism of vitamins	Theoretical	2
Blood glucose analysis	Practical	2
HISTOLOGY and EMBRYOLOGY		
Topic	**Type**	**Time**
Introduction to the histology of digestive system	Theoretical	1
Histology of oral organs and structures	Theoretical	2
Histology of digestive tract	Theoretical	4
Histology of liver	Theoretical	2
Histology of gallbladder and pancreas	Theoretical	1
Development of digestive system	Theoretical	4
Practice: Histology of oral organs and structures	Practical	2
Practice: Histology of digestive tract	Practical	2
Practice: Histology of liver, gallbladder, and pancreas	Practical	2
MEDICAL MICROBIOLOGY		
Topic	**Type**	**Time**
Enterobacterales	Theoretical	3
Oxidase positive curved bacilli (Vibrionaceae, Campylobacteraceae)	Theoretical	1
Primary hepatotropic viruses (HAV, HBV, HCV, HDV and HEV)	Theoretical	2
Introduction to general parasitology	Theoretical	1
Protozoa	Theoretical	4
Nematodes	Theoretical	2
Cestodes	Theoretical	2
Trematodes	Theoretical	2
Normal flora	Theoretical	1
Bacterial pathogenesis	Theoretical	2
Lab: Examination of parasites	Practical	2

UROGENITAL AND ENDOCRINE SYSTEMS COMMITTEE

COURSES	THEORETICAL COURSE DURATION (h)	PRACTICAL COURSE DURATION (h)	TOTAL COURSE DURATION (h)
21020004-01 Introduction to Committee	1	0	1
21020004-02 Anatomy	13	4	17
21020004-03 Physiology	32	0	32
21020004-04 Histology and Embryology	16	8	24
21020004-05 Medical Biochemistry	14	2	16
TOTAL	**76**	**14**	**90**

AIMS AND LEARNING OBJECTIVES OF THE COMMITTEE

Aim:

The aim of the committee is to ensure that the urogenital and endocrine systems are learned with a holistic approach in terms of anatomical, developmental, histological, physiological, and biochemical, and to have the knowledge and skill levels to understand the clinical lessons about these systems.

Learning Objectives:

1. Explains the structural features of the urogenital and endocrine systems.
2. Describes the biochemistry of the hormones, biomolecules, and their mechanisms of action.
3. Explains the physiological effects of the hormones and functioning of the urogenital system.
4. Explains how the organs in this system emerge in the developmental process and the distinguishing features at the tissue level.

TOPICS

ANATOMY		
Topic	**Type**	**Time**
Kidney and ureter	Theoretical	2
Urinary bladder and urethra	Theoretical	2
Pelvic diaphragm and perineum	Theoretical	2

Male genital organs	Theoretical	2
Female genital organs and breast anatomy	Theoretical	2
Thyroid and parathyroid glands, suprarenal glands	Theoretical	1
Pituitary gland and pineal gland	Theoretical	2
Lab: Kidney, ureter, urinary bladder, and urethra	Practical	2
Lab: Pelvic diaphragm and perineum, male and female genital organs, endocrine glands	Practical	2
PHYSIOLOGY		
Topic	**Type**	**Time**
Introduction to the physiology of the urogenital system	Theoretical	2
Glomerular filtration	Theoretical	2
Tubular reabsorption	Theoretical	2
Renal clearance	Theoretical	1
Sodium balance and regulation of extracellular fluid volume	Theoretical	2
Potassium balance	Theoretical	1
Calcium and phosphate balance	Theoretical	1
Acid-base balance	Theoretical	2
Physiology of male reproductive system	Theoretical	2
Physiology of female reproductive system	Theoretical	2
Physiology of pregnancy and lactation	Theoretical	2
Introduction to the endocrine system	Theoretical	1
Hypothalamus – pituitary functional relationship	Theoretical	1
Physiology of pituitary hormones	Theoretical	1
Growth Hormone	Theoretical	2
Physiology of thyroid hormones	Theoretical	2
Physiology of parathyroid hormones	Theoretical	2
Physiology of adrenocortical hormones	Theoretical	2
Endocrine functions of the pancreas	Theoretical	2
MEDICAL BIOCHEMISTRY		
Topic	**Type**	**Time**
Kidney functions and electrolyte balance	Theoretical	2
Hormones and their properties	Theoretical	2
Mechanisms of action of hormones	Theoretical	2
Hypothalamus, pituitary, and pineal hormones	Theoretical	2
Thyroid gland hormones and metabolism	Theoretical	2
Metabolism of adrenal cortex hormones	Theoretical	2
Biochemistry of the adrenal medulla	Theoretical	2
Lab: Complete Urine Analysis	Practical	2

HISTOLOGY and EMBRYOLOGY		
Topic	**Type**	**Time**
Histology of kidneys and urinary tracts	Theoretical	2
Development of urinary system	Theoretical	2
Histology of male genital system	Theoretical	2
Histology of female genital system	Theoretical	2
Development of genital system	Theoretical	3
Development and histology of hypophysis and epiphysis	Theoretical	2
Development and histology of thyroid, parathyroid, adrenal glands, and endocrine pancreas	Theoretical	3
Practice: Histology of urinary system	Practical	2
Practice: Histology of male genital system	Practical	2
Practice: Histology of female genital system	Practical	2
Practice: Histology of endocrine system	Practical	2

BASICS OF DISEASES COMMITTEE

COURSES	THEORETICAL COURSE DURATION (h)	PRACTICAL COURSE DURATION (h)	TOTAL COURSE DURATION (h)
21020005-01 Introduction to Committee	1	0	1
21020005-02 Biophysics	4	0	4
21020005-03 Medical Biochemistry	4	0	4
21020005-04 Medical Biology	8	0	8
21020005-05 Medical Pharmacology	23	0	23
21020005-06 Medical Microbiology	28	10	38
21020005-07 Medical Pathology	19	0	19
TOTAL	**87**	**10**	**97**

AIMS AND LEARNING OBJECTIVES OF THE COMMITTEE

Aim:

The aim of this committee is to explain the basic biochemical, molecular, pharmacological, microbiological, and pathological information for clinical and laboratory evaluations of diseases and to provide the knowledge and skill levels necessary to understand the clinical courses planned for the next medical education stages.

Learning Objectives:

1. Explains the biophysical changes associated with the disease.
2. Explains the biochemical changes that occur in diseases.
3. Explains the information about the disease-causing microbiological organisms.
5. Explains the mechanism of action of drugs.
6. Explains disease-related pathological concepts.
7. Explains the molecular biological basis of diseases.

TOPICS

BIOPHYSICS		
Topic	**Type**	**Time**
Electric current, biological effects and safety	Theoretical	1
Bioelectric applications	Theoretical	1
Description of radiation, its main features	Theoretical	1

Biological effects of radiation	Theoretical	1
BIOCHEMISTRY		
Topic	**Type**	**Time**
Reactive oxygen molecules and oxidative stress	Theoretical	2
Plasma proteins and acute phase response	Theoretical	2
MEDICAL MICROBIOLOGY		
Topic	**Type**	**Time**
Collection and transport of microbiological samples	Theoretical	2
Gram-positive cocci (staphylococcus)	Theoretical	1
Gram-positive cocci (streptococci)	Theoretical	2
Gram-positive spore-forming bacilli (Bacillus, Clostridium) and gram-positive non-spore-forming bacilli (Actinomyces, Nocardia, Tropheryma, Rhodococcus, Corynebacterium, Listeria)	Theoretical	3
Gram-negative diplococci (Neisseria, Moraxella)	Theoretical	1
Gram-negative coccobacilli (Haemophilus, Pasteurella, Brucella, Bordetella, Francisella)	Theoretical	2
Non-fermentative gram (-) bacilli (Pseudomonas, Burkholderia, Stenotrophomonas, Acinetobacter) and various gram (-) bacilli (Eikenella, Bartonella, Klebsiella granulomatis, Gardnerella, Legionella)	Theoretical	2
Spirochete, rickettsia, chlamydias, mycoplasmas and other anaerobic bacteria	Theoretical	2
Introduction to general virology	Theoretical	1
DNA viruses (herpesviruses, poxviruses, papovaviruses, adenovirus and parvovirus)	Theoretical	3
Negative-sense RNA viruses (myxoviruses, bunyaviruses, rabies virus, filoviruses and lymphocytic choriomeningitis virus)	Theoretical	3
Positive-sense RNA viruses (picornaviruses, norovirus, rotavirus, coronavirus, rubella virus and flaviviruses)	Theoretical	2
General mycology, superficial and cutaneous mycosis agents, subcutaneous mycosis agents	Theoretical	2
Endemic and opportunistic agents of mycosis	Theoretical	2
Lab: Diagnostic methods of Gram-positive bacteria	Practical	2
Lab: Diagnostic methods of Gram-negative bacteria	Practical	2
Lab: Methods of diagnosis of bacteria with different characteristics	Practical	2
Lab: Examination of fungi	Practical	2
Lab: Bacteriological identification methods	Practical	2

MEDICAL BIOLOGY	Type	Time
Heredity models	Theoretical	1
Molecular biology of cancer	Theoretical	2
Structure of telomerase and its connection with aging and cancer	Theoretical	1
Population genetics	Theoretical	1
Gene mapping	Theoretical	1
Genetic polymorphism	Theoretical	1
Genotoxicity	Theoretical	1
MEDICAL PHARMACOLOGY	**Type**	**Time**
Introduction to pharmacology	Theoretical	1
Pharmaceutical types of drugs	Theoretical	1
Administration routes of drugs	Theoretical	1
Mechanisms of action, pharmacodynamics	Theoretical	1
Pharmacokinetics: absorption, distribution, biotransfomation and elimination	Theoretical	4
Drug receptors and pharmacodynamic effects	Theoretical	1
The relationship of dose (concentration) – pharmacological effect	Theoretical	2
The factors changing the effects of drugs	Theoretical	2
Pharmacokinetic and pharmacodynamic drug interactions	Theoretical	2
The unwanted and toxic effects of drugs	Theoretical	1
Pharmacology of autacoids and gaseous autacoids: EDRF, EDHF, NO	Theoretical	1
Autacoids with amine structure: 5-hydroxytryptamine (serotonin), histamine	Theoretical	2
Autacoids with peptide structure: Angiotensins, quinines, endothelins	Theoretical	2
Autacoids with lipid structure: Eicosanoids, PAF	Theoretical	2
MEDICAL PATHOLOGY	**Type**	**Time**
Introduction to pathology, definitions, and techniques	Theoretical	2
Causes, mechanism, and morphologic alterations of cell injury	Theoretical	2
Cellular adaptation, intracellular accumulation, and cellular aging	Theoretical	2
Necrosis and apoptosis	Theoretical	2
Inflammation and repair	Theoretical	4
Mechanical trauma injury / thermal, electrical, and ionized radiation injury	Theoretical	1
Hemodynamic disturbances	Theoretical	2
Introduction to autoimmune diseases and hypersensitivity reactions	Theoretical	2
General principles of infection pathology	Theoretical	1
Amyloidosis	Theoretical	1

SCIENTIFIC AND CLINICAL APPROACHES COMMITTEE

COURSES	THEORETICAL COURSE DURATION (h)	PRACTICAL COURSE DURATION (h)	TOTAL COURSE DURATION (h)
21020006-01 Scientific Research Methods and Biostatistics	21	4	25
21020006-02 Clinical Overview II	56	0	56
21020006-03 Clinical Skill II	0	10	10
TOTAL	**77**	**14**	**91**

AIMS AND LEARNING OBJECTIVES OF THE COMMITTEE

Aim:
The aim of this committee is to gain basic medical skills, scientific and clinical approach skills, and awareness of medicine, and to develop evidence-based analytical skills.

Learning Objectives:
1. Learns the basic professional skill techniques required in clinical practice.
2. Describes the techniques applied in basic life support, respectively.
3. Defines how to make wound dressing.
4. Determines the fracture with the correct technique.
5. Learns to wear cervical collar with correct technique.
6. Learns the technique of applying elastic bandage in traumatic patients.
7. Learns the patient positions and technique for the blood pressure measurement.
8. Learns the techniques of measuring fever and counting respiratory rate.
9. Explains how to control bleeding in patients with arterial and venous bleeding.
10. Explains the technique of measuring blood glucose with a glucometer, respectively.
11. Explains how to give an intravenous (IV) injection to a patient.
12. Lists the techniques of hand washing and wearing gloves.
13. Describes organ systems in connection with relevant clinical information.
14. Explains the disease and clinical picture.
15. Defines the sources of access to information.
16. Learns to prepare scientific research in accordance with research principles.
17. Learns to design research and calculates the sample width.
18. Learns to enter the research data into computer and to evaluate research findings by applying biostatistical analysis techniques.

TOPICS

SCIENTIFIC RESEARCH METHODS AND BIOSTATISTICS		
Topic	**Type**	**Time**
Purpose and research methods of scientific research	Theoretical	1
Preparing a scientific project in health sciences: Preparing for the project writing and planning the project	Theoretical	1
Creation of the project team, determination of the project method, necessary permissions for the project	Theoretical	1
Writing the project proposal	Theoretical	1
Mistakes made in the project proposal and solution suggestions	Theoretical	1
Biostatistics, data, and variable concepts	Theoretical	1
Descriptive statistics	Theoretical	1
Prevalence measures	Theoretical	2
Frequency tables	Theoretical	1
Table and graphical representations	Theoretical	1
Practices	Practical	2
Hypothesis testing	Theoretical	2
Statistical testing methods and sample size	Theoretical	2
More than two samples' tests in independent groups	Theoretical	2
Multiple sample tests and categorical data analysis in dependent groups	Theoretical	2
Diagnostic tests and ROC analysis	Theoretical	2
Practices	Practical	2
CLINICAL OVERVIEW II		
Topic	**Type**	**Time**
Spinal cord lesions	Theoretical	1
Lesions of the brain stem and cerebellum	Theoretical	2
Cranial nerves: I-VI lesions	Theoretical	1
Cranial nerves: VII-XII lesions	Theoretical	1
Developmental anomalies of nervous system	Theoretical	1
Cerebral hemisphere lesions, subcortical lesions, and vascular lesions	Theoretical	2
Clinical anatomy of eyeball and accessory ocular structures	Theoretical	1
Visual tract lesions	Theoretical	1
Hearing and balance: clinical anatomy	Theoretical	1
Developmental anomalies of eye globes-lids and ears	Theoretical	1
Serological tests	Theoretical	2
Clinical anatomy of the cardiovascular system	Theoretical	1
Developmental anomalies of heart and vessels	Theoretical	2
Clinical anatomy of the respiratory system	Theoretical	1

Clinical enzymology	Theoretical	1
Developmental anomalies of urogenital system	Theoretical	2
Clinical anatomy of the urogenital system	Theoretical	2
Biochemical approach to kidney diseases	Theoretical	1
Biochemical approach to diseases of the hypothalamic-pituitary system	Theoretical	1
Biochemical approach to thyroid gland diseases	Theoretical	1
Clinical anatomy of the endocrine system	Theoretical	1
Biochemical approach to adrenal gland diseases	Theoretical	2
Abdominal wall hernias	Theoretical	1
Clinical anatomy of the digestive system	Theoretical	2
Developmental anomalies of digestive system	Theoretical	2
Lipid metabolism disorders	Theoretical	1
Integration of metabolism: biochemical response in fasting and satiety (case report)	Theoretical	1
Clinical evaluation of the metabolism of vitamins	Theoretical	1
Inherited metabolic diseases	Theoretical	2
Clinical drug research, bioavailability, and bioequivalence studies	Theoretical	2
Clinical significance of oxidative phosphorylation and energy homeostasis	Theoretical	1
Chromosomal aberrations	Theoretical	1
Molecular basis of inherited diseases	Theoretical	1
Cancer biochemistry	Theoretical	2
Tumor immunology	Theoretical	1
Gene defects	Theoretical	2
Pharmacogenetics and its applications	Theoretical	1
Molecular diagnostic methods	Theoretical	1
Medically important arthropods and their diseases	Theoretical	1
Transplantation pathology	Theoretical	1
Transplantation immunology	Theoretical	1
Pharmacovigilance	Theoretical	1
Rational drug use	Theoretical	1
CLINICAL SKILLS		
Topic	**Type**	**Time**
Wound dressing skills	Practical	2
Ability to apply elastic bandages	Practical	2
Blood pressure measurement skills	Practical	2
Bleeding control	Practical	2
Ability to give intramuscular (IM) and subcutaneous (SC) injections	Practical	2


LOKMAN HEKİM
ÜNİVERSİTESİ