

Basic Physiology & Biochemistry

Objectives

At the end of the Physiology and Biochemistry course, the students should be able to:

- Mention normal human body functions from cellular level to different systems of the body.
- Interpret normal composition and functions of different components and differentiate it from abnormal
- Demonstrate knowledge and skills for performing physiological and biochemical tests in abnormal conditions of the body

List of Competencies

Learning Physiology and Biochemistry provide better understanding of human body system and mechanism of body function. This knowledge helps as building block for better understanding of para-clinical and clinical subjects.

In the process of completing these courses students acquire the following competencies.

1. Explain the importance of water intake and output of the body
2. Identify patients with dehydration and oedema
3. Identify different blood corpuscles under microscope
4. Report/ notify clinical condition related to enlarged tonsil, spleen and lymph nodes
5. Measure and records important vital functions- heart rate, pulse rate, blood pressure
6. Describe the mechanism of respiration and measure & record respiratory rate
7. Mention the functions of para-nasal sinuses
8. Describe the functions of different gastro intestinal organs
9. Auscultation of intestinal movements and differentiate normal from abnormal movement of the gut.
10. Describe the physiological functions of urogenital system
11. Identify different bones, joints and muscles involved in gross movement of the body
12. Knowledge about structures of skin enable them to take septic measures and management of superficial wound healing
13. Regulation of body system by hormones released from different endocrine glands
14. Mention the role of hormones in menstrual cycle , process of lactation, intrauterine embryonic development in different trimester
15. Mention functions of brain, eyeball, ear
16. Understanding sympathetic and parasympathetic nervous system and their role in maintaining body functions
17. Describing functions of cranial nerves in performing physiological functions of the body

Subject : Physiology & Biochemistry

Contents	Learning Objectives	Training /Learning experiences		Expected hours /days	Assessment
		Teaching methods	Aids		
1. General Body Structure a. Cell b. Tissue c. Systems of the body	At the end of the session the students will be able to : 1. define physiology, define biochemistry 2. mention the functions of the cell 1. mention the functions of the following tissue: epithelial tissue, connective tissue, muscular tissue, nervous tissue 2. mention general functions of different systems of human body	Lecture Tutorial Practical	Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers.	Total-16 hours Lec.- 8hrs Tutorial-4 hrs Practical-4 hrs	Written SAQ Oral + Practical
2. Body Fluids (biochemistry) a. Types of fluid b. Intake & output of fluid Bood & Lymphatic System a. Blood & It's cells b. Lymph & lymph nodes	At the end of the session the students will be able to : 1. state the body fluid compartments and mention the composition of ECF and ICF. 2. state water turnover, daily water intake & output, describe water balance 3. define and detect dehydration & oedema At the end of the session the students will be able to : 1. state the composition & function of blood 2. state the morphological characteristics of different blood corpuscles and their functions , identify them under microscope 3. state functions of lymphatic system 4. mention the functions of tonsil, spleen & lymph nodes	Lecture Tutorial Practical	Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers	Total-20 hours Lec.- 8 hrs Tutorial-6 hrs Practical-6 hrs	Written (SAQ) Oral + Practical
3. Cardio-vascular system a. Heart and it's parts b. Main blood vessels of the heart c. Main blood vessels of the body d. Blood pressure	At the end of the session the students will be able to : 1. mention the functions of the heart. 2. explain functions of arterial system, venous system, cardiac cycle 3. define cardiac output, venous return 4. measure & record heart rate, pulse rate, blood pressure	Lecture Tutorial Practical	Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers	Total-20 hours Lec.- 8 hrs Tutorial-6 hrs Practical-6 hrs	Written (SAQ) Oral + Practical

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4. Respiratory System a. Functions of respiratory tract and para nasal sinuses	At the end of the session the students will be able to : 1. mention the functions of upper and lower respiratory tract. 2. state the functions of paranasal sinuses 3. explain the mechanism of respiration	Lecture Tutorial Practical	Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers	Total-18 hours Lec-8 hrs Tutorial-4 hrs Practical-6 hrs	Written (SAQ) Oral + Practical
5. Digestive System 1 Functions of GIT 2. Composition of different juice and enzymes secreted by organs of GIT	At the end of the session the students will be able to : 1. state the function of the various parts of gastrointestinal tract e.g. Stomach, Duodenum, liver, Gall bladder, pancreas, small intestine, vermiform appendix , large gut, rectum 2. describe the main composition of gastric juice, intestinal Juice, bile.	Lecture Tutorial Practical	Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers	Total-18 hours Lec- 8 hrs Tutorial-4 hrs Practical-6 hrs	Written (SAQ) Oral + Practical
6. Digestion & Metabolism (Biochemistry) a. Digestive juice functions b. Metabolism of CHO, Fat & Protein	At the end of the session the students will be able to : 1. describe peristalsis (movement of gut) 2. Functions of Saliva, Gastric juice, pancreatic juice, intestinal juice, bile 3. out line the digestion & absorption of Protein, Fat, Carbohydrate, 4. define <ul style="list-style-type: none"> • Metabolism • Anabolism • catabolism 	Lecture Tutorial Practical	Lecture Practical demonstration	Total-22 hrs Lec-10 hrs Tutorial-6 hrs Practical-6 hrs	Written (SAQ) Oral + Practical

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7. Skin & Musculo-skeletal System a.Skin b. Bones and Joints	At the end of the session the students will be able to : 1. Mention the functions of skin, bones and joints	Lecture Tutorial Practical	Skeleton Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers	Total-12 hours Lec.- 6 hrs Tutorial-4 hrs Practical-2 hrs	Written (SAQ) Oral + Practical
8. URO-Genital System a. Parts of the Urinary tract b. Parts of the genital tract a. Menstrual Cycle b. Intra- uterine embryonic development in different trimester c. Mechanism of lactation	At the end of the session the students will be able to : 1. mention the function of different parts of urinary system 2. mention the function of different parts of reproductive system – both male and female. 3. describe briefly menstrual cycle. 4. name the intrauterine stages of embryonic development 5. outline the main factors that initiate and maintain process of the lactation.	Lecture Tutorial Practical	Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers	Total-20 hrs Lec.- 10 hrs Tutorial-6 hrs Practical-4 hrs	Written (SAQ) Oral + Practical

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9. Nervous System a. Brain & its parts b. Central & Peripheral Nervous system c. Functions of Cranial nerves d. Eye & Ear	At the end of the session students will be able to <ol style="list-style-type: none"> classify nervous system define followings: neuron, sensory nerve, motor nerve, nerve plexus, reflex arch, ganglion, sympathetic & para sympathetic nervous system mention the function of cranial nerves, main functional areas of cerebrum, cerebellum, mid brain, pons, medulla oblongata, basal ganglia, hypothalamus, thalamus, spinal cord composition & functions of cerebro-spinal fluid (CSF) mention their functions of different structures of the eye ball. mention the physiological functions of external middle and internal ear, tympanic membrane 	Lecture Tutorial Practical	Skeleton, Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers	Total-20 hrs Lec.- 8 hrs Tutorial-6 hrs Practical-6 hrs	Written (SAQ) Oral + Practical
10. Endocrine system a. Endocrine Glands b. Different hormones & their functions	At the end of the session students will be able to <ol style="list-style-type: none"> define endocrine gland name main endocrine glands and mention functions of pituitary gland, thyroid, adrenal glands, ovary, testis, islets of langerhans of pancreas list the hormones of pituitary glands, thyroid adrenal glands, ovary, testis, islets of langerhans 	Lecture Tutorial Practical	Models, chalk & Board, Chart & diagram, OHP, Multimedia, CD, volunteers	Total-14 hours Lec.- 6 hours Tutorial-4 hours Practical-4 hours	Written (SAQ) Oral + Practical