Gujarat Technological University

B.Pharm Semester-I

Anatomy physiology and Health education

Theory(3 Hours / Week: 3 Credits: 45 hours)

1. **Introduction and Scope** of Anatomy and Physiology. Structural and functional organization of various organ systems. Definitions of various terms used in Anatomy. **2hrs**
2. **Structure and function of cell** and its components with Special emphasis on molecular structure of cell membrane, transporter mechanisms, mitochondria and nucleus. Cell cycle and its significance. Mechanism of protein synthesis By cell organelles. **7hrs**
3. **Elementary tissues of the body**. Various elementary tissues and their subtypes: epithelial tissue, muscular tissue, connective tissue and nervous tissue. **3hrs**
4. **Osseous system**: Structure and function of skeleton. Histology of bone Classification of joints and their function. Joint disorders. **5hrs**
5. **Muscular system:** Gross anatomy of skeletal muscles. Names, position, attachments and functions of various muscles. Neuromuscular junction. Physiology of muscle contraction and its components. Properties of skeletal muscles and their significance in health disorders. **5hrs**
6. **Haemopoietic system:** Composition and functions of blood and its components. Blood groups. Mechanism of blood coagulation. Haemopoiesis. Brief information regarding disorders of blood. **6hrs**
7. **Lymph and lymphatic system:** Composition, Formation, and circulation of lymph. Extra-cellular, Tran-cellular and intra-cellular fluids and their composition. Basic physiology of spleen and serosal cavities. Disorders of lymphatic system. **3hrs**
8. **Body defense Mechanisms & Immunity:** Basic principles of immunity, innate immunity, adaptive immunity, immune interactions, immunotherapy, acquired immunity, Reticulo-endothelial System. **3hrs**
9. **Local Hormones, Inflammation & Allergy**: Functional importance of histamine, 5-hydroxytryptamine (5-HT), Ecosanoids, Platelet-activating factors (PAF) & peptides with specific reference to their role in inflammation & allergy. **5hrs**
10. **Digestive system**; Gross Anatomy of the Gastrointestinal tract. Structure and functions of various organs of alimentary canal and associated organs like Liver, pancreas and gall bladder. Physiology of digestion and absorption. Brief overview of disorders. **6hrs**

Practical(2 Hours / Week: 2 Credits)

1. Study of the human skeleton. **2hrs**

2. Study with the help of charts and models of the Digestive and Muscular System and organs **2hrs**

3. Histology of elementary tissues and organs of alimentary canal and associated organs **2hrs**

4. Hematology experiments **6hrs**
   Use & Care of Microscope
   Study of Haemocytometry
   Hemoglobin estimation
   Total WBC count
   Total RBC count
   Differential WBC count
   Determination of clotting time and bleeding time of blood,
   Erythrocyte sedimentation rate (ESR) and Blood Groups
   Effect of Osmosis on RBC

5. Amphibian Experiments for Study of Properties of Skeletal Muscle using either demonstrations or computer simulated experiments. **3hrs**

Books Recommended
(Latest Editions)

1 William J. Larsen: Anatomy – Development, function, Clinical Correlations– Saunders (Elsevier Science)

2 Guyton A.C. and Hall J.E. : Textbook of Medical Physiology – 10th Edition– W.B.Saunders

3 Seeley R.R., StephensT.D. and Tate P.:Anatomy and Physiology 2000– McGraw Hill Co.

4 Waugh A. and Grant A.: Ross and Wilson's Anatomy and Physiology in Health & illness — Churchill Livingstone

5 Sobotta : Atlas of Human Anatomy (2 Volumes) –Edited by Putz and R. Pabst, Lippincott, Williams and Wilkins

6 Anne M.R.Agur & Ming J. Lee: Grant's Atlas of Anatomy –Lippincott, Williams and Wilkins

7 Gosling T.A., Harris P.F., Whitmore I., William, Human Anatomy: Color Atlas and Text — Mosby

8 Bullock B.L. & Henze R.L., Focus on Pathophysiology –Lippincott

9 Martini, F. Fundamentals of Anatomy and Physiology (Prentice Hall)

10 West, J.B. Best and Taylor's physiological Basis of Medical Practice (Williams and Wilkins, Baltimore)

11 Tortora G.J. and Anagnodokos, N.P. Principles of Anatomy and Physiology (Harper and Colling Publishers, New York)

12 Derasari and Gandhi's Elements of Human Anatomy, Physiology & Health Education Eds R. K. Goyal et. al. (B.S.Shah Prakashan, Ahmedabad)

13 Joshi, Vijaya D. Preparatory Manual for Undergraduates Physiology (B.I. Churchill Livingstone) –

14 Chatterjee, C.C.Human Physiology (Medical Allied Agency, Calcutta) –

15 Goyal, R.K. et al.: Practical Anatomy Physiology and Biochemistry (B.S. Shah Prakashan, Ahmedabad)

16 Garg K. et al. A Text Book of Histology (CBS Publishers, New Delhi)

17 Lesson, C.R. et al.: Text Book of Histology (W.B.Saunders Company)