FACULTY OF PHARMACY
First Semester Bachelor of Pharmacy
In Effect from Academic Year 2016-17

Subject Code: 1PH1010104	**Subject Title:** HUMAN ANATOMY PHYSIOLOGY-I
Pre-requisite Subject	**- NONE -**

Objectives of course:

1. To understand structure and function of cell, tissue, organs and system at cellular level.
2. To understand how functions of cell, tissues, organs and systems are integrated to make the entire body function with complete co-ordination.
3. To understand the various diseases caused due to disturbances in the body physiology.
4. To learn fundamentals of health, various dimensions of health, disease management and
5. Clinical parameters for measuring health.

Learning outcomes:

The student should be able to:

1. Draw and label the internal structure of cell, different tissues, organs and systems of Human body.
2. Explain the functions of important organs and Systems.
3. Know the different components of blood and should be able to diagnose any abnormalities caused due to vary in the blood components.
4. Identify the major bones, organs by the models.
5. Measure the Blood pressure and body temperature.
6. Describe the significance of each wave of ECG.
7. Explain basic knowledge of some common diseases.
8. Define common terminologies used in health.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)					
				Theory(T)		Practical(P)		Total Marks	
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Theory	Practical
3	0	3	6	80	20	80	20	100	100

Subject Contents			
Sr. No.	**Topic**	**Total Hours**	**Weight (%)**
1	**Introduction and Scope** of Anatomy and Physiology. Structural and functional organization of various organ systems. Homeostasis, Negative and positive feedback system. Transcellular, Extra-cellular and Intra-cellular fluids and their composition. Serosal cavities. Definitions of various terms used in Anatomy.	3	6
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	4	8
3	**Elementary tissues of the body:** Various elementary tissues and their subtypes with characteristics, location and functions: epithelial tissue, muscular tissue, connective tissue and nervous tissue.	4	8

4	**Osseous system:** Structure, Composition and function of skeleton. Histology of bone. Classification of joints and their function. Types of movements of joints. Brief introduction to disorders of bones and joints.	4	8
5	**Muscular system:** Gross anatomy of skeletal muscles. Neuromuscular junction. Physiology of muscle contraction and its components. Properties of skeletal muscles. Brief introduction to muscle disorders.	3	6
6	**Haemopoietic system:** Introduction, composition, properties and functions of blood and its components. Haemopoiesis, Lifecycle and physiology of RBC. Blood groups and their significance, Haemostasis and fibrinolytic pathway, Types of Anaemia, Brief information regarding disorders of blood.	8	20
7	**Lymph and lymphatic system:** Composition, formation, circulation and functions of lymph. Basic physiology and functions of spleen. Disorders of lymph and lymphatic system.	2	4
8	**Cardiovascular System:** Anatomy and physiology of the heart, Circulatory system including coronary circulation and pulmonary circulation. Properties of Cardiac muscle, Electrocardiogram (ECG), Blood pressure and its regulation, Basic understanding of cardiac cycle and heart sounds, cardiac output and factors affecting cardiac output. Renin Angiotensin Aldosterone system and its significance. Brief introduction to cardiovascular disorders like hypertension, atherosclerosis, angina pectoris, myocardial ischaemia and infarction, congestive cardiac failure and cardiac arrhythmias**.**	9	23
9	**Body defense Mechanisms and Immunity:** Basic principles of immunity, innate immunity, adaptive immunity, acquired immunity, immune interactions (cellular and humoral immunity).	3	6
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 at various parts of gastrointestinal tract including phases of gastric secretion. Brief overview of disorders of G. I. tract and associated organs.	5	11

List of References:
Reference Books:

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., Stephens T. D. and Tate P.: Anatomy and Physiology 2000– McGraw Hill Co.
4. Sobotta. Atlas of Human Anatomy (2 Volumes) –Edited by Putz and R. Pabst,Lippincott, Williams and Wilkins
5. Anne M. R. Agur & Ming J. Lee: Grant's Atlas of Anatomy –Lippincott, Williams and Wilkins
6. Gosling T. A., Harris P. F., Whitmore I., William, Human Anatomy: Color Atlas and Text –– Mosby
7. Bullock B.L. & Henze R.L., Focus on Pathophysiology –Lippincott
8. Martini F. Fundamentals of Anatomy and Physiology (Prentice Hall)

9. West J. B. Best and Taylor's physiological Basis of Medical Practice (Williams and Wilkins, Baltimore)
10. Tortora G. J. and Anagnodokos, N. P. Principles of Anatomy and Physiology (Harper and Colling Publishers, New York)
11. Chatterjee C. C. Human Physiology (Medical Allied Agency, Calcutta)
12. Garg K. et al. A Text Book of Histology (CBS Publishers, New Delhi)
13. Lesson C. R. et al.: Text Book of Histology (W.B.Saunders Company)

Text Books:

1. Goyal R. K. & Mehta A. A. Human Anatomy Physiology And Health Education, (B. S. Shah Prakashan)
2. Waugh A. and Grant A.: Ross and Wilson's Anatomy and Physiology in Health and illness — Churchill Livingstone
3. Joshi Vijaya D. Preparatory Manual for Undergraduates Physiology (B.I. Churchill Livingstone)
4. Goyal R. K. et al.: Practical Anatomy Physiology and Biochemistry (B.S. Shah Prakashan, Ahmedabad)

e-Resources:

1. Blood function and composition:http://www.myvmc.com/anatomy/blood-function-and-composition
2. Cardiovascular system: http://classes.midlandstech.edu/caterp/Courses/bio211/chap18/chap18.html

List of Experiments:

Practical exercises should be based on theoretical topics. The practical should broadly cover the following:	
1	Study of the human skeleton with the help of charts and models, Study of joints with the help of charts.
2	Digestive and Muscular System (Names, position, attachments and functions of various muscles) with the help of charts and models.
3	Histology of elementary tissues and various organs of Cardiovascular, Digestive and Muscular System.
4	Hematology experiments: Use and Care of Microscope Study of Haemocytometry Haemoglobin estimation Total WBC count Total RBC count Differential WBC count Determination of clotting time and bleeding time of blood Erythrocyte Sedimentation Rate (ESR) Blood Groups, Effect of Osmosis on RBC
5	Study of the human cardiovascular (Heart, Arterial and Venous System), Circulatory system including arterial and venous system with special reference to the names and positions of main arteries and veins, Coronary circulation, Pulmonary circulation. Determination of pulse rate, blood pressure, listening to heart sounds. Demonstration of ECG.
6	Amphibian experiments for study of properties of skeletal muscle using either Demonstrations or computer simulated experiments.