NIRMA UNIVERSITY
Institute of Pharmacy

(B. Pharm)
(Semester - II)

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Course Code	**BP201T**
Course Title	**Human Anatomy and Physiology II – Theory**

Scope:

This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

Objectives:

Upon completion of this course the student should be able to -

1. Explain gross morphology, structure and functions of various organs of the human body.
2. Describe various homeostatic mechanisms and their imbalances.
3. Identify various tissues and organs of different systems of human body.
4. Perform hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc. and also record blood pressure, heart rate, pulse and respiratory volume.
5. Appreciate coordinated working pattern of different organs of each system.
6. Appreciate interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

Course Learning Outcomes (CLO):

At the end of the course, students will be able to -

1. Identify the structure, location of cell, tissues, muscles and various organs of the body.
2. Explain the anatomy, physiology and functions of cardiovascular, digestive, respiratory and reproductive system.
3. Outline the concepts of genetics.
4. Summarize the roles and functions of body fluids, blood and lymph.
5. Discuss various feedback mechanisms and regulation of physiological processes.
6. Perform hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc. and also record blood pressure, heart rate, pulse and respiratory volume.

Syllabus: **Teaching hours: 45 Hours**

UNIT I **10 Hours**

Body fluids and blood:

Body fluids, composition and functions of blood, hemopoeisis, formation of hemoglobin, anemia, mechanisms of coagulation, blood grouping, Rh factors, transfusion, its significance and disorders of blood, Reticulo-endothelial system.

Lymphatic system:

Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system.

UNIT II **10 Hours**

Cardiovascular system:

Heart – anatomy of heart, blood circulation, blood vessels, structure and functions of artery, vein and capillaries, elements of conduction system of heart and heart beat, its regulation by autonomic nervous system, cardiac output, cardiac cycle.

Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.

UNIT III **06 Hours**

Digestive system:

Anatomy of GI Tract with special reference to anatomy and functions of stomach, (Acid production in the stomach, regulation of acid production through parasympathetic nervous system, pepsin role in protein digestion) small intestine and large intestine, anatomy and functions of salivary glands, pancreas and liver, movements of GIT, digestion and absorption of nutrients and disorders of GIT.

UNIT IV **10 Hours**

Respiratory system:

Anatomy of respiratory system with special reference to anatomy of lungs, mechanism of respiration, regulation of respiration. Lung Volumes and capacities transport of respiratory gases, artificial respiration, and resuscitation methods.

Urinary system:

Anatomy of urinary tract with special reference to anatomy of kidney and nephrons, functions of kidney and urinary tract, physiology of urine formation, micturition reflex and role of kidneys in acid base balance, role of RAS in kidney and disorders of kidney.

UNIT V **09 Hours**

Reproductive system:

Anatomy of male and female reproductive system, Functions of male and female reproductive system, sex hormones, physiology of menstruation, fertilization, spermatogenesis, oogenesis, pregnancy and parturition.

Introduction to genetics:

Chromosomes, genes and DNA, protein synthesis, genetic pattern of inheritance.

Tutorials: **Teaching hours: 15 Hours**

Tutorials will be based on above syllabus

Suggested Readings^: (Latest Edition)

1. Sembulingam, K. Sembulingam, P. *Essentials of Medical Physiology*. New Delhi, Jaypee Brother's Medical Publishers.
2. Wilson, K.J.W. *Anatomy and Physiology in Health and Illness*. New York, Churchill Livingstone.
3. Best and Tailor. *Physiological basis of Medical Practice*. MI USA, Williams & Wilkins Co, Riverview.
4. Guyton, A.C, Hall J.E, Miamisburg, O.H. *Text book of Medical Physiology*. U.S.A. Elsevier Saunders.
5. Tortora G, Palmetto, G.A. *Principles of Anatomy and Physiology*. U.S.A. John Wiley & sons.
6. Singh I. *Textbook of Human Histology*. New Delhi, Jaypee Brother's Medical Publishers.
7. Ghai, C.L. *Textbook of Practical Physiology*. New Delhi. Jaypee Brother's Medical Publishers.
8. Srinageswari, K., Sharma, R. *Practical workbook of Human Physiology*. New Delhi, Jaypee Brother's Medical Publishers.
9. Gandhi, T.P. et. al. *Human Anatomy, Physiology & Health Education*. B.S.Shah Prakashan, Ahmedabad.
10. Goyal, R.K. et al.: *Practical Anatomy Physiology and Biochemistry*. B.S. Shah Prakashan, Ahmedabad.

L= Lecture, T= Tutorial, P= Practical, C= Credit

^this is not an exhaustive list