

**NIRMA UNIVERSITY**  
**Institute of Pharmacy**

**(B. Pharm)**  
**(Semester - I)**

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<b>Course Code</b>	<b>BP101T</b>
<b>Course Title</b>	<b>Human Anatomy and Physiology I– Theory</b>

**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 homeostatic mechanisms. The subject provides the basic knowledge required to understand 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 several experiments related to special senses and nervous system.
5. Appreciate coordinated working pattern of different organs of each system.

**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. Remember various feedback mechanisms that help to regulate physiological processes.
3. Describe anatomy, physiology and functions of integumentary, skeletal and nervous system.
4. Explain structure and functions of various endocrine glands and list their disorders.
5. Assess normal and abnormal functioning of various sensory organs.

**Syllabus:**

**Teaching hours: 45 Hours**

**UNIT I**

**10 Hours**

• **Introduction to human body**

Definition and scope of anatomy and physiology, levels of structural organization and body systems, basic life processes, homeostasis, basic anatomical terminology.

• **Cellular level of organization**

Structure and functions of cell, transport across cell membrane, cell division, cell junctions.

General principles of cell communication, intracellular signaling pathway activation by extracellular signal molecule, Forms of intracellular signaling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine

- **Tissue level of organization**

Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues.

## **UNIT II**

**10 Hours**

- **Integumentary system**

Structure and functions of skin

- **Skeletal system**

Divisions of skeletal system, types of bone, salient features and functions of bones of axial and appendicular skeletal system

Organization of skeletal muscle, physiology of muscle contraction, neuromuscular junction

## **UNIT III**

**10 Hours**

- **Nervous system**

Organization of nervous system, neuron, neuroglia, classification and properties of nerve fibre, electrophysiology, action potential, nerve impulse, receptors, synapse, neurotransmitters.

Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid. Structure and functions of brain (cerebrum, brain stem, cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts, reflex activity)

## **UNIT IV**

**08 Hours**

- **Peripheral nervous system:**

Classification of peripheral nervous system: Structure and functions of sympathetic and parasympathetic nervous system.

Origin and functions of spinal and cranial nerves.

- **Special senses**

Structure and functions of eye, ear, nose and tongue and their disorders.

## **UNIT V**

**07 Hours**

- **Endocrine system**

Classification of hormones, mechanism of hormone action, structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas, pineal gland, thymus and their disorders.

## **Tutorials**

**Teaching hours: 15 Hours**

Tutorials will be based on above syllabus

## **Suggested Readings<sup>^</sup>: (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 Taylor. 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. Chatterje, C.C. Human Physiology (vol 1 and 2). Kolkata, Academic Publishers

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

^ this is not an exhaustive list