

<b>INSTITUTE</b>	<b>FACULTY OF PHARMACY</b>
<b>PROGRAM</b>	<b>BACHELOR OF PHARMACY</b>
<b>SEMESTER</b>	<b>2</b>
<b>COURSE TITLE</b>	<b>HUMAN ANATOMY AND PHYSIOLOGY-II</b>
<b>COURSE CODE</b>	<b>13PH0201</b>
<b>COURSE CREDITS</b>	<b>6</b>

**Objective:**

- 1 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

**Course Outcomes:** After completion of this course, student will be able to:

- 1 Explain the gross morphology, structure and functions of various organs of the human body.
- 2 Describe the various homeostatic mechanisms and their imbalances.
- 3 Identify the various tissues and organs of different systems of human body.
- 4 Perform the hematological tests like blood cell counts, haemoglobin 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 the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

**Pre-requisite of course:** Explain the gross morphology, structure and functions of various organs of the human body.

**Teaching and Examination Scheme**

<b>Theory Hours</b>	<b>Tutorial Hours</b>	<b>Practical Hours</b>	<b>ESE</b>	<b>IA</b>	<b>CSE</b>	<b>Viva</b>	<b>Term Work</b>
3	1	4	75	15	10	35	15

Contents : Unit	Topics	Contact Hours
1	<p><b>Nervous system</b> 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), 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 Energetics: Formation and role of ATP, Creatinine Phosphate and BMR., 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, 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, 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</p>	10
2	<p><b>Digestive system</b> 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 Energetics: Formation and role of ATP, Creatinine Phosphate and BMR.</p>	6

<b>Contents : Unit</b>	<b>Topics</b>	<b>Contact Hours</b>
3	<b>Respiratory system</b> 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 reflux and role of kidneys in acid base balance, role of RAS in kidney and disorders of kidney	10
4	<b>Endocrine system</b> 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	10
5	<b>Reproductive system</b> 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	9
<b>Total Hours</b>		<b>45</b>

#### Suggested List of Experiments:

<b>Contents : Unit</b>	<b>Topics</b>	<b>Contact Hours</b>
1	<b>Human Anatomy and Physiology-II</b> Experiment-1, Experiment-2, Experiment-3, Experiment-4, Experiment-5, Experiment-6, Experiment-7, Experiment-8, Experiment-9, Experiment-10, Experiment-11, Experiment-12, Experiment-13, Experiment-14, Experiment-15, Experiment-16	60
2	<b>Human Anatomy and Physiology-II</b> Tutorial-1, Tutorial-2, Tutorial-3, Tutorial-4, Tutorial-5, Tutorial-6, Tutorial-7, Tutorial-8, Tutorial-9, Tutorial-10, Tutorial-11, Tutorial-12, Tutorial-13, Tutorial-14, Tutorial-15	15
<b>Total Hours</b>		<b>75</b>

#### Textbook :

- 1 Textbook of Human Histology, Inderbeer Singh, Jaypee brothers Medical Publishers, 2019
- 2 Textbook of Practical Physiology, C.L Ghai, Jaypee brothers Medical Publishers, 2013
- 3 Practical workbook of Human Physiology, K Srinageswari and Rajeev Sharma, Jaypee brothers Medical Publishers, 2018
- 4 Essentials of Medical Physiology, K. Sembulingam and P. Sembulingam., Jaypee brothers medical publishers, New Delhi, 1999
- 5 Anatomy and Physiology in Health and Illness, Kathleen J.W. Wilson, Churchill Livingstone, New York, Elsevier Health Sciences, 1991

**Textbook :**

- 6 Physiological basis of Medical Practice, Williams & Wilkins, Williams & Wilkins, 1984
- 7 Text book of Medical Physiology, Arthur Guyton and John.E. Hall., Philadelphia, PA : Elsevier, 1956
- 8 Principles of Anatomy and Physiology, Tortora Grabowski. Palmetto, Wiley India Pvt. Ltd, 1996

**References:**

- 1 Physiological basis of Medical practice, Physiological basis of Medical practice, Best and Tailor. Williams & Williams co, Wolters Kluwer India Pvt. Ltd., 2011
- 2 Guyton and Hall Textbook of Medical Physiology, Guyton and Hall Textbook of Medical Physiology, Arthur C, Guyton and John E. Hall, Miamisburg, saunders, 2015
- 3 Human Physiology (volume 1 & 2), Human Physiology (volume 1 & 2), Dr. CC Chatterjee., CBS, 2020

**Suggested Theory Distribution:**

The suggested theory distribution as per Bloom’s taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
<b>Remember / Knowledge</b>	<b>Understand</b>	<b>Apply</b>	<b>Analyze</b>	<b>Evaluate</b>	<b>Higher order Thinking / Creative</b>
20.00	30.00	25.00	15.00	10.00	0.00

**Instructional Method:**

- 1 The course delivery method will depend upon the requirement of content and the need of students. The teacher in addition to the conventional teaching method by the blackboard may also use any tools such as demonstration, role play, quiz, brainstorming, MOOCs etc.
- 2 The internal evaluation will be done based on continuous evaluation of students in the laboratory and classroom.
- 3 Students will use supplementary resources such as online videos, NPTEL videos, MOOCs/ e-courses, virtual laboratories.