GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm SEMESTER: II

Subject Name: Human Anatomy and Physiology II

Subject Code: BP201TP

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 the course student shall 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.

Sr No	Topics	%
	•	weightage
1.	Nervous system:	10
	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)	
2.	Digestive system	6
	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.	
3.	Respiratory system	10
	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	
4.	Endocrine system	10
	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.	
5.	Reproductive system	9
	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	

Practical

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

- 1. To study the integumentary and special senses using specimen, models, etc.,
- 2. To study the nervous system using specimen, models, etc.,
- 3. To study the endocrine system using specimen, models, etc
- 4. To demonstrate the general neurological examination
- 5. To demonstrate the function of olfactory nerve
- 6. To examine the different types of taste.
- 7. To demonstrate the visual acuity
- 8. To demonstrate the reflex activity
- 9. Recording of body temperature
- 10. To demonstrate positive and negative feedback mechanism
- 11. Determination of tidal volume and vital capacity
- 12. Study of digestive, respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens
- 13. Recording of basal mass index
- 14. Study of family planning devices and pregnancy diagnosis test
- 15. Demonstration of total blood count by cell analyser
- 16. Permanent slides of vital organs and gonads

Recommended Books (Latest Editions)

- 1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi
- 2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
- 3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MI USA
- 4. Text book of Medical Physiology- Arthur C,Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
- 5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A

- 6. Textbook of Human Histology by Inderbir Singh, Jaypee brothers medical publishers, New Delhi
- 7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brothers medical publishers, New Delhi
- 8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi

Reference Books:

- 1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
- 2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A
- 3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic Publishers Kolkat

