Gujarat Technological University

B. PHARM SEMESTER-II HUMAN ANATOMY AND PHYSIOLOGY

Subject Code: 2220004

THEORY (4 Hours/Week, 4 Credits, 60 Hours)

Sr.	Course Contents	Hours
No.		
1	Respiratory System: Anatomy and physiology of various organs of respiratory system, pulmonary ventilation and factors affecting it, lung volumes and capacities, gas laws in relation to exchanges of oxygen and carbon dioxide, external and internal respiration including transport of gases in the blood, control and regulation of respiration, voice production, brief outline of hypoxia, asthma, COPD, emphysema, chronic bronchitis, pneumonia, tuberculosis, pulmonary oedema, sudden infant death syndrome, severe acute respiratory syndrome.	8
2	Nervous system: Organization and functions of nervous system, parts of Neuron, structural and functional classification of neurons, Neuroglia, Myelination, Gray and white matter, Graded potential, Resting membrane potential, Generation and propagation of Nerve action potential, Signal transmission at synapses, Post synaptic potentials (EPSP,IPSP) and their summation, Brief overview of various types of neurotransmitter, Overview of nervous disorders like multiple sclerosis, epilepsy.	5
	Anatomy of spinal cord (External, Internal), Protective structures of Spinal cord and nerves, names and functions of spinal nerves, physiology of spinal cord, sensory and motor tracts, reflexes and reflex arcs, brief outline of meningitis and poliomyelitis	5
	Major parts and protective coverings of brain, blood brain barrier, CSF, medulla oblongata, pons, midbrain, reticular formation, cerebellum, thalamus, Epithalumus, subthalamus, hypothalamus, cerebral cortex, lobes of cerebrum, cerebral white matter, basal nuclei, limbic system, sensory, motor and association areas of cerebral cortex, brain waves, cranial nerves names and functions, brief outline of cerebrovascular accident, transient ischemic attack, Alzheimer's disease, Dementia, Encephalitis, Attention Deficit Hyperactivity Disorder	8
	Comparison of somatic and autonomic nervous system, Anatomy of autonomic motor pathways (preganglionic neurons, autonomic ganglia, postganglionic neurons, enteric neurons), Synthesis, release and removal of neurotransmitters (e.g. Acetylcholine, Nor adrenaline), Physiology of the ANS, comparisons of sympathetic and parasympathetic divisions of ANS.	4
3	Special Senses: Basics Sensory modalities, Process of sensation, sensory receptors, somatic sensation, somatic sensory and motor pathways, Brief outline of Parkinson's disease, Amyotropic lateral sclerosis. Olfactory receptors, physiology of olfaction, Anatomy of taste buds and papillae, physiology of gustation, Accessory structures of eyes, anatomy of eyeball, image	6

	formation, refraction abnormalities, photo receptors and physiology of vision. Anatomy of ear, physiology of hearing and equilibrium. Brief outline of cataract, glaucoma, deafness, meniere's disease, otitis media.	
4	Urinary System: Anatomy of kidney, nephron, functions of renal system, glomerular filtration,	8
	tubular reabsorption and tubular secretion and their regulation, formation of urine, ureter, urinary bladder, urethra, brief outline of renal calculi, urinary tract infection, glomerular disease, renal failure, acid base balances and imbalances.	
5	Endocrine System: Hormone, its type, endocrine glands (pituitary gland, thyroid, parathyroid, adrenals, Pancreas, testes and ovary), their secretion, regulation of secretion, functions and disorders (brief outline of pituitary gland, thyroid gland, adrenal gland, pancreatic islet disorders, definitions of gynecomastia, hirsutism).	8
6	Reproductive System: Gross Anatomy of male reproductive system and their functions, sperm and spermatogenesis, Accessory sex glands. Gross Anatomy of Female reproductive system and their functions, Ovum and Oogenesis, Physiology of Menstruation, Family planning, various contraceptive methods, Medical termination of pregnancy (Abortion), brief outline of erectile dysfunction (Impotence), Premenstrual syndrome, Male and female infertility, endometriosis, Benign prostatic hyperplasia.	8

B. PHARM. SEMESTER-II HUMAN ANATOMY AND PHYSIOLOGY

Subject Code: 22200P4

PRACTICAL (3 Hours/Week, 3 Credits, 45 Hours)

Sr.	Course Contents	Hours
No.		
1	Biochemical analysis of urine: physical characteristics, normal constituents	3
2	Biochemical analysis of urine: abnormal constituents	3
3	Identify the constituents of urine in unknown sample.	3
4	Study anatomy of Respiratory system using charts and models	3
5	Study anatomy of Nervous system using charts and models	3
6	Study anatomy of Ear and Eye using charts and models	3
7	Study anatomy of Urinary system using charts and models	3
8	Study anatomy of Male & Female reproductive system using charts & models	3
9	Study histology and functions of various organs of Respiratory system and	3
	nervous system using slides	
10	Study histology and functions of various organs of slides urinary system and	3
	male and female reproductive system using slides.	
11	Study of various contraceptive techniques using charts	3
	HUMAN EXPERIMENTS	
12	Determination of body temperature and study of learning and memory	3
	(Short term and long term)	
13	Determination of lung function	3
	a. Determination of lung volumes and vital capacity using Spirometer /	
	Flowmeter	
	b. Determination of breath holding time	
14	Determination of vision acuity	3
	a. Near Point and near response	
	b. Determination of Stereoscopic vision	
	c. Dominance of the eye	
15	Determination of other special senses	3
	a. Temperature sensations	
	b. Sensation of taste	
	c. Sensation of smell	

Books Recommended (Latest Editions):

- 1. Tortora Gerard. J. and Derrickson Bryan. Principles of Anatomy and Physiology (International Student Edition 13th edition- Wiley)
- 2. Guyton A.C. and Hall J.E. : Textbook of Medical Physiology 10th Edition– W. B. Saunders
- 3. Waugh A. and Grant A.: Ross and Wilson's Anatomy and Physiology in Health illness Churchill Livingstone
- 4. Chatterjee C. C. Human Physiology (Medical Allied Agency, Calcutta)
- 5. West, J. B. Best and Taylor's physiological Basis of Medical Practice (Williams and Wilkins, Baltimore)
- 6. Martini, F. Fundamentals of Anatomy and Physiology (Prentice Hall)
- 7. Goyal_R. K. & Mehta A.A._ Human Anatomy Physiology and Health Education, (B. S. Shah Prakashan)
- 8. Garg K. et al. A Text Book of Histology (CBS Publishers, New Delhi)
- 9. Sobotta: Atlas of Human Anatomy (2 Volumes) -Edited by Putz and R. Pabst,

- Lippincott, Williams and Wilkins
- 10. Anne M. R. Agur & Ming J. Lee: Grant's Atlas of Anatomy –Lippincott, Williams and Wilkins
- 11. Gosling T.A., Harris P.F., Whitmore I., William, Human Anatomy: Color Atlas and Text Mosby
- 12. Joshi Vijaya D. Preparatory Manual for Undergraduates Physiology (B.I. Churchill Livingstone)
- 13. Textbook of practical Physiology C.L.Ghai (Jaypee Brothers Medical publishers)
- 14. Goyal R.K. et al.: Practical Anatomy Physiology and Biochemistry (B. S. Shah Prakashan, Ahmedabad)