GUJARAT TECHNOLOGICAL UNIVERSITY
Pharm.D.
1styear

Subject Name: Human Anatomy and Physiology
Subject Code: 818801

Scope: This course is designed to impart a fundamental knowledge on the structure and functions of the human body. It also helps in understanding both homeostasis mechanisms and homeostatic imbalances of various body systems. Since a medicament, which is produced by pharmacist, is used to correct the deviations in human body, it enhances the understanding of how the drugs act on the various body systems in correcting the disease state of the organs.

Objective:
Upon completion of the course the student shall be able to:
a. describe the structure (gross and histology) and functions of various organs of the human body;
b. describe the various homeostatic mechanisms and their imbalances of various systems;
c. identify the various tissues and organs of the different systems of the human body;
d. perform the hematological tests and also record blood pressure, heart rate, pulse and Respiratory volumes;
e. appreciate coordinated working pattern of different organs of each system; and
f. appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body

TeachingScheme (Hours)				EvaluationScheme(Marks)				Totalmarks
Theory	Tutorial	Practical	Total	Theory		Practical		
				External	Internal	External	Internal	
3	1	3	7	70	30	70	30	200

Sr. No.	CourseContents	Hours	ModuleWeightage
1	**Scope of anatomy and physiology**,basic terminologies used in this subject (Description of the body as such planes and terminologies)	4	4.5%
2	**Structure of cell**–its components and their functions.	5	5.5%
3	**Elementary tissues of the human body:** Epithelial, Connective, Muscular and Nervous tissues –their sub-types and characteristics	4	4.5%
4	a) **Osseoussystem**- structure, composition and functions of the Skeleton.(done inpracticalclasses-6hrs) b) Classification of joints,Types of movements of joints and disorders of joints(Definitions only)	4	4.5%
5	**Haemopoetic System** a) Composition and functions of blood b) Haemopoesis and disorders of blood components(definition of disorder) c) Bloodgroups d) Clottingfactorsandmechanism e) Plateletsand disordersofcoagulation	6	6.5%

6	**Lymph** a) Lymph and lymphatic system, composition, formation and circulation. b) Spleen:structureandfunctions,Disorders c) Disordersoflymphaticsystem(definitiononly)	**3**	**3.5%**
7	Cardiovascular system a) Anatomy and functions of heart b) Blood vessels and circulation (Pulmonary, coronary and systemic circulation) c) Electrocardiogram (ECG) d) Cardiac cycle and heart sounds e) Blood pressure – its maintenance and regulation f) Definition of the following disorders Hypertension, Hypotension, Arteriosclerosis, Atherosclerosis, Angina, Myocardial infarction, Congestive heart failure, Cardiac arrhythmias	**7**	**8%**
8	Respiratory system a) Anatomy of respiratory organs and functions b) Mechanism / physiology of respiration and regulation of respiration c) Transport of respiratory gases d) Respiratory volumes and capacities, and Definition of: Hypoxia, Asphyxia, Dybarism, Oxygen therapy and resuscitation.	**6**	**6.5%**
9	Digestive system a) Anatomy and physiology of GIT b) Anatomy and functions of accessory glands of GIT c) Digestion and absorption d) Disorders of GIT (definitions only)	**6**	**6.5%**
10	Nervous system a) Definition and classification of nervous system b) Anatomy, physiology and functional areas of cerebrum c) Anatomy and physiology of cerebellum d) Anatomy and physiology of mid brain e) Thalamus, hypothalamus and Basal Ganglia f) Spinal card: Structure & reflexes – mono-poly-planter g) Cranial nerves – names and functions h) ANS – Anatomy & functions of sympathetic & parasympathetic N.S.	**9**	**10%**
11	Urinary system a) Anatomy and physiology of urinary system b) Formation of urine c) Renin Angiotensin system – Juxtaglomerular apparatus - acid base Balance d) Clearance tests and micturition	**6**	**6.5%**
12	Endocrine system a) Pituitary gland b) Adrenal gland c) Thyroid and Parathyroid glands d) Pancreas and gonads	**7**	**8%**

13	Reproductive system a) Male and female reproductive system b) Their hormones – Physiology of menstruation c) Spermatogenesis & Oogenesis d) Sex determination (genetic basis) e) Pregnancy and maintenance and parturition f) Contraceptive devices	**8**	**9%**
14	Sense organs a) Eye b) Ear c) Skin d) Tongue & Nose	**6**	**6.5%**
15	Skeletal muscles a) Histology b) Physiology of Muscle contraction c) Physiological properties of skeletal muscle and their disorders (definitions)	**5**	**5.5%**
16	Sports physiology a) Muscles in exercise, Effect of athletic training on muscles and muscle performance, b) Respiration in exercise, CVS in exercise, Body heat in exercise, Body fluids and salts in exercise, c) Drugs and athletics	**4**	**4.5%**

CourseMaterials:

Text books (Latest edition)

1. Tortora Gerard J. and Nicholas, P. Principles of anatomy and physiology Publisher Harpercollins college New York.
2. Wilson, K.J.W. Ross and Wilson's foundations of anatomy and physiology. Publisher: Churchill Livingstone, Edinburg..

Reference books (Latest edition)

1. Guyton arthur, C. *Physiology of human body*. Publisher: Holtsaunders.
2. Chatterjee,C.C. *Human physiology*. Volume 1&11. Publisher: medical allied agency, Calcutta.
3. Peter L. Williams, Roger Warwick, Mary Dyson and Lawrence, H.
4. *Gray's anatomy.* Publisher:Churchill Livingstone, London.

HUMAN ANATOMYPHYSIOLOGY

Practical (3 Hours/ Week, 6 Credits, 90 Hours)

Sr. No.	Experiments
1	Study of tissues of human body (a) Epithelial tissue. (b) Muscular tissue.
2	Study of tissues of human body (a) Connective tissue. (b) Nervous tissue.
3	Study of appliances used in hematological experiments.
4	Determination of W.B.C. count of blood
5	Determination of R.B.C. count of blood.
6	Determination of differential count of blood.

7	Determination of (a) Erythrocyte Sedimentation Rate. (b) Hemoglobin content of Blood. (c) Bleeding time & Clotting time
8	Determination of (a) Blood Pressure. (b) Blood group.
9	Study of various systems with the help of charts, models & specimens (a) Skeleton system part I-axial skeleton. (b) Skeleton system part II- appendicular skeleton. (c) Cardiovascular system. (d) Respiratory system. (e) Digestive system. (f) Urinary system. (g) Nervous system. (h) Special senses. (i) Reproductive system.
10	Study of different family planning appliances.
11	To perform pregnancy diagnosis test
12	Study of appliances used in experimental physiology.
13	To record simple muscle curve using gastroenemius sciatic nerve preparation.
14	To record simple summation curve using gastroenemius sciatic nerve preparation
15	To record simple effect of temperature using gastroenemius sciatic nerve preparation.
16	To record simple effect of load & after load using gastroenemius sciatic nerve preparation.
17	To record simple fatigue curve using gastroenemius sciatic nerve preparation

CourseMaterials:

Text books

1. Goyal, R. K, Natvar M.P, and Shah S.A, Practical anatomy, physiology and biochemistry, latest edition, Publisher: B.S Shah Prakashan, Ahmedabad

Referencebooks

1. Ranade VG, Text book of practical physiology, Latest edition, Publisher: PVG, Pune Anderson Experimental Physiology, Latest edition

Scheme of PracticalExamination

	Internal/Sessional	**External**
Identification	04	10
Synopsis	04	10
MajorExperiment	07	20
MinorExperiment	03	15
Viva	02	15
Max.marks	**20**	**70**
Duration	**3 hours**	**4 hours**

Note: Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).