



Faculty of Pharmacy
Diploma in Pharmacy (D. Pharm.)
(W. E. F.: 2023-24)
Document ID: SUTEPHD-01

Name of Faculty	:	Faculty of Pharmacy
Name of Program	:	Diploma in Pharmacy
Course Code	:	IDPH01
Course Title	:	Human Anatomy & Physiology
Type of Course	:	Basic Pharmaceutical Sciences
Year of Introduction	:	2023-24

Prerequisite	:	Zeal to learn the subject												
Course Objective	:	<p>This course will discuss the following aspects of:</p> <ol style="list-style-type: none"> 1. Structure and functions of the various organ systems and organs of the human body 2. Homeostatic mechanisms and their imbalances in the human body 3. Various vital physiological parameters of the human body and their significances 4. General blood collection techniques and carrying out various haematological assessments and interpreting the results 5. Recording and monitoring the vital physiological parameters in human subjects and the basic interpretations of the results 6. Microscopic examinations of the various tissues permanently mounted in glass slides 7. Discuss the anatomical and physiological characteristics of various organ systems of the body using models, charts, and other teaching aids 												
Course Outcomes	:	<p>Upon successful completion of this course, the students will be able to</p> <table border="1"> <tr> <td>CO1</td> <td>Describe the various organ systems of the human body</td> </tr> <tr> <td>CO2</td> <td>Discuss the anatomical features of the important human organs & tissues</td> </tr> <tr> <td>CO3</td> <td>Explain the homeostatic mechanisms regulating the normal physiology in the human system</td> </tr> <tr> <td>CO4</td> <td>Discuss the significance of various vital physiological parameters of the human body</td> </tr> <tr> <td>CO5</td> <td>Perform the haematological tests in human subjects and interpret the results</td> </tr> <tr> <td>CO6</td> <td>Record, monitor and document the vital physiological parameters of human subjects and interpret the results</td> </tr> </table>	CO1	Describe the various organ systems of the human body	CO2	Discuss the anatomical features of the important human organs & tissues	CO3	Explain the homeostatic mechanisms regulating the normal physiology in the human system	CO4	Discuss the significance of various vital physiological parameters of the human body	CO5	Perform the haematological tests in human subjects and interpret the results	CO6	Record, monitor and document the vital physiological parameters of human subjects and interpret the results
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CO7	Describe the anatomical features of the important human tissues under the microscopical conditions
CO8	Discuss the significance of various anatomical and physiological-characteristics of the human body

Teaching and Examination Scheme

Teaching Scheme (Contact Hours)			Credits	Examination Marks				
L	T	P		Theory Marks		Practical Marks		Total Marks
SEE	CIA	SEE	CIA					
03	01	03	06	80	20	80	20	200

Legends: L-Lecture; T-Tutorial/Teacher Guided Theory Practice; P - Practical, C - Credit, SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

Unit No.	Topics	Teaching Hours	Weightage	Mapping with COs
1	Scope of Anatomy and Physiology Definition of various terminologies	2	2.66%	CO1
2	Structure of Cell: Components and its functions	2	2.66%	CO1
3	Tissues of human body: Epithelial, Connective, Muscular and Nervous tissues –their sub-types & characteristics.	4	5.33%	CO2 CO3
4	Osseous system: structure and functions of bones of 1. axial and appendicular skeleton 2. Classification, types and movements of joints, disorders of joints	3	4.00%	CO1 CO2 CO4
5	Haemopoietic system 1. Composition and functions of blood 2. Process of Hemopoiesis 3. Characteristics & functions of RBCs, WBCs, & platelets 4. Mechanism of Blood Clotting 5. Importance of Blood groups	8	10.66%	CO4 CO5 CO6

6	Lymphatic system 1. Lymph and lymphatic system, composition, function and its formation. 2. Structure and functions of spleen and lymph node.	3	4.00%	CO1 CO4 CO5
7	Cardiovascular system 1. Anatomy and Physiology of heart 2. Blood vessels and circulation (Pulmonary, coronary and systemic circulation) 3. Cardiac cycle and Heart sounds, Basics of ECG 4. Blood pressure and its regulation	8	10.66%	CO1 CO4 CO5
8	Respiratory system 1. Anatomy of respiratory organs and their functions. 2. Regulation, and Mechanism of respiration. 3. Respiratory volumes and capacities - definitions	4	5.33%	CO5 CO6
9	Digestive system 1. Anatomy and Physiology of the GIT 2. Anatomy and functions of accessory glands 3. Physiology of digestion and absorption	8	10.66%	CO1 CO2 CO3
10	Skeletal muscles 1. Histology 2. Physiology of muscle contraction 3. Disorder of skeletal muscles	2	2.66%	CO1 CO3 CO7
11	Nervous system 1. Classification of nervous system 2. Anatomy and physiology of cerebrum, cerebellum, mid brain 3. Function of hypothalamus, medulla oblongata and basal ganglia 4. Spinal cord-structure and reflexes 5. Names and functions of cranial nerves. 6. Anatomy and physiology of	8	10.66%	CO1 CO2 CO4
12	Sense organs - Anatomy and physiology of 1. Eye 2. Ear	6	8.00%	CO1 CO2 CO5

	3. Skin 4. Tongue 5. Nose			CO7 CO8
13	Urinary system 1. Anatomy and physiology of urinary system 2. Physiology of urine formation 3. Renin - angiotensin system 4. Clearance tests and micturition	4	5.33%	CO1 CO2 CO6
14	Endocrine system (Hormones and their functions) 1. Pituitary gland 2. Adrenal gland 3. Thyroid and parathyroid gland 4. Pancreas and gonads	6	8.00%	CO4 CO6 CO7
15	Reproductive system 1. Anatomy of male and female reproductive system 2. Physiology of menstruation 3. Spermatogenesis and Oogenesis 4. Pregnancy and parturition	4	5.33%	CO1 CO4 CO7 CO8

Suggested List of Experiments

Sr. No.	Name of Experiment	Teaching Hours
1	Study of compound microscope	03
2	General techniques for the collection of blood	03
3	Microscopic examination of Epithelial tissue, Cardiac muscle, Smooth muscle, Skeletal muscle, Connective tissue, and Nervous tissue of ready / pre-prepared slides.	03
4	Study of Human Skeleton-Axial skeleton and appendicular skeleton	03
5	Determination of Blood group, ESR, Haemoglobin content of blood, Bleeding time and Clotting time	06
6	Determination of WBC count of blood	03
7	Determination of RBC count of blood	03
8	Determination of Differential count of blood	03

9	Recording of Blood Pressure in various postures, different arms, before and after exertion and interpreting the results	03
10	Recording of Body temperature (using mercury, digital and IR thermometers at various locations), Pulse rate/ Heart rate (at various locations in the body, before and after exertion), Respiratory Rate	03
11	Recording Pulse Oxygen (before and after exertion)	03
12	Recording force of air expelled using Peak Flow Meter	03
13	Recording of Blood Pressure in various postures, different arms, before and after exertion and interpreting the results	03
14	Measurement of height, weight, and BMI	03
15	Study of various systems and organs with the help of chart, models, and specimens <ol style="list-style-type: none"> 1. Cardiovascular system 2. Respiratory system 3. Digestive system 4. Urinary system 5. Endocrine system 6. Reproductive system 7. Nervous system 8. Eye 9. Ear 10. Skin 	30

Suggested Distribution of Theory Marks Using Bloom's Taxonomy

Level	Remembrance	Understanding	Application	Analyse	Evaluate	Create
Weightage	25	12.5	12.5	00	50	00

NOTE: This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Major Equipment/ Instruments and Software Required

Sr. No.	Name of Major Equipment/ Instruments and Software
1	Microscopes
2	Haemocytometer with Micropipettes
3	Sahli's haemoglobinometers
4	Sphygmomanometers
5	Stethoscopes



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6	Human Permanent Slides for various tissues
7	Models for various organs
8	Specimen for various organs and systems
9	Human Skeleton and bones
10	Different Contraceptive Devices and Models
11	IR Thermometer
12	Refrigerator
13	First aid equipment
14	Dummy Inhalers and Nebulizer
15	Pharmacotherapeutic charts for various diseases & disorders
16	Surgical devices and Sutures
17	Digital BP Instrument
18	Mercury Thermometer
19	Digital Thermometer
20	Pulse Oximeter
21	ESR Apparatus (Westergren and Wintrobe)
22	Peak Flow meter
23	Stadiometer
24	Adult Weighing Scale (150 kg)
25	Glucometer
26	Projection microscope
27	Drug information resources
28	Charts / displays/ AVs on tobacco control, glycemic index of foods, nutrition, reproductive health
29	Display for various disinfectants, mosquito repellents etc
30	Permanent slide of different microbes

Suggested Learning Websites

Sr. No.	Name of Website
1	https://pci.nic.in/pdf/Syllabus_B_Pharm.pdf
2	https://www.aicte-india.org/downloads/bpharma.pdf
3	https://www.ipc.gov.in/
4	https://www.ayush.gov.in/
5	https://ayudmla.gujarat.gov.in/home.php
6	https://www.fda.gov/
7	https://www.pharmacopoeia.com/
8	https://ipapharma.org/
9	https://gpat.nta.nic.in/
10	https://drnaitiktrivedi.com/
11	https://gdc4gpat.com/course/gpat/



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12	https://niscpr.res.in/
13	https://delnet.in/
14	https://ihubgujarat.in/
15	https://www.ssipgujarat.in/

Reference Books

Sr. No.	Name of Reference Books
1	Human Physiology by C. C. Chatterjee
2	Human Anatomy and Physiology by S. Chaudhary and A. Chaudhary
3	Derasari and Gandhi's elements of Human Anatomy, Physiology and Health Education
4	S.R. Kale and R.R. Kale, Textbook of Practical Anatomy and Physiology
5	Ross and Wilson Anatomy and Physiology in Health and illness
6	Human Anatomy and Physiology by Tortora Gerard J
7	Fundamentals of Medical Physiology by K. Sambulingam and P Sambulingam
8	Ranade V.G. Text Book of Practical Physiology
9	Goyal R.K., Natvar M.P. and Shah S.A., Practical Anatomy, Physiology and Biochemistry, Experimental Physiology