

Human Anatomy and Physiology (Practical)

ER20-14P

A Practical Book for D. Pharm. First Year

As per the Pharmacy Council of India (PCI) ER-2020 Syllabus

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Course Code: ER 20-14P

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Course Objectives

This course will provide hands-on experience in the following:

1. General blood collection techniques and carrying out various haematological assessments and interpreting the results
2. Recording and monitoring the vital physiological parameters in human subjects and the basic interpretations of the results
3. Microscopic examinations of the various tissues permanently mounted in glass slides
4. Discuss the anatomical and physiological characteristics of various organ systems of the body using models, charts and other teaching aids

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Perform the haematological tests in human subjects and interpret the results
2. Record, monitor and document the vital physiological parameters of human subjects and interpret the results
3. Describe the anatomical features of the important human tissues under the microscopical conditions
4. Discuss the significance of various anatomical and physiological characteristics of the human body

Syllabus

S. No.	Practicals
1	Study of compound microscope
2	General techniques for the collection of blood
3	Microscopic examination of Epithelial tissue, Cardiac muscle, Smooth muscle, Skeletal muscle, Connective tissue and Nervous tissue of ready / pre-prepared slides.
4	Study of Human Skeleton - Axial skeleton and appendicular skeleton
5	Study of appliances used in Haematological experiments (only identification and listing the appliances)
6	Determination of a) Blood group b) ESR c) Haemoglobin content of blood d) Bleeding time and Clotting time
7	Determination of WBC count of blood
8	Determination of RBC count of blood
9	Determination of Differential count of blood
10	Recording of Blood Pressure in various postures, different arms, before and after exertion and interpreting the results
11	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
12	Recording Pulse Oxygen (before and after exertion)
13	Recording force of air expelled using Peak Flow Meter
14	Measurement of height, weight, and BMI

S. No.	Practicals
15	Study of various systems and organs with the help of chart, models and specimens a) Cardiovascular system b) Respiratory system c) Digestive system d) Urinary system e) Endocrine system f) Reproductive system g) Nervous system h) Eye i) Ear j) Skin

Preface

Human Anatomy and Physiology is one of the fundamental subjects in the Diploma in Pharmacy (D. Pharm.) curriculum, providing students with a comprehensive understanding of the structure and functions of the human body. Practical knowledge is essential for correlating theoretical concepts with real-life clinical applications, enabling pharmacy students to develop the scientific skills required for patient care and healthcare practice.

This practical book has been prepared strictly according to the **Pharmacy Council of India (PCI), Course Code ER20-14P**, for **D. Pharm. First Year** students. It covers all the prescribed practical exercises in a systematic and student-friendly manner. Each experiment includes the **Aim, Principle, Materials Required, Procedure, Observations, Result, Precautions, and Viva-Voce Questions**, making it a complete laboratory guide for students and a useful teaching resource for faculty members. Special emphasis has been placed on clear presentation, scientific accuracy, and current laboratory practices. The experiments are designed to strengthen students' understanding of microscopic anatomy, hematological investigations, vital signs, body systems, and basic physiological assessments. Simple language, well-structured procedures, and clinically relevant explanations have been incorporated to facilitate effective learning and practical skill development. This book also encourages students to develop good laboratory practices, maintain proper records, observe biosafety guidelines, and cultivate analytical thinking essential for pharmaceutical education and future professional responsibilities. Although every effort has been made to ensure the accuracy and completeness of the content, constructive suggestions from teachers, students, and readers are always welcome for improving future editions. We sincerely hope that this practical manual will serve as a valuable companion for D. Pharm. students in achieving academic excellence and developing competency in Human Anatomy and Physiology practicals.

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Authors' Note

The study of Human Anatomy and Physiology forms the cornerstone of pharmaceutical education, as it enables students to understand the normal structure and function of the human body before studying pathology, pharmacology, and therapeutics. Practical training is indispensable in translating theoretical knowledge into laboratory competence and clinical understanding.

This practical book has been developed with the objective of providing a comprehensive, easy-to-follow, and examination-oriented laboratory manual for **First Year Diploma in Pharmacy (ER-2020)** students. Every experiment has been prepared in accordance with the latest **PCI syllabus**, ensuring uniformity with curriculum requirements while maintaining scientific rigor.

The experiments included in this manual are designed not only to fulfill academic requirements but also to develop observational skills, precision in laboratory techniques, ethical laboratory practices, and confidence in handling basic physiological and anatomical investigations. Viva-voce questions and precautionary measures have been incorporated to enhance conceptual understanding and practical preparedness.

We express our sincere gratitude to the **Pharmacy Council of India**, colleagues, students, and academic mentors whose valuable guidance and encouragement have inspired the preparation of this practical manual. We also acknowledge the contribution of various standard textbooks, laboratory manuals, and scientific resources that served as references during the development of this book.

We hope this book will be beneficial to students, teachers, and pharmacy institutions in promoting quality practical education. Any constructive suggestions for improvement in future editions will be gratefully acknowledged.

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We sincerely acknowledge the invaluable guidance, encouragement, and continuous support extended by the **Director-cum-Principal, faculty members, and laboratory staff** of the Department of Pharmacy. Their expertise, constructive suggestions, and unwavering cooperation have been instrumental in the successful compilation and organization of the experiments presented in this manual.

We also extend our heartfelt appreciation to all teachers, researchers, and students whose valuable feedback, practical insights, and academic contributions have significantly enhanced the quality and relevance of this manual. The experiments have been carefully designed and organized in accordance with the latest Pharmacy Council of India (PCI) curriculum to strengthen students' practical competencies, scientific reasoning, and laboratory skills.

The authors are also grateful to the authors, publishers, and various academic resources that have served as important references during the preparation of this manual. Every effort has been made to ensure the accuracy, clarity, and reliability of the content. Nevertheless, we welcome constructive suggestions and recommendations from readers that may contribute to the further improvement of future editions of this manual.

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Table of Contents

S. No.	List of Experiments	Page No.
1	To study the parts of a compound microscope and learn its proper handling, care, and maintenance.	1
2	Study of Compound Microscope-Focusing and Observation Techniques	4
3	To study and perform the general techniques for safe and accurate collection of blood samples for laboratory investigations.	7
4	To study the microscopic structure and identify the different types of epithelial tissue using prepared histological slides.	11
5	To study the microscopic structure and identify the different types of connective tissue using prepared histological slides.	14
6	To study the microscopic structure and identify the characteristic features of skeletal muscle tissue using a prepared histological slide.	17
7	To study the microscopic structure and identify the characteristic features of smooth muscle tissue using a prepared histological slide.	20
8	To study the microscopic structure and identify the characteristic features of cardiac muscle tissue using a prepared histological slide.	23
9	To study the microscopic structure and identify the characteristic features of nervous tissue using a prepared histological slide.	26
10	To study the bones of the axial skeleton and identify their anatomical features using charts, models, and preserved specimens.	29
11	To study the bones of the appendicular skeleton and identify their anatomical features using charts, models, and preserved specimens.	32
12	To determine the ABO and Rh blood group of a blood sample using the slide agglutination method.	35
13	To determine the Erythrocyte Sedimentation Rate (ESR) of a blood sample using the Westergren method.	39
14	To estimate the haemoglobin (Hb) concentration of a blood sample using Sahli's (Acid Haematin) Method.	42
15	To determine the Bleeding Time (BT) and Clotting Time (CT) of blood using Duke's method for BT and the Capillary Tube method for CT.	45

S. No.	List of Experiments	Page No.
16	To determine the total white blood cell (WBC) count in a blood sample using a Neubauer haemocytometer.	48
17	To determine the total red blood cell (RBC) count in a blood sample using a Neubauer haemocytometer.	51
18	To determine the Differential Leukocyte Count (DLC) by examining a stained peripheral blood smear under a microscope.	54
19	To measure arterial blood pressure using a sphygmomanometer and stethoscope, and to interpret the obtained values.	57
20	To measure and record the body temperature, pulse rate, heart rate, and respiratory rate of a healthy individual and compare the values with normal reference ranges.	60
21	To measure and compare pulse oxygen saturation (SpO ₂) and pulse rate before and after physical exertion using a pulse oximeter.	63
22	To measure the Peak Expiratory Flow Rate (PEFR) using a Peak Flow Meter and assess airway function.	66
23	To measure the height and body weight of an individual and calculate the Body Mass Index (BMI) to assess nutritional status.	69
24	To study the anatomy of the human cardiovascular system, including the heart and major blood vessels, using charts, models, and preserved specimens.	73
25	To study the anatomy of the human respiratory system, including the respiratory organs and their functions, using charts, models, and preserved specimens.	76
26	To study the anatomy of the human digestive system, including the alimentary canal and accessory digestive organs, using charts, models, and preserved specimens.	79
27	To study the anatomy of the human urinary system, including the kidneys, ureters, urinary bladder, and urethra, using charts, models, and preserved specimens.	82
28	To study the anatomy, major organs, and functions of the cardiovascular, respiratory, digestive, and urinary systems using charts, models, and preserved specimens.	85