

Human Anatomy and Physiology

Second Edition

Practical Notebook

The curriculum of this program is more relevant to the current practice standards, dynamic to accommodate the upcoming changes. The objectives and outcomes of this program as per ER20 are aimed to build more skills and competencies, and more scope has been provided in the syllabus for the active learning by the students through the assignments and field visit activities which will enhance their creativity, communication skills and interpretational skills. The curriculum of 'Human Anatomy and Physiology' practical based on ER-2020 is outcome-based education which not only trains the students for carrying out basic physiological monitoring of various systems and functions upon successful completion of this course but also the students will be able to develop clear understanding of the haematological tests in human beings, interpretation of results of vital human physiological parameters at the level of analysis, evaluation and synthesis, anatomical features of the human tissues and significance of various anatomical and physiological characteristics of the human body.

The Practical Notebook includes 26 experiments as per guidelines of ER20-14P.

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Dedicated to Education



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Human Anatomy and Physiology

Second Edition

Practical Notebook

for First Year Diploma in Pharmacy

According to the latest syllabus prescribed by Pharmacy Council of India under Regulation 7 of the Education Regulations, 2020, for Diploma in Pharmacy course, implemented with strict compliance from 2021-2022 academic session.

Varun Dutt Sharma
SK Pandey



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Certificate

Student's Name: _____

Class _____ Roll No. _____

This is to certify that experiments, written in the index, have been performed by the student, are satisfactory.

Grade.....

Name and signature of lab. incharge

College stamp



Date

Syllabus

Human Anatomy and Physiology – Practical

Course Code: ER20-14P

75 Hours (3 Hours/week)

Scope: This course is designed to train the students and instil the skills for carrying out basic physiological monitoring of various systems and functions.

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

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
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 to the Second Edition

The Pharmacy Council of India made regulations under Section 10 of Pharmacy Act, 1948 called The Education Regulation, 2020 for Diploma course in Pharmacy. It was approved by Government of India, Ministry of Health & Family Welfare which was notified in October, 2020 implemented in 2021 for Diploma in Pharmacy students. The curriculum and syllabus of Human Anatomy and Physiology—practical based on ER-2020 is outcome based education which not only trains the students and instils the skills for carrying out basic physiological monitoring of various system and functions upon successful completion of this course but also the students will be able to develop clear understanding of the haematological tests in human subjects, interpretation of results of vital physiological parameters of human at the level of analysis, evaluation and synthesis.

The practical notebook contains 26 experiments as per guidelines of ER-2020. The left blank page is provided for making diagrams and calculations where applicable.

We shall gratefully acknowledge the comments, suggestions and criticism by respected teachers and students for improvement of future edition. We express our sincere thanks to Mr Satish Kumar Jain, Chief Managing Director and Mr YN Arjuna, Vice President—Publishing Editorial, and Publicity, M/s CBS Publishers & Distributors for their cooperation, encouragement and assistance in bringing out the second edition of this practical notebook. Finally our gratitude is to our colleagues for their inspiration and motivation.

Varun Dutt Sharma
SK Pandey



Preface to the First Edition

The ultimate objective of technical education is to develop relevant skill, creativity and competency among the students so as to enable them to perform the task effectively and efficiently later in the world of work. To obtain the above aim, and to reduce the writing work load of the students, this practical notebook of “Human Anatomy and Physiology” for diploma in pharmacy first year has been written according to new syllabus as prescribed by Pharmacy council of India, education regulation 1991. This practical notebook contains 20 experiments. Left hand side page of every experiment has been left blank for making diagram, calculation and observation.

We shall be gratefully acknowledged the comments, suggestions and criticism by respected teachers and students for improvement of future edition. We express sincere thanks to Mr Satish Kumar Jain and Mr Y.N. Arjuna, M/S CBS Publishers & Distributors for their cooperation, encouragement and assistance in bringing out the present form of this manual. Finally ours greatest gratitude are to our colleagues, friends and family members.

Varun Dutt Sharma
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