

Human Anatomy and Physiology I

Theory Course Code: BP101T

for First Semester Bachelor in Pharmacy

has been written in a simple and lucid language so that the students are able to learn and understand the two subjects—anatomy and physiology—easily, imbibe and retain the knowledge, precisely, and reproduce the facts effectively in their examinations.

The text of anatomy part is well supplemented by numerous simple color line diagrams, while physiology text is accompanied by tables, flowcharts, etc.

In addition, the functions of various parts of the organs/tissues are given Clinical and Applied aspects which emphasise the diseases associated with them. Both these aspects make the subject interesting and easy to memorise and understand.

This textbook for Semester I (Course code BP101T) contains 5 units. Each unit has 1–3 chapters with amalgamation of anatomy and physiology. Unit I is on introduction, cellular and tissue level of organization. Unit II is on integumentary (skin) system, including skeletal, muscular systems and joints. Unit III deals with body fluids, blood and lymphatic system. Unit IV is on peripheral nervous system and special senses. Unit V deals with the study of heart, cardiac output, pulse, blood pressure, electrocardiogram, etc.

Last part of the chapter is 'Assess Yourself' with the help of long questions, short questions and multiple choice questions. This course content of Semester I Book would be better recapitulated once the practicals are completed with the help of *Human Anatomy and Physiology Practical Workbook* for Bachelor in Pharmacy Students (Course Codes BP107P and BP207P) in their respective laboratories, as theory and practicals complement each other in enhancing learning.

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ISBN: 978-93-5466-197-6



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for First Semester
Bachelor in Pharmacy
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Krishna Garg
Medha Joshi
Sudipta Kundu



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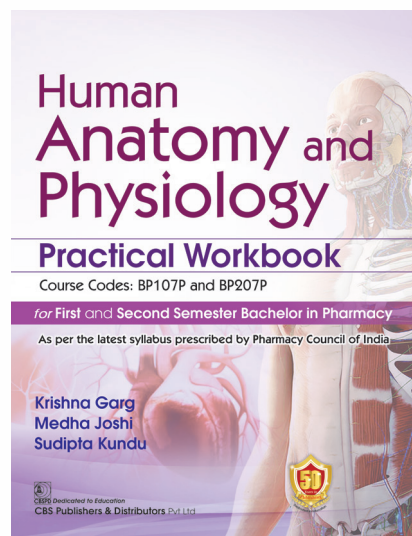
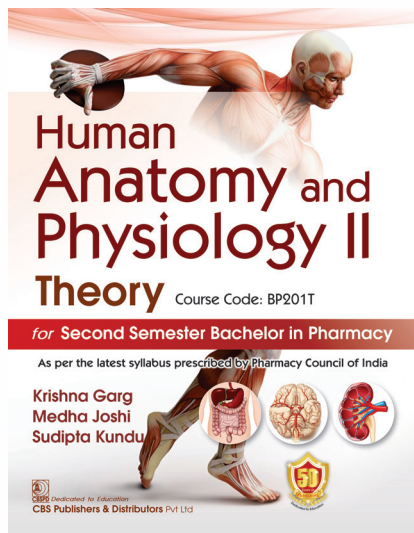
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Related Publications



Other Titles Authored/Edited by Dr Krishna Garg

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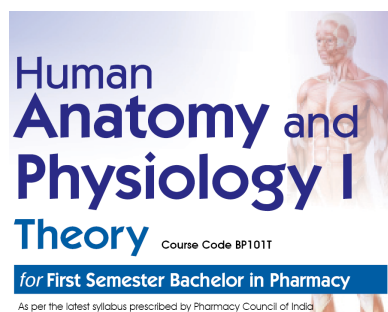


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ISBN: 978-93-5466-197-6

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First Edition: 2023

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Published by Satish Kumar Jain and produced by Varun Jain for

CBS Publishers & Distributors Pvt Ltd

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Printed at: Goyal Offset Works Pvt. Ltd., Haryana India

Preface

Pharmacy is an emerging popular subject in the arena of health sciences. As there are a number of brilliant avenues open to graduates, pharmacy as a subject of learning is gaining a lot of importance. So as to meet the requirements of the pharmacy students, we have decided to prepare this book for first semester Bachelor in Pharmacy students covering both anatomy and physiology discussing thoroughly all the relevant theoretical and applied aspects of these important subjects.

The latest syllabus of BPharm is subdivided into Semester I and Semester II courses. Accordingly two separate volumes are prepared as *Human Anatomy and Physiology I* and *Human Anatomy and Physiology II*.

This textbook for Semester I (Course Code BP101T) contains 5 units. Each unit has 1–3 chapters with amalgamation of anatomy and physiology. Unit I is on introduction, cellular and tissue level of organization. Unit II is on integumentary (skin) system, including skeletal, muscular systems and joints. Unit III deals with body fluids, blood and lymphatic system. Unit IV is on peripheral nervous system and special senses. Unit V deals with the study of heart, cardiac output, pulse, blood pressure, electrocardiogram, etc.

Each chapter in this book begins with 'Chapter Outline' followed by requisite amount of text in simple language, colour line diagrams, tables, flowcharts, etc. The highlights of the each chapter have been summarised as 'Golden Points'. These are followed by 'Clinical Aspects' where common diseases of the particular system are elucidated. These aspects emphasise the importance of its anatomy and physiology given in the text.

The chapter ends with 'Assess Yourself' to check on the skills and knowledge acquired from the study of the chapter. This section comprises long and short essay type questions including multiple choice questions (MCQs). We hope the teachers and the students will find this textbook extremely useful in teaching–learning the subjects of anatomy and physiology with ease and clarity.

**Krishna Garg
Medha Joshi
Sudipta Kundu**

Acknowledgements

We are grateful to the Almighty for His guidance during writing of the text and preparation of the illustrations of the important book titled *Human Anatomy and Physiology I: Theory for First Semester Bachelor in Pharmacy* students.

We extend our special thanks to Mr Satish Kumar Jain Chairman and Managing Director and Mr Varun Jain Director, CBS Publishers & Distributors Pvt Ltd, for their wholehearted support in publishing this book. The unquestionable support of Mr YN Arjuna Senior Vice President—Publishing, Editorial and Publicity, and his entire team comprising Ms Ritu Chawla GM—Production, Mr Manish Raj Graphic Artist, Ms Jyoti Sharma DTP Operator, Mr Neeraj Sharma Copyeditor and Mr Neeraj Prasad Graphic Artist is really appreciable. They have all done an excellent work to bring out the first edition of the book with appreciable quality. We are really obliged to all of them and pray for their prosperity.

Krishna Garg
Medha Joshi
Sudipta Kundu

Syllabus

Human Anatomy and Physiology I (Theory)

Course Code BP101T

Theory 45 hours (3 Hours/week)

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

Objectives: Upon completion of this course the student should be able to:

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the various experiments related to special senses and nervous system.
5. Appreciate coordinated working pattern of different organs of each system.

Course Contents

Unit I

10 hours

1. Introduction to Human Body
Definition and scope of anatomy and physiology, levels of structural organization and body systems, basic life processes, homeostasis, basic anatomical terminology.
2. Cellular Level of Organization
Structure and functions of cell, transport across cell membrane, cell division, cell junctions. General principles of cell communication, intracellular signaling pathway activation by extracellular signal molecule, Forms of intracellular signaling: a) Contact-dependent, b) Paracrine, c) Synaptic, d) Endocrine
3. Tissue Level of Organization
Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues.

Unit II

10 hours

4. Integumentary System
Structure and functions of skin
5. Musculo-skeletal System
Divisions of skeletal system, types of bone, salient features and functions of bones of axial and appendicular skeletal system. Organization of skeletal muscle, physiology of muscle contraction, neuromuscular junction
6. Joints
Structural and functional classification, types of joint movements and its articulation

Unit III

10 hours

7. Body Fluids
8. Blood
Body fluids, composition and functions of blood, hemopoiesis, formation of hemoglobin, anemia, mechanisms of coagulation, blood grouping, Rh factors, transfusion, its significance and disorders of blood, Reticulo endothelial system.

9. Lymphatic system and Immunity
Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system

Unit IV

08 hours

10. Peripheral Nervous System
Classification of peripheral nervous system: Structure and functions of sympathetic and parasympathetic nervous system.
11. Special Senses
Structure and functions of eye, ear, nose and tongue and their disorders.

Unit V

07 hours

12. Heart and Circulatory System
Heart—anatomy of heart, blood circulation, blood vessels, structure and functions of artery, vein and capillaries, elements of conduction system of heart and heart beat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.



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