

The objectives of the Programme are:

- To impart adequate knowledge and scientific information regarding basic principles of Pharmaceutical Chemistry, Pharmaceutics (including cosmetics), Pharmacology and Pharmacognosy (including Herbal drugs) to develop and evaluate dosage forms
- To enhance the understanding of practical techniques to enable the synthesis, manufacture and analysis of various formulations and herbal medicines
- To impart adequate knowledge of practical aspects of Pharmacological screening, biological standardization and in-vivo interactions to ensure the safety and efficacy of the formulations
- To impart adequate knowledge of practical aspects to deliver quality assured products as per the Pharmacopoeial standards

The objectives of the Programme are:

- To provide adequate knowledge of practical aspects of product detailing to optimize the marketing of Pharmaceutical products
- To enable the student to maintain a high standard of ethics and conduct in professional career
- To facilitate the student to develop an attitude to seek lifelong learning to update the knowledge and professional skills
- To enable the student to cope in various situations, irrespective of the different cultures or constraints involved and develop leadership and entrepreneurial skills
- To provide adequate knowledge about the Human Anatomy and Physiology & to facilitate their understanding of various body systems

Why This Course

- The Human Anatomy and Physiology Course presents the fundamentals of physiology geared specifically for pharmacy students
- Includes sections of medical terminology with pronunciations and definitions in each chapter
- In physiology, the functions of the human body, the mechanisms by which the various organs and tissues carry out their specific activities are described
- Emphasis the processes that control and regulate these functions

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Course Aim and Summary

- This course deals with Anatomy and Physiology of the human body.
- This course is designed to impart fundamental knowledge on the structure and functions of various organ systems of the human body.
- It also helps in understanding various homeostatic mechanisms.
- This course facilitates students to gain better understanding on diseases, their treatment and to prepare them for further study in the course discipline.

Course Intended Learning Outcomes

After studying this Course, student will be able to:

No.	Intended Learning Outcome
1	Describe the cellular and tissue levels of organization in the human body
2	Explain the composition and functions of blood and body fluids
3	Outline the gross morphology, structure and functions of organs of the human body
4	Discuss the role of homeostatic mechanisms in the maintenance of proper health
5	Appraise the coordinated working pattern of different organs of each system of human body

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➤ 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.

➤ Cellular level of organization

- Structure and functions of cell, transport across cell membrane, cell division, cell junctions.
- General principles of cell communication, intracellular signalling pathway activation by extracellular signal molecule.
- Forms of intracellular signalling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine

➤ **Tissue level of organization**

- Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues

➤ **Integumentary system**

- Structure and functions of skin

➤ **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

➤ **Joints**

- Structural and functional classification, types of joints movements and its articulation

➤ **Body fluids and blood**

- Body fluids, composition and functions of blood
- Hemopoiesis, formation of hemoglobin, anemia.
- Mechanisms of coagulation
- Blood grouping, Rh factors, transfusion, its significance.
- Disorders of blood
- Reticulo- endothelial system.

➤ **Lymphatic system**

- Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system

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➤ **Peripheral nervous system**

- Classification of peripheral nervous system
- Structure and functions of sympathetic and parasympathetic nervous system
- Origin and functions of spinal and cranial nerves

➤ **Special senses**

- Structure and functions of eye, ear, nose and tongue and their disorders

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➤ **Cardiovascular system**

- Heart – anatomy of heart
- Blood circulation, blood vessels, structure and functions of artery, vein and capillaries
- Elements of conduction system of heart and heartbeat, its regulation by autonomic nervous system
- Cardiac output, cardiac cycle.
- Regulation of blood pressure, pulse, electrocardiogram
- Disorders of heart

Method of Assessment

- There are two components for assessment in this course:
- **Component - 1: 25 Marks (CE)**
- It has 3 sub components
- Part 1A: Attendance: **04 Marks**
- Part 1B: Assignment : **06 Marks**
- Part 1C: Sessional Examinations : **15 Marks**
- Student is required to submit 1 word processed assignment which is set for 12 marks at the end of 14th week and the marks scored will be reduced to 6 marks.
- Two sessional exams (each for 30 marks) of 1 hour duration will be conducted, one at the end of 6th week and the other at the end of the 12th week. The average of the 2 sessional marks reduced to 15 will be the marks scored in the Sessional Examination.

Percentage of Attendance	Theory
95 – 100	4
90 – 94	3
85 – 89	2
80 – 84	1
Less than 80	0

Method of Assessment Contd.

- **Component - 2 : 75 Marks (SEE)**
- A 3 hour duration Semester End Examination will be conducted for maximum marks of 75.
- The assessment questions are set to test the learning outcomes. In each component certain learning outcomes are assessed. The following table illustrates the focus of learning

No.	Intended Learning Outcome	Type of Assessment		
		Component-I		Component-II (Semester End Examination)
		1B	1C	
		Assignment and Interaction with Student	Sessional exam	
1	Describe the cellular and tissue levels of organization in the human body		X	X
2	Explain the composition and functions of blood and body fluids		X	X
3	Outline the gross morphology, structure and functions of organs of the human body		X	X
4	Discuss the role of homeostatic mechanisms in the maintenance of proper health	X		X
5	Appraise the coordinated working pattern of different organs of each system of human body	X		X

- Both components will be moderated by a second examiner.

- **Essential Reading**

- Class notes
- Sembulingam, K., Sembulingam, P. (2016) *Essentials of Medical Physiology* 7th edn. New Delhi: Jaypee Brothers Medical Publishers.
- Kathleen, J. W. W. (1996) *Anatomy and Physiology in Health and Illness*. New York:Churchill Livingstone.
- Tortora Grabowski. (1992) *Principles of Anatomy and Physiology* 7th edn. New York:Harper and Collins.
- Vasudeva, N., Mishra, S. (ed.) (2016) *Inderbir Singh's Text book of Human Histology* 8th edn. New Delhi: Jaypee Brother's Medical Publishers.
- Ghai, C. L. (2012) *Text book of Practical Physiology* 8th edn. New Delhi: Jaypee Brother's Medical Publishers.

Recommended Reading

- Tandon, O. P., Tripathi, Y. (ed.)(2011) Best and Taylor's Physiological Basis of Medical Practice 13th edn. Riverview, Mi, USA: Lippincott Williams & Wilkins Co.
- Guyton, A. C., John, E. H. (2012) *Text book of Medical Physiology* 11th edn. Miamisburg, U.S.A: Elsevier.
- Chatterjee, C. C. (2016) *Human Physiology (vol 1 and 2)* 11th edn. Kolkata: Academic Publishers.

Magazines and Journals

- Indian Journal of Clinical Anatomy and Physiology, New Delhi: Innovative Publications.
- International Journal of Anatomy & Applied Physiology, Delaware: Sci Doc Publishers.

Websites

- www.anatomycorner.com
- www.anatomyzone.com

DISCLAIMER

- Some of the contents of this Course has been sourced from web sources and books.
- **References**
 - www.medmovie.com
 - www.Youtube.com
 - www.slideshare.net
 - Tortora, G.J. and Derrickson, B.H. (2009) *Principles of Anatomy and Physiology*, 12th edition, Newyork: John-Wiley & sons.
 - Waugh, A and Grant, A. (2006) *Ross and Wilson Anatomy and Physiology*, 10th edition, Edinburgh: Churchill livingstone.