Dr. Rafiq Zakaria Campus
Maulana Azad Educational Trust
Y.B. Chavan College of Pharmacy
An ISO 9001:2008 Certified Institute
(B. Pharm., M. Pharm & Research Center)

COURSE MODULE

Program Title	B. Pharmacy
Department	Pharmacology
Course Title	Human anatomy and physiology-I

1. **NAME OF INSTITUTION :** Y. B. CHAVAN COLLEGE OF PHARMACY, AURANGABAD

2. **AFFILIATED UNIVERSITY:** DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

3. **DEPARTMENT :** PHARMACOLOGY

4. **PROGRAM TITLE :** B. PHARM

4.1. Program Outcomes (PO):

PO 01: Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.

PO 02: Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.

PO 03: Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.

PO 04: Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.

PO 05: Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.

PO 06: Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).

PO 07: Pharmaceutical Ethics: Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.

PO 08: Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.

PO 09: The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.

PO 10: Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 11: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

5. COURSE SPECIFICATION : HUMAN ANATOMY AND PHYSIOLOGY

5.1. Course Identification and General Information

a. Course Title:	HUMAN ANATOMY AND PHYSIOLOGY		
b. Course Number/ Code	BP101T (THEORY) BP107P (PRACTICAL)		
c. Credit Hours	Theory	Practical	Total
	45	60	105
d. Study level/ semester at which this course is offered	SEMESTER		
e. Pre-requisite	Students should know about the basic biology		
f. Co-requisite	Require weekly study function of human body chemical, cellular, organ and system level		
g. Language of teaching the course	English		
h. Prepared by	Mr. Mohd Mukhtar khan		
i. Approved by	Dr. Syed Ayaz Ali		

5.2. Course Description:

This course will provide the student with an in-depth study of the anatomy and physiology (structure and function) of the human body. Both normal and pathological conditions are emphasized. It is a study of the structure and function of the human biology including cells, tissues and organs of the systems and regulation of physiological functions involved in maintain homeostasis. The lab provides a hands-on learning experience for exploration of human system components and basic physiology. Systems to be studied include integumentary, skeletal, muscular, nervous, and special senses etc.

5.3. Course Objectives:

- Explain the gross morphology structure and function of various organs of the human body.
- To understand homeostasis mechanisms and its relation with various body systems.
- Identify The Various Tissue And Organs Of Different Systems Of Human Body.
- Perform the various experiments related to special senses and nervous system
- The knowledge imparted should help the students to understand the pharmacology of drugs

5.4. Course Outcomes (CO):(around 5 to 8)

(e.g. CO101.1 (CO - course code, 101 subject code as per syllabus, & .1 is first CO)

Code	Course outcome
CO 101.01	Impart the concept of basic life process and levels of structural organization and physiology of human body
CO 101.02	To correlate the concepts of homoeostasis and its significance with different systems
CO 101.03	To relate the pathological changes in various diseases.
CO 101.04	To build the skills for analyzing neurological examination
CO 101.05	Make use of the acquired facts and relate them in treatment

5.4.1 Alignment of PO to CO: (PO: Program Outcome; CO: Course Outcome)

Course code (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 101.01	**M**	___	___	___	___	**S**	___	__	___	___	**M**
CO 101.02	**M**	___	___	__	__	**S**	___	__	**S**	__	**M**
CO 101.03	**S**	__	**S**	**S**	__	**S**	___	___	__	__	**S**
CO 101.04	**M**	**S**	**S**	__	__	__	__	___	___	___	**M**
CO 101.05	**M**	__	**S**	**S**	__	**S**	__	___	**S**	___	**M**

Correlation levels 1, 2 or 3 as defined below:
1: Slight (Low); 2: Moderate (Medium); 3: Substantial (High); If there is no correlation, put '-'

5.4.2 Teaching and Assessment Methods for achieving learning outcome:

Teaching Strategies /methods used	Methods of Assessment
The course typically includes lecture, class discussion, reading assignments, laboratory performance, Digital Method (PPT)	Quiz questions will be drawn from lecture notes, reading assignments and text objectives. Each quiz may consist of

	Multiple-choice, true/false and matching questions

6. COURSE CONTENTS:

6.1. Theoretical Aspect:

Order	Topic list/units	Subtopics list	Number of Weeks	Contact Hours
UNIT I	**Introduction to human body** **Cellular level of organization**	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 signaling pathway activation by extracellular signal molecule, Forms of intracellular signaling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine	**3**	**10**
	Tissue level of organization	Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues.		
UNIT II	**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 junctionOrganization of skeletal muscle, physiology of muscle contraction, neuromuscular junction	**03**	**10**

	Joints	Structural and functional classification, types of joints movements and its articulation		
UNIT III	**Body fluid and Blood** **Lymphatic System**	Body fluids, composition and functions of blood, hemopoeisis, formation of hemoglobin, anemia, mechanisms of coagulation, blood grouping, Rh factors, transfusion, its significance and disorders of blood, Reticulo endothelial system. Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system	**10**	**03**
UNIT IV	**Peripheral nervous system** **Special senses**	Classification of peripheral nervous system: Structure and functions of sympathetic and parasympathetic nervous system. Origin and functions of spinal and cranial nerves. Structure and functions of eye, ear, nose and tongue and their disorders.	**08**	**02**
UNIT V	**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 and disorders of heart	**07**	**03**

6.2. Practical Aspect (If Any):

Order	Tasks/Experiments	Number of Weeks	Contact Hours
1.	Study of compound microscope.	**1**	**4**
2.	Microscopic study of Epithelial and Connective tissue	**1**	**4**
3.	Microscopic study of Muscular and Nervous tissue	**1**	**4**
4.	Identification of Axial bones	**1**	**4**
5.	Identification of Appendicular bones	**1**	**4**

6.	Introduction to hemocytometry.	**1**	**4**
7.	Enumeration of white blood cell (WBC) count.	**1**	**4**
8.	Enumeration of total red blood corpuscles (RBC) count	**1**	**4**
9.	Determination of bleeding time	**1**	**4**
10.	Determination of clotting time	**1**	**4**
11.	Estimation of hemoglobin content	**1**	**4**
12.	Determination of blood group.	**1**	**4**
13.	Determination of erythrocyte sedimentation rate (ESR).	**1**	**4**
14.	Determination of heart rate and pulse rate.	**1**	**4**
15.	Recording of Blood Pressure	**1**	**4**

6.3. Assignments/Tutorials:

a) Tutorials based on Topic/Units are scheduled periodically.

b) Questions are assigned to students for practice after every lecture.

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7. SCHEDULE OF ASSESSMENT TASKS DURING THE SEMESTER:

Sr. No.	Assessment Method	Week due	Marks	Proportion of Final Assessment
01	Continious mode(Assignments, Exercises & tutorials)	Weekly during practical's	10	5%
02	Sessional (Internal Theory exam)	As per academic plan	15	5%
	Continious mode(Assignments, Exercises & tutorials	Weekly during practical's	05	5%
03	Continuous Practical Assessment (Sessional Practical exam)	As per academic plan	10	5%
04	Final exam (theory)	As per University at end of course	75	40%
05	Final exam(practical)		35	40%
Total			150	100%

8. STUDENT SUPPORT:

Office Hours/Week	Other Procedures
Two hours minimum	WhatsApp e-mail, etc

9. TEACHER'S AVAILABILITY FOR STUDENT SUPPORT:

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time	**Morning 10-11 Afternoon 2-3**	**Morning 10-11 Afternoon 2-3**	**11-12**	**12-01**	**Morning 10-11 Afternoon 3-4**	**Morning 10-11 Afternoon 3-4**

10. LEARNING RESOURCES:

Sr. No.	Title of Learning Material	Details
01	Text books	JohnB.West, Best And Taylor's Physiological Basis Of Medical Practice, Williams &Wilkins GerardJ. Tortora & Bryan Derikson, Principles of Anatomy and Physiology, JohnWileyand Sons,Inc Arthur C.Guyton And John E.Hall, Text Book Of Medical Physiology, ElsevierIndia Anne Waugh Allison Grant, Rossand Wilson Anatomy and Physiology in Health and Illness, Churchill Livingstone Elsevier
02	Essential references (as per syllabus)	JohnB.West, Best And Taylor's Physiological Basis Of Medical Practice, Williams &Wilkins GerardJ. Tortora & Bryan Derikson, Principles of Anatomy and Physiology, JohnWileyand Sons,Inc Anne Waugh Allison Grant, Rossand Wilson Anatomy and Physiology in Health and Illness, Churchill Livingstone Elsevier

03	Reference material	Martini, Nath and Bartholomew. 2015. Fundamentals of Anatomy and Physiology 10th ed. Pearson Education, Benjamin Cummings, San Francisco, CA.
04	E-materials and websites	https://www.pearsonhighhered.com
05	Other learning material	PPT, Question papers, charts. Printed and Handwritten notes

11. FACILITIES REQUIRED:

Sr. No.	Particular of Facility Required
01	Lecture Rooms (capacity for 60 students)
02	Laboratory (capacity for 20 students)
03	Computing resources: P-IV-PCs with recent hardware/ utilization of open source and licensed application software
04	Other resources: Appropriate laboratory tools, Chemicals, Glass ware, Apparatus, Instrumentation

12. COURSE IMPROVEMENT PROCESSES:

12.1. Strategies for obtaining student feedback on effectiveness of teaching:

Course delivery evaluation by students using: Questionnaire forms and online questionnaires

12.2. Other strategies for evaluation of teaching by the instructor or by the department:

Periodic review by Academic Planning & Monitoring Committee and departmental review committee, Observations and assistance of colleagues, External assessments by advisors/ examiners and auditors.

12.3. Process for improvement of teaching:

Use of ICT tools, teaching aids, Simultaneous practical orientation and theory classes (SPOT), Adoption of reflective teaching.

12.4. Describe the planning procedures for periodically reviewing of course effectiveness and planning for improvement:

Periodic review by departmental review committee, Review of course delivery and outcome through assessment and feedback from all stake holders.

12.5. Course development plans:

Provide inputs for course improvement and update to University Course development Committees (Board of Studies)

13. INFORMATION ABOUT FACULTY MEMBER RESPONSIBLE FOR THE COURSE:

Name	Mr. Mohd MUKHTAR KHAN
Location	PHARMACOLOGY LAB
Contact Detail (e-mail & Cell No.)	9960833118
Office Hours	10:00 AM to 5:00 PM