



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-II

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 II		
b. Course Number/ Code	BP201T (THEORY) BP207P (PRACTICAL)		
c. Credit Hours	Theory	Practical	Total
	45	64	109
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. Systems to be studied include digestive, respiratory, cardiovascular systems, urinary and reproductive systems, Chromosomes, genes and DNA, protein synthesis, genetic pattern of inheritance with the help of models, charts and specimens. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject

5.3. Course Objectives:

- Explain the gross morphology structure and function of various organs of the human body.
- Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
- Appreciate coordinated working pattern of different organs of each system
- Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.
- 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 estimation of hematological parameters and its significance
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	—	—	—	—	M
CO 101.02	M	—	S	—	—	S	—	—	S	—	M
CO 101.03	M	S	S	S	—	S	—	—	—	—	M
CO 101.04	M	S	M	—	—	—	—	—	—	—	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	Quiz questions will be drawn from lecture notes, reading assignments and text

performance, Digital Method (PPT)	objectives. Each quiz may consist of multiple-choice, true/false and matching questions
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6. COURSE CONTENTS:

6.1. Theoretical Aspect:

Order	Topic list/units	Subtopics list	Contact Hours
UNIT I	Nervous system	Organization of Nervous system, Neuron, neuroglia, classification of and properties of nerve fibre, electrophysiology, action potential, nerve fibre, electrophysiology, action potential, nerve impulse, receptors synapse, neurotransmitters, Central Nervous System: meninges, ventricles of brain, and cerebrospinal fluid, structure and functions of brain (cerebrum, brain stem, cerebellum), spinal cord (gross structure, function of efferent and afferent nerve tracts, Reflex activity)	10
UNIT II	Digestive system Energetics	Anatomy of GI Tract with special reference to anatomy and functions of stomach, (Acid production in the stomach, regulation of acid production through parasympathetic nervous system, pepsin role in protein digestion) small intestine and large intestine, anatomy and functions of salivary glands, pancreas and liver, movements of GIT, digestion and absorption of nutrients and disorders of GIT. Formation and role of ATP. Creatinine phosphate and BMR	06

UNIT III	Respiratory system Urinary system	Anatomy of respiratory system with special reference to anatomy of lungs, mechanism of respiration, regulation of respiration Lung Volumes and capacities transport of respiratory gases, artificial respiration, and resuscitation methods. Anatomy of urinary tract with special reference to anatomy of kidney and nephrons, functions of kidney and urinary tract, physiology of urine formation, micturition reflex and role of kidneys in acid base balance, role of RAS in kidney and disorders of kidney	10
UNIT IV	Endocrine System	Classification of hormones, Mechanism of hormone action, Structure and functions of pituitary gland, thyroid Gland, parathyroid gland, Adrenal gland,pancrease,pineal gland,Thymus And their disorders.	
UNIT V	Reproductive system Introduction to genetics	Anatomy of male and female reproductive system, Functions of male and female reproductive system, sex hormones, physiology of menstruation, fertilization, spermatogenesis, oogenesis, pregnancy and parturition Chromosomes, genes and DNA, protein synthesis, genetic pattern of inheritance	09

6.2. Practical Aspect (If Any):

Order	Tasks/Experiments	Number of Weeks	Contact Hours
1.	To study the integumentary and special senses using specimen, models, etc	1	4
2.	To study the nervous system using specimen, models, etc..	1	4
3.	To study the endocrine system using specimen, models, etc	1	4
4.	To demonstrate the general neurological examination	1	4
5.	To demonstrate the function of olfactory nerve	1	4
6.	To examine the different types of taste.	1	4
7.	To demonstrate the visual acuity	1	4

8.	To demonstrate the reflex activity	1	4
9.	Recording of body temperature	1	4
10.	To demonstrate positive and negative feedback mechanism.	1	4
11.	Determination of tidal volume and vital capacity.	1	4
12.	Study of digestive, respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens.	1	4
13.	Recording of basal mass index.	1	4
14.	Study of family planning devices and pregnancy diagnosis test.	1	4
15.	Demonstration of total blood count by cell analyzer	1	4
16.	Permanent slides of vital organs and gonads.	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.

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
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Two hours minimum	e-mail, etc
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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	<p>JohnB.West, Best And Taylor's Physiological Basis Of Medical Practice, Williams &Wilkins</p> <p>GerardJ. Tortora & Bryan Derikson, Principles of Anatomy and Physiology, JohnWileyand Sons,Inc</p> <p>Arthur C.Guyton And John E.Hall, Text Book Of Medical Physiology, ElsevierIndia</p> <p>Anne Waugh Allison Grant, Rossand Wilson Anatomy and Physiology in Health and Illness, Churchill Livingstone Elsevier</p>
02	Essential references (as per syllabus)	<p>JohnB.West, Best And Taylor's Physiological Basis Of Medical Practice, Williams &Wilkins</p> <p>GerardJ. Tortora & Bryan Derikson, Principles of Anatomy and Physiology, JohnWileyand Sons,Inc</p> <p>Anne Waugh Allison Grant, Rossand Wilson Anatomy and Physiology in Health and Illness, Churchill Livingstone Elsevier</p>
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.pearsonhighered.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