

Punjab University College of Pharmacy
Faculty of Pharmacy
University of the Punjab, Lahore
Course Outline



Programme	Pharm.D 2nd Semester	Course Code	PHARM-117 (Theory), PHARM-118 (Lab)	Credit Hours	2+1
Course Title	Anatomy and Histology				
Course Introduction					
Anatomy and Histology are fundamental subjects in medical and biological sciences that provide essential knowledge about the structure of the human body from the macroscopic to the microscopic level. This course is designed to introduce students to the organization of the body and the detailed study of tissues that form organs and systems. Anatomy is the study of the gross structure of the human body, including organs, muscles, bones, and body systems. It helps students understand the location, shape, and relationships of body parts, as well as how these structures function together to maintain health. Histology is the study of microscopic tissues and cells. It focuses on the detailed structure of epithelial, connective, muscular, and nervous tissues, and how these tissues combine to form organs. Histology provides insight into the cellular organization necessary for normal body function. Throughout this course, students will study major body systems such as the skeletal, muscular, circulatory, respiratory, digestive, urinary, reproductive, and nervous systems, while also examining the microscopic structure of tissues associated with each system. Practical learning may include the use of microscopes, tissue slides, and diagrams to identify different cells and tissue types. By the end of the course, students will be able to describe major anatomical structures, recognize the basic tissue types, understand the relationship between tissue structure and function, and apply this knowledge in medical and laboratory sciences.					
Learning Outcomes					
On the completion of the course, the students will be able to: Identify and describe the anatomy of the thoracic region, including the skeletal, respiratory, and cardiovascular structures Understand and explain the positions, structures, and functions of the major abdominal organs and related systems. Demonstrate knowledge of the structures and functions of the urinary system, limbs, and nervous system, including the spinal cord, brain, cranial nerves, eye, and ear. Explain histological techniques and their pharmacological relevance in the context of tissue analysis and drug interactions.					

Course Content (Theory)		Assignments/Readings
Week 1	Anterior and posterior aspects of the heart	Standring, S. (Ed.). (2020). Gray's anatomy: The anatomical basis of clinical practice (42nd ed.). Elsevier Assignment: learn about coronary arteries and veins with practice of diagrams
	The coronary arteries and veins	
Week 2	The coronary arteries and veins	Learning: Practice the diagram of heart with proper labelling
	Heart chambers,	
Week 3	Mediastinum	Tortora's Principles of Anatomy & Physiology Textbook by Bryan H. Derrickson and Gerard J. Tortora Assignment: Practice and learn about positions of these organs with diagram
	Positions of liver, spleen, gall bladder in the abdominal cavity.	
Week 4	Positions pancreas, stomach and kidney in the abdominal cavity.	Tortora's Principles of Anatomy & Physiology Textbook by Bryan H. Derrickson and Gerard J. Tortora
	Gross anatomy of stomach, intestine,	
Week 5	Gross anatomy of liver, spleen, gall bladder, pancreas, and kidney	Assignment: attempt quiz of covered syllabus
	Gross anatomy of stomach, intestine, liver, spleen, gall bladder, pancreas, and kidney	
Week 6	The portal system of veins	Learning: learn about hepatoportal system
	The biliary duct system	
Week 7	Gross anatomy of brain	Chung, K. W., Chung, H. M., & Halliday, N. L. (2015). Gross anatomy (8th ed.). Lippincott Williams & Wilkins
	Gross anatomy of spinal cord	
Week 8	Names of the cranial nerves and their specific functions.	Assignment: attempt quiz of covered topics
	Names of the cranial nerves and their specific functions.	
Week 9	Gross anatomy of eye	Learning: Cover and practice labeled diagram of ear and eye
	Gross anatomy of ear	
Week 10	The thoracic cage	Morton, D. A., Foreman, K. B., & Albertine, K. H. (2011). The big picture: Gross anatomy. McGraw-Hill.
	The thoracic vertebrae	
Week 11	The ribs, sternum, diaphragm	
	Lobes and fissures of lungs	Learning: practice the labeled diagrams of thoracic region
Week 12	Lobes and fissures trachea	Morton, D. A., Foreman, K. B., & Albertine, K. H. (2011). The big picture: Gross anatomy. McGraw-Hill

	Lobes and fissures of bronchi	Assignment: Attempt quiz of covered topics
Week 13	Gross anatomy of the pharynx and larynx	Tortora's Principles of Anatomy & Physiology Textbook by Bryan H. Derrickson and Gerard J. Tortora Assignment: Attempt quiz of covered topics
	Gross anatomy of bones	
Week 14	Gross anatomy of the joints of upper limbs	
	Gross anatomy of joints of lower limbs	
Week 15	Overview of histological techniques like tissue fixation, embedding, sectioning, staining, and microscopy	Learning: Learn about these techniques using internet platform
	Overview of histological techniques like tissue fixation, embedding, sectioning, staining, and microscopy	
Week 16	Pharmacological relevance of histology	
	Pharmacological relevance of histology	
Textbooks and Reading Material		
Main source: Tortora's Principles of Anatomy & Physiology. Textbook by Bryan H. Derrickson and Gerard J. Tortora		
Other sources: • Agur, A. M. R., & Dalley, A. F., II. (2024). Moore's Essential Clinical Anatomy (7th ed.). Lippincott Williams & Wilkins. • Chung, K. W., Chung, H. M., & Halliday, N. L. (2015). Gross anatomy (8th ed.). Lippincott Williams & Wilkins • Dalley, A. F., II, & Agur, A. M. R. (2023). Moore’s Clinically Oriented Anatomy (9th ed.). Lippincott Williams & Wilkins. • Drake, R. L., Vogl, A. W., & Mitchell, A. W. M. (2023). Gray's Anatomy for Students (5th ed.). Elsevier. • Ellis, H., & Mahadevan, V. (2010). Clinical anatomy: Applied anatomy for students and junior doctors (10th ed.). Wiley-Blackwell. • Gartner, L. P., & Lee, L. M. J. (2023). Gartner & Hiatt's Atlas and Text of Histology (8th ed.). Lippincott Williams & Wilkins. • Morton, D. A., Foreman, K. B., & Albertine, K. H. (2011). The big picture: Gross anatomy. McGraw-Hill. • Ross, M. H., & Pawlina, W. (2023). Histology: A Text and Atlas with Correlated Cell and Molecular Biology (9th ed.). Lippincott Williams & Wilkins. • Standring, S. (Ed.). (2020). Gray’s anatomy: The anatomical basis of clinical practice (42nd ed.). Elsevier.		

Course content (Practical/lab)				
1. Understand thoracic anatomy including the thoracic cage, diaphragm, and lung structures etc. 2. Study the cardiac morphology encompassing external and internal structures of the heart and associated vasculature. 3. Identify the abdominal organ positions and structures of the liver, spleen, gall bladder, pancreas, stomach, and kidneys using anatomical models. 4. Examine urinary system components including kidney, ureter, bladder, and urethra. 5. Study male and female reproductive system anatomy. 6. Analyze the bones and joints of upper limbs 7. Analyze the bones and joints of lower limbs 8. Examine brain structures including lobes, ventricles, and brainstem. 9. Study spinal cord anatomy with regional differentiation, vertebrae, and grey/white matter. 10. Identify the anatomical structure of human eye and ear 11. Perform tissue Fixation of rat liver and kidney specimen using 10% neutral buffered formalin for subsequent histopathological analysis. 12. Identify key microscopic features of common histological findings in tissues as different types of epithelial tissues, connective tissues. (Loose and dense connective tissues), cartilages, bone (Compact and spongy bone), digestive system (Esophagus, stomach, small intestine), liver, lymphatic system (Lymph nodes, spleen, thymus), excretory system. (Kidneys /glomerulus, ureters and urinary bladder), respiratory system (Bronchi and alveolus), endocrine system (pituitary gland, thyroid gland, adrenal gland), reproductive system (seminiferous tubules/ testes, ovary, mature follicle).				
Assignments: Types and Number with Calendar				
Assignment/presentation (20 marks)			Class quiz (30 marks)	
No.	Week	Deadline for submission	No.	Week
Assignment 1 (Pre-mid)	Week 3	Within the timeline assigned by the teacher	Quiz 1 (pre-mid)	Week 4
			Quiz 2 (pre-mid)	Week 7
Assignment 2 (Post-mid)	Week 11		Quiz 3 (post-mid)	Week 10
			Quiz 4 (post-mid)	Week 14