Program	BS Physical Education	Course Code	PE-302	Credit Hours	01
Course Title	**Anatomy and Physiology (Practical)**				

Course Introduction

The practical component of the Anatomy and Physiology course is designed to provide students with hands-on experience in understanding the human body's structure and function. Students will engage in various activities, including dissections, anatomical modelling, physiological experiments, and clinical assessments. These practical sessions reinforce theoretical knowledge and develop valuable skills essential for sports science and physical education.

Learning Outcomes

On the completion of the course, the students will:

- Identify and describe the human body's anatomical structures and physiological processes.
- Explain the relationship between anatomical structures and their functions in movement and exercise.
- Apply knowledge of anatomy and physiology to analyze and improve sports performance.
- Understand the physiological responses and adaptations to exercise and physical activity.
- Demonstrate proficiency in anatomical terminology, body planes, and movements.
- Integrate anatomical and physiological principles in coaching and exercise programming.
- Discuss the implications of anatomy and physiology in injury prevention and rehabilitation.

	Course Content	Assignments/Readings
Week 1	**Introduction to Practical Sessions** • Orientation to the Anatomy and Physiology lab • Safety procedures and ethical considerations in handling specimens • Overview of practical session objectives and expectations.	From Books and Class Lectures
Week 2	**The Skeletal System** • Identification of major bones and bone landmarks • Examination of bone histology under a microscope • Understanding bone growth and development.	From Books and Class Lectures
Week 3	**The Muscular System** • Identification of major muscle groups and their functions • Microscopic examination of muscle tissue • Muscle contraction experiments (e.g., using frog muscles)	From Books and Class Lectures

Week 4	**The Nervous System** • Identification of major brain regions and spinal cord structures • Examination of nerve histology • Reflex testing and neural pathway experiments.	From Books and Class Lectures
Week 5	**The Cardiovascular System** • Anatomy of the heart and major blood vessels • Dissection of a sheep heart • Blood pressure and heart rate measurement techniques.	From Books and Class Lectures
Week 6	**The Respiratory System** • Anatomy of the respiratory tract and lungs • Dissection of a sheep lung • Spirometry tests to measure lung volumes and capacities.	From Books and Class Lectures
Week 7	**The Digestive System** • Identification of major digestive organs and their functions • Dissection of a Sheep digestive tract • Experiments on enzyme activity and digestion.	From Books and Class Lectures
Week 8	**The Urinary System** • Anatomy of the kidneys, ureters, bladder, and urethra • Dissection of a sheep kidney • Urinalysis to assess kidney function.	From Books and Class Lectures
Week 9	**The Endocrine System** • Identification of major endocrine glands and their hormones • Examination of Endocrine Tissue Histology • Experiments on hormone effects using model organisms.	From Books and Class Lectures
Week 10	**The Reproductive System** • Anatomy of male and female reproductive organs • Dissection of a rat reproductive system • Study of reproductive cycles and gametogenesis.	From Books and Class Lectures
Week 11	**The Integumentary System** • Examination of skin layers and structures • Identification of skin histology under a microscope • Experiments on skin response to stimuli.	From Books and Class Lectures

Week 12	**The Lymphatic and Immune Systems** • Anatomy of lymphatic vessels, lymph nodes, and organs • Examination of blood and lymphatic histology • Experiments on immune response and antigen-antibody reactions.	From Books and Class Lectures
Week 13	**Functional Anatomy in Motion** • Analysis of human movement using anatomical models • Observation of muscle actions during physical activities • Electromyography (EMG) experiments to study muscle activity	From Books and Class Lectures
Week 14	**Clinical Assessment Techniques** • Techniques for assessing joint range of motion (ROM) • Manual muscle testing (MMT) and functional movement screening • Cardiopulmonary fitness assessments (e.g., VO_2 max testing)	From Books and Class Lectures
Week 15	**Integration of Systems** • Case studies integrating multiple body systems • Group presentations on specific physiological responses to exercise • Peer review and feedback sessions	From Books and Class Lectures
Week 16	**Practical Exam and Review** • Practical exam assessing skills learned throughout the course • Review session and discussion of key learnings • Course wrap-up and feedback	From Books and Class Lectures
Textbooks and Reading Material		
Textbooks • Colville, T. P., & Bassert, J. M. (2015). Clinical anatomy and physiology for veterinary technicians (3rd ed.). Mosby. • Cross, R., & Dawson, B. (2014). Sports Anatomy and Physiology (2nd ed.). Routledge. • Marieb, E. N., & Hoehn, K. N. (2018). Essentials of human anatomy & physiology (12th ed.). Pearson. • Marieb, E. N., & Smith, L. A. (2018). Human Anatomy & Physiology Laboratory Manual (12th ed.). Pearson. • Odya, E., & Norris, M. A. (2017). Anatomy & physiology for dummies (3rd ed.). For Dummies.		