TRINITY MEDICAL SCIENCES UNIVERSITY | SCHOOL OF BIOMEDICAL SCIENCES

INTRODUCTION TO ANATOMY
BIOS 205

Course description

The purpose of this course is to provide students a foundation for understanding the organization of the human body through the study of the gross anatomy of the different organ systems. Special consideration is placed in the functional anatomy and the utilization of the anatomical knowledge on the interpretation of symptoms and signs of common conditions. The use of the anatomical terminology throughout the course will introduce the students in the use of the appropriate medical language.

Credit: 3 credits **Repeatable: No**

Course Structure

The course will be presented in different formats: Lectures with PowerPoints, self-directed learning, discussions and student assignments etc.

Competencies

This course emphasizes competencies to enhance skills essential for a future health care professional.

- **Knowledge**
  - **Demonstrate content knowledge and skills in foundational courses required by biomedical professionals**
  - **Demonstrate information literacy**
  - Demonstrate quantitative reasoning
  - **Demonstrate longitudinal learning through coursework**
- **Critical Thinking**
  - Develop the skills of self-reflection and peer assessment to improve personal performance.
  - **Demonstrate the ability to analyze literature and written material**
  - Demonstrate the ability to distinguish between well-reasoned and poorly reasoned arguments
- **Communication Skills**
  - **Demonstrate effective presentation skills to faculty and peers.**
  - **Demonstrate effective listening skills**
  - **Demonstrate effective written communication**

Objectives:

By the end of the BIOS 205 course, students should be able to:

- be familiarized with anatomical principles and correlate structure with general function of organs and organ systems
- understand the scientific basis of anatomy
- explain the major features related to each structure (form, location, relationships)
- explain the basic structural organization of the vertebrate body plan
- apply the anatomical knowledge on interpretation of symptoms and signs of common diseases
- apply their basic knowledge of anatomical structures to interpret normal X-ray films
- communicate information about body structure using language appropriate to colleagues and to the lay person
- identify all the major structures of the human body on the skeleton, dissected bodies, pictures and X-ray
- Pursue independent, self-directed, and critical learning

Schedule: Dates and times to be posted at the beginning of the term on the online calendar.

Course Topics / Outline

Week	Topic
1	Introduction to Anatomy: Anatomical nomenclature and terminology.
	Skeletal system: Introduction: components, general functions. Bones: Criteria for classification. Classification of bones based on shape and macroscopic structure. Periosteum. Endosteum. General features of blood and nerve supply. Cartilage: General features. Types: Main characteristics, location. Perichondrium. Bone growth, bone remodeling, and fracture repair: Overview.
	Skeletal system: Joints: General functions and classification. Fibrous, cartilaginous, and synovial joints: morphofunctional features. General features of blood and nerve supply.
2	Vertebral column as a whole: Anatomical features. Vertebrae: common features and function of each part. Typical vertebrae of each region of the vertebral column: Distinctive feature. Atypical vertebrae. Sacrum. Surface anatomy. Thorax: Ribs and costal cartilages. Classification of ribs. Typical ribs: Main features. Atypical ribs. Sternum. Surface anatomy.
	Vertebral column: Joints of the vertebral bodies: components and their function. Joints of the vertebral arches: components, accessory ligaments, function. Intervertebral foramina. Craniovertebral joints: components, ligaments, classification. Movements of the vertebral column and craniovertebral joints. Sternal and costovertebral joints: Movements of the ribs related to the respiration.
	Vertebral column: Contents of vertebral canal. Formation of spinal nerves. Introduction to muscular system: general function of the muscular tissue. Types of muscle: main features. Connective tissue associated with the muscular tissue: Endomysium, perimysium, endomysium, tendons, aponeurosis, fascia. Muscle contraction: fixed and mobile points. Classification of muscles related to their role in the production of movement. Shape od muscles: functional significance in muscular contraction.
	Back and suboccipital region: Muscles, fascia, and nerve supply. Thoracic wall: Muscles, nerve supply.
3	Skull: External features: Relevant anatomical details of the anterior, lateral, superior and posterior projections.
	Skull: Relevant anatomical details of the external and internal surface of the cranial base. Internal surface of the calvaria. Nasal cavity: Major components of its walls.
	Head: Muscles of facial expression. Temporomandibular joint. Muscles of mastication. Nerve supply.

	Neck. Fasciae. Triangles. Superficial and lateral muscles. Posterior triangle: Boundaries, contents. Cervical plexus: formation and main branches. Prevertebral muscles.
4	Neck. Anterior triangle: Boundaries. Hyoid bone: suprahyoid and infrahyoid muscles.
	Upper limb: Bones of the pectoral girdle: Classification. Relevant anatomical details. Bones of the free portion: Classification. Relevant anatomical details.
	Upper limb: Joints of the pectoral girdle: Classification. Glenohumeral joint: components, movements. Joints of the free portion (elbow joint, radioulnar joints, radiocarpal joint, carpometacarpal, metacarpophalangeal, interphalangeal): components, classification, and movements.
	Upper limb: Superficial fascia: contents. Deep fascia: Formation of compartments in the arm, forearm, and hand. Carpal tunnel: formation and contents. Muscular groups of the pectoral girdle and arm: location, muscular action. Rotator cuff: components, functions.
5	**QUIZ 1**
	Upper limb: Muscles of the forearm: Anterior and posterior compartments: layered organization, muscular action. Hand: regions. Compartments: muscles, muscular action.
	Upper limb: Axilla: Walls and contents. Brachial plexus: formation, branches. Muscular groups and cutaneous areas supplied by each of the major branches of the brachial plexus.
	Anterior abdominal wall: boundaries. Surface anatomy: relevant anatomical details. Division into abdominal regions. Layers. Muscles: location, functions, nerve supply. Rectus sheath: formation, contents. Inguinal canal: walls, orifices, contents.
6	Posterior abdominal wall: components. Muscles: location, functions, nerve supply. Lumbar plexus: formation, branches. Pelvis: Parts. Pelvic cavity: Walls. Pelvic inlet: boundaries and diameters. Pelvic outlet: boundaries. Sacral plexus: formation, branches.
	Lower limb: Bones of the pelvic girdle: Classification. Relevant anatomical details. Bones of the free portion: Classification. Relevant anatomical details.
	Lower limb: Joints of the pelvic girdle: Classification. Coxofemoral (hip) joint: components, movements. Joints of the free portion (knee joint, tibiofibular joints, ankle joint: components, classification, movements. Foot joints: Major ligaments of the sole of the foot: Role. Medial longitudinal arch, lateral longitudinal arch, transverse arch: bony, tendinous, and ligamentous components.
	Pre Exam Review
7	**Midterm Examination**
8	**Examination Review**
	Lower limb: Superficial fascia: contents, cribriform fascia. Deep fascia: Formation of compartments in the thigh, leg, foot. Iliotibial tract, saphenous opening. Femoral triangle: boundaries, contents. Femoral sheath, femoral canal, femoral ring, adductor canal. Muscles of the anterior and medial thigh regions: location, muscular action.
	Lower limb: Muscles of the gluteal region, posterior thigh region, leg, and foot: location, muscular action.
9	Lower limb: Muscular groups and cutaneous areas supplied by each of the major branches of the lumbosacral plexus.
	Respiratory system: Overview of the relevant morphofunctional aspects of its components. Nose, nasal cavity, paranasal air sinuses, larynx.
	Respiratory system: Overview of the relevant morphofunctional aspects of the lungs, tracheobronchial tree. Thoracic cavity: compartments. Mediastinum: Boundaries, divisions, major contents. Pleura. Pleural cavity.
10	Cardiovascular system: Overview of the heart and pericardium, aortic arch and carotid system of arteries.
	Cardiovascular system: Overview of the arteries of the upper limb.
	Cardiovascular system: Overview of thoracic and abdominal aorta, and iliac system of arteries.
	Venous and lymphatic systems. Overview of the inferior vena cava system and the lymphatic system of the lower limbs and abdomen. Portal system of veins: overview.
11	Venous and lymphatic systems. Overview of the superior vena cava system and the lymphatic system of the upper limbs and abdomen
	Digestive system: Overview of the cranial cervical and thoracic parts.

	Digestive system: Overview of the abdominal part. Peritoneum: overview.
	QUIZ 2
12	Urinary system: Overview
	Urinary system: Overview
	Female reproductive system: overview
	Male reproductive system: overview
13	Pre-examination review
14	**FINAL EXAMINATION**

Assignments:

Students are required to present the overview of clinical scenario of selected disease conditions to apply their anatomical knowledge. The Presentation time is 20 minutes and the students required to submit the power-point 24 hours before the presentation schedule.

Textbooks and Reference Materials:

Required Texts

Gerard J. Tortora and Bryan H. Derrickson. Principles of Anatomy and Physiology. 14th Edition. Publisher: Wiley.

Recommended Texts

Anne M Gilroy. Anatomy: An Essential Textbook. 2nd Edition. Publisher: Thieme.

Evaluation: Students are evaluated by two quizzes, a midterm exam, a final exam, assignments and their attendance.

Points:

	Points*
Assignments	10%
Quizzes	25%
Mid Term	30%
Final exam	30%
Attendance	5%
Total points	100%

*Points are approximate and may be adjusted during the term. Students will be notified of changes.

Grades

Percent of Points	Letter Grade
95-100%	A(h)
90-94%	A
85-89%	B+
80-84%	B
75-79%	C+
70-74%	C
<70%	F

Attendance:

Students are expected to attend at least 80% of all scheduled learning activities. Attendance in the class will be recorded. Students attended 80% or more will be awarded with 5% on total scoring system. Please note that absences due to illness or misadventure will be factored into the 20% of allowable absences if informed respective faculty or the Dean of Students.

Policies:

Professional Demeanor

The student should be thoughtful and professional when interacting with faculty and other students. Inappropriate behavior includes the use of offensive language, gestures, or remarks with sexual overtones. Students should maintain a neat and clean appearance, and dress in attire that is generally accepted as professional.

Honesty

Students are expected to demonstrate honesty and integrity in all aspects of their education and in their interactions with faculty, administration, physicians, patients, and fellow students. They will not cheat, plagiarize, or assist others in the commission of these acts.

Faculty and Office Hours:

Dr. Lina Diaz, Professor and Course Director

Dr. Partha Mandal, Course Instructor

Student can schedule an appointment by email.