CONTEX

This subject offers a scientific knowledge of the human body based on the study of its structure from the molecular level until the organism considered as a whole, applicable to the human health. It complements with subjects like Biochemical and physiopathology.

SUBJECT'S DATA

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Previous requirements
- None

Requirements
- None

LECTURER
M.VICTORIA AYALA JOVE

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<th>Telephone number</th>
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<tr>
<td>E-mail</td>
<td><a href="mailto:VICTORIA.AYALA@MEX.UDL.CAT">VICTORIA.AYALA@MEX.UDL.CAT</a></td>
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PROFICIENCIES

Specific proficiencies
- Know and identify the human body’s structure and function.

OBJECTIVES AND CONTENTS

Subject/ matter’s learning objectives

1) From the knowledge level, the student that pass the subject have to:
   - Understand and use of the anatomy’s terminology.
   - Know the different human body’s structures.
   - Understand the anatomical normality as a starting point to know the human body’s needs and the relation of this normality with the illness.

2) The main teaching objectives to achieve with the scheduled activities are:
   - Use oral and written communication skills in the most appropriate and effective way.
   - Think clearly and critically, fusing experience, knowledge and reasoning.
   - Identify, interpret and answer effectively problems.
Subject/ matter's contents

Cap. 1. Introduction to Human body’s anatomy.
Cap. 2. Musculoskeletal System.
Cap. 3. Blood.
Cap. 4. Digestive System.
Cap. 5. Respiratory System.
Cap. 6. Cardiovascular System.
Cap. 7. Immune System.
Cap. 8. Urinary System.
Cap. 9. Endocrine System.
Cap. 10. Nervous System.
Cap. 11. Male Reproductive System and Female Reproductive System.

CAPÍTOL 1. Introduction to Human body’s anatomy.

1.1. Human Anatomy Definition.
1.2. Contents in the human body awareness (levels of structural organization).
1.3. Life processes.
1.4. Description of the anatomical position.
   1.4.1. Main body regions.
   1.4.2. Body cavities.
   1.4.3. Reference levels, descriptive and direction terms.
   1.4.4. Regions and lines reference.

Practices. Seminar. Description of the different body regions.


2.1. Introduction.
   2.1.1. Skeletal Tissue.
      2.1.1.1. Introduction.
      2.1.1.2. Cartilage.
      2.1.1.3. Bone.
      2.1.1.4. Bone development and growth.
      2.1.1.5. Bone remodelling and repair.
      2.1.1.6. Synovial.
      2.1.1.7. Tendons and ligaments.
   2.1.2. Skeletal Muscle.
      2.1.2.1. Types of skeletal muscle fibres.
      2.1.2.2. Muscle mechanics.

2.2. Musculoskeletal System.
   2.2.1. General Considerations.
2.2.2. Introduction.
2.2.3. Descriptive terminology of the bone surface scoreboard.
2.2.4. Divisions of the skeletal system.
2.2.5. Joint's classification.
2.2.6. General structure of a diarthrosis.
2.2.7. Muscles' descriptive terminology.

2.3. Head.
2.3.1. Cranium.
2.3.2. Facial massif.
2.3.3. Most important skull bone's holes.
2.3.4. Head's joints.
2.3.5. Muscles of mastication.
2.3.6. Muscles of facial expression.
   2.3.6.1. Eyelid's muscles.
   2.3.6.2. Nose's muscles.
   2.3.6.3. Lips’ muscles.
   2.3.6.4. Ear's muscles.
   2.3.6.5. Neck's muscles.
   2.3.6.6. Cranium muscles.
2.3.7. Muscles that move the ocular globe.
2.3.8. Muscles that move the tongue.
2.3.9. Oral cavity floor's muscles.
2.3.10. Laryngeal muscles.
2.3.11. Hyoid bone.

2.4. Vertebral column.
2.4.1. Vertebral column on the whole.
2.4.2. Vertebral column’s anatomy.
2.4.3. Vertebral column’s curvatures on the whole.
2.4.4. Vertebra’s constitution.
2.4.5. Elements of the intervertebral joint.
2.4.6. Vertebral column’s movements on the whole.
   Pelvic girdle.
2.4.7. Pelvic girdle’s architecture.
2.4.8. Sacroiliac joints’ anatomy.
2.4.9. Anatomy of the pubis symphysis and sacrococcygeal joint.
2.4.10. Pelvic floor's muscles.
2.4.11. Perineal’s muscles.
   Lumbar spine.
2.4.12. Lumbar spine on the whole.
2.4.13. Trunk muscles.
2.4.13.1. Posterior muscle group.
2.4.13.2. Laterovertebral muscles.
2.4.13.3. Abdominal wall muscles.

Dorsal spine and breathing.
2.4.15. ribs. Anatomy of the costovertebral and costosternal joints.
2.4.16. Breathing muscles.

Cervical spine.
2.4.17. Cervical spine on the whole.
2.4.18. Schematic constitution of the three first cervical vertebrae
2.4.19. Cervical spine muscles.
2.4.20. Ventromedial muscles.
  2.4.20.1. Sternocleidomastoid muscle.
  2.4.20.2 Prevertebral muscles.
  2.8.20.3. Lateral muscles.
  2.8.20.4. Anterior’s neck muscles.
2.4.21. Dorsal muscles.
  2.4.21.1. Vertebral canal muscles.
  2.4.21.2. Nape muscles.
    2.4.21.2.1. Suboccipital muscles.
    2.4.21.2.2. Median plane muscles.
    2.4.21.2.3. Superficial plane muscles.
2.5. Upper extremity.
  2.5.1. Structure of the girdle and upper extremity.
  2.5.2. clavicle, scapula, humerus, ulna, radius, carpus, metacarpus and phalanges
  2.5.3. Shoulder’s anatomy.
    2.5.3.1. Shoulder’s movements.
    2.5.3.2. Shoulder’s joint complex.
    2.5.3.3. Shoulder’s capsule and ligaments.
    2.5.3.4. Shoulder’s muscular coaptation.
    2.5.3.5. Girdle’s movements.
    2.5.3.6. Girdle’s motor muscles.
  2.5.4. Elbow’s anatomy.
    2.5.4.1. Elbow’s movements.
    2.5.4.2. Elbow’s ligaments.
    2.5.4.3. Elbow’s motor muscles.
    2.5.4.4. Joint coaptation factors.
    2.5.4.5. The prono-supination.
    2.5.4.6. Meaning, definition and uses.
2.5.4.7. Anatomy of the upper and lower radioulnar joint.
2.5.4.8. Prono-supination muscles.

2.5.5. Wrist anatomy.
  2.5.5.1. Meaning.
  2.5.5.2. Definition and range of movements of the wrist.
  2.5.5.3. Wrist’s joint complex.
  2.5.5.4. Disposition of the wrist's ligaments.
  2.5.5.5. Wrist’s motor muscles.

2.5.6. Hand’s anatomy.
  2.5.6.1. Hand’s topography.
  2.5.6.2. Hand’s architecture.
  2.5.6.3. The metacarpophalangeal and interphalangeal joints.
  2.5.6.4. Hand’s motor muscles.
    2.5.6.4.1. Thenar eminence.
    2.5.6.4.2. Hypothenar eminence.
    2.5.6.4.3. Medial palmar zone.
  2.5.6.5. Thumb’s anatomy.

2.6. Lower extremity.
  2.6.1. Lower’s extremity anatomy.
    2.6.2. Innominate bone, femur, knee cap, tibia, fibula, tarsus, metatarsus and phalange.
  2.6.3. Hip’s anatomy.
    2.6.3.1. Hip’s movements.
    2.6.3.2. Architecture of the femur and the pelvic bone.
    2.6.3.3. Anatomy of the joint capsule and the hip’s ligaments.
    2.6.3.4. Ball and socket joint coaptation factors.
    2.6.3.5. Hip’s motor muscles.
  2.6.4. Knee’s anatomy.
    2.6.4.1. Knee’s movements.
    2.6.4.2. General architecture of the lower limb and orientation of the joint surfaces.
    2.6.4.3. Anatomy of the joint capsule, ligaments and knee meniscus.
    2.6.4.4. Knee’s motor muscles.
  2.6.5. Ankle’s anatomy.
    2.6.5.1. Food’s joint complex.
    2.6.5.2. Ankle’s movements.
  2.6.6. Food’s anatomy.
    2.6.6.1. Food’s movements.
    2.6.6.2. Food’s joint anatomy.
    2.6.6.3. Food’s ligaments.
2.6.6.4. Food and ankle’s motor muscles.  
2.6.6.5. Plant bend on the whole.  
2.6.6.6. Distribution of static loads and deformations of the plant bend.  
2.6.6.7. Architectural balance of the foot.  
2.6.6.8. Dynamics deformation of the plant bend.

Practices. Musculoskeletal System.

In groups of 20-25 students, the morphological and functional study of the entire skeletal system on human skeletons will take place in the bone laboratory.


3.1.1. Erythrocyte anatomy.  
3.1.2. Leukocyte anatomy.  
3.1.3. Thrombocyte anatomy.

Practices. Seminar. Identification of the different blood cells.

CAPÍTOL 4. Digestive System.

4.1. Organization of the gastrointestinal tract.  
4.2. Oral’s cavity anatomy (Mouth).  
4.3. Esophagus anatomy.  
4.4. Stomach anatomy.  
4.5. Pancreas.  
4.5.1. Anatomy and Histology.  
4.6.1. Anatomy  
4.6.2. Blood supply.  
4.7. Gallbladder.  
4.7.1. Histology  
4.8. Small intestine.  
4.8.1. Anatomy and Histology.  
4.9. Large intestine.  
4.9.1. Anatomy and Histology.

CAPÍTOL 5. Respiratory System.
5.1. Organs: Airways.
   5.1.1. Upper airway.
      5.1.1.1. Nose anatomy.
      5.1.1.2. Pharynx anatomy.
      5.1.1.3. Larynx anatomy.
         5.1.1.2.1. Cartilages.
   5.1.2. Lower airways.
      5.1.2.1. Trachea anatomy.
      5.1.2.2. Anatomy of the bronchial tubes and alveolus.
      5.1.2.3. Lungs. Macroscopic anatomy. Lobes, segments and fissures.
      5.1.2.4. Pleura anatomy.
      5.1.2.5. Pulmonary vessels.

5.2. Breathing muscles.
   5.2.1. Diaphragm.
   5.2.2. Ribcage muscles.
   5.2.3. Abdominal muscles.


CAPÍTOL 6. Cardiovascular System.

6.1. Heart. Localization and heart’s size.
   6.1.1. Pericardium.
   6.1.2. Heart wall.
   6.1.3. Heart chambers.
   6.1.4. Heart valves.
   6.1.5. Heart’s blood supply.

6.2. Vascular system.
   6.2.1. Blood’s vessels anatomy.
      6.2.1.1. Arteries (elastic a., muscular a., arterioles)
      6.2.1.2. Capillaries.
      6.2.1.3. Biological activity of vascular endothelial.
      6.2.1.4. Venules.
      6.2.1.5. Veins.
   6.2.3. Lymphatic system.
      6.2.3.1. Generalities.
      6.2.3.2. Lymph vessels and lymph circulation.
   6.2.4. Circulatory pathways.
      6.2.4.1. Systemic arteries.
6.2.4.2. Systemic veins.


CAPÍTOL 7. Immune System.

7.1. The Immune System.
7.1.1. Introduction.
7.1.2. Immune System Cells.
7.2. Lymphoid tissues.
7.2.1. Thymus anatomy.
7.2.2. Lymphatic nodes' anatomy.
7.2.3. Mucosa-associated lymphoid tissue anatomy.
7.2.4. Tonsils' anatomy.
7.2.5. Spleen's anatomy.

Practices. Seminar. Immunity alteration due to HIV.

CAPÍTOL 8. Urinary System.

8.1.1. Macroscopic and microscopic anatomy of the kidney.
8.1.3. Blood supply.
8.2. Urinary tract.
8.2.1. Ureters’ anatomy.
8.2.2. Urinary's bladder anatomy.
8.2.3. Urethra's anatomy.

CAPÍTOL 9. Endocrine System.

9.1. Neuroendocrine integration.
9.3. Pineal gland.
9.7. Adrenal medulla anatomy.
9.10. Diffuse endocrine system.
9.11. Paraganglia.

Practices. Seminar. Thyroid’s structure.

CAPÍTOL 10. Nervous system.

10.1. Introduction.
10.2. Integrator system.
   10.2.1. Central nervous system.
      10.2.1.1. Morphology of the cerebral hemispheres.
      10.2.1.2. The white matter.
      10.2.1.3. The cerebral cortex.
      10.2.1.4. Functional areas of the cerebral cortex.
      10.2.1.5. Basal ganglia.
      10.2.1.6. Diencephalon.
      10.2.1.7. Brainstem.
      10.2.1.8. Cerebellum.
      10.2.1.9. Spinal cord.
   10.2.2. Peripheral nervous system.
      10.2.2.1. Spinal nerves.
      10.2.2.2. Cranial nerves.
   10.2.3. Meninges, LCR, Ventricles and blood supply.
10.3. Sensory systems.
   10.3.1. Introduction.
   10.3.2. Receptor’s classification.
   10.3.3. Receptor field.
   10.3.4. Transduction of sensory stimulus into nerve impulses.
   10.3.5. Sensory modulation.
   10.3.6. Anatomy of the Proprioceptive systems and Interceptive (Somatestesia).
      10.3.6.1. Mechanoreceptors.
      10.3.6.2. Tactile, pressure sensibility, and skin vibration.
      10.3.6.3. Deep tissue sensitivity. Touch, pressure and position.
      10.3.6.4. Conduction of nerve impulses.
      10.3.6.5. Pain and temperature: nociceptors and thermoreceptors.
      10.3.6.6. Integumentary system (Skin).
   10.3.7. Anatomy of the exteroceptive systems.
      10.3.7.1. Taste system.
      10.3.7.2. Olfactory System.
10.3.7.3. Stato-acoustic system.
10.3.7.4. Visual System.

10.4.1. Levels of integration in somatic motor nervous system.

10.5. Autonomic nervous system.
10.5.1. Sympathetic nervous system.
10.5.2. Parasympathetic nervous system.


CAPÍTOL 11. Male Reproductive System and Female Reproductive System.

11.1. Introduction.
11.2. Anatomy of the male reproductive system.
11.2.1. Testicular anatomy summary.
11.2.2. Pathways.
11.2.1. Seminiferous tubules.
11.2.2. Rete testis.
11.2.3. Efferent ducts.
11.2.4. Epididymis.
11.2.5. Ductus deferens.
11.2.6. Ejaculatory ducts.
11.2.7. Urethra.
11.2.3. Seminal vesicles’ anatomy.
11.2.4. Prostate anatomy.
11.2.5. Penis anatomy.

11.3. Anatomy of the female reproductive system.
11.3.1. Ovary anatomy.
11.3.2. Anatomy of the genital system.
11.3.2.1. Oviduct.
11.3.2.2. Womb.
11.3.2.3. Cervix.
11.3.2.4. Vagina.
11.3.2.5. Vulva.
11.3.3. Breast anatomy.

## METHODOLOGY

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<td>• Exercises (3h)</td>
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<td>• Personal study (80h)</td>
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<td>• Work in groups (seminar, bone lab) (18h)</td>
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### TEACHER LEADERSHIP

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Summary of student work hours. Test

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Other test request

Important:

- The test will take place between the test period and work's delivery, and it is the only option that gives opportunity to recover (between the established period) if the student does NOT pass it with a 5.
- It is a must get a mark of 5 in the test in order to make the average with the other evidences.
- If the student does not present the first test performed, or he/she does not assist to the retake, the first note of the test will be weighted up in 40% instead of 50%.
- To make the average that will allow the student to pass the subject, he/she must complete and submit the evidence described above.

BIBLIOGRAPHY AND RESOURCES

Books

- DORLAND. Diccionario enciclopédico ilustrado de medicina. 30ª Edición. Elsevier
2005.

Articles and reviews


Web references

• cms.clevelandclinic.org/.../body.cfm?id=111
• Web Student consult images Elsevier
• Harrinson’s online
• Images MD: the online encyclopedia of medical images
• Diccionari enciclopèdic de Medicina

Audiovisual material

El cuerpo humano. BBC.

Others (project guides, dossiers, examples of problem’s resolution...)