INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Anatomohistofisiology I			Field of study	Biology and Biochemistry		
Bachelor in	Nursing			School	School of Health		
Academic Year	2020/2021	Year of study	1	Level	1-1	ECTS credits	5.0
Type	Semestral	Semester	1	Code	9501-699-1101-00-20		

Workload (hours)	135	Contact hours	T -	TP 60	PL -	TC -	S -	E -	OT -	O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Mario Alberto Preto Rodrigues

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. To identify topographical regions.
2. To relate anatomical structures based on anatomic plans.
3. To describe microscopic and macroscopic structure of osteo-articular and integumentary systems.
4. To describe hystology of muscle contraction and the attachments and actions of main skeletal muscles.
5. To describe histological, anatomical aspects of heart and blood vessels, physiological events of cardiac cycle and of hemodynamics.
6. To describe bood cells and their functions.
7. To describe anatomical and histological aspects of respiratory system components and physiological aspects of pulmonary ventilation, gas transport and exchange in pulmonary and systemic capillaries.
8. To describe anatomical, histological and physiological aspects of each gastrointestinal tract segment and of pancreas and liver, namely hepatic functions on bile secretion and metabolism.

Prerequisites

Before the course unit the learner is expected to be able to:
Not eligible

Course contents

1Introduction: Topographical regions. Anatomic plans. 2 Osteoarticular, muscle and integumentary systems: Skin. Skeletal tissues. Bones. Joints. Physiology of muscle contraction. 3 Cardiovascular System: Anatomy and histology. Cardiac cycle. Hemodynamics. 4 Haemolymphoid system: Blood. Lymphoid tissue. Immunity. 5 Respiratory System. Anatomy and histology. Physiology 6 Alimentary system. Anatomy and histology. Gastrointestinal physiology. Hepatic functions

Course contents (extended version)

1. INTRODUCTION TO ANATOMY STUDY
   - Topographical regions
   - Anatomical position. Plans. Concepts: cranial/caudal, dorsal/ventral, medial/lateral.
2. OSTEOARTICULAR SYSTEM
   - Skeletal tissues: bone and cartilage. Histogenesis of bone. Growth plate.
   - Vertebral column: vertebrae, sacrum, coccyx. Main bone characteristics.
   - Skeleton of thorax: thoracic vertebrae, sternum and ribs.
   - Skull. Orbit and nasal cavity. Bony palate. Cranial bones.
   - Upper limb: scapula, clavicle, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges.
   - Lower limb: innominate bone, femur, tibia, fibula, patella, tarsal and metatarsal bones, phalanges.
   - Concept of joint. Functional aspects.
   - Non-synovial joints: suture, synchondrosis, syndesmosis, symphysis and gomphosis.
   - Synovial joints: articular cartilages, fibrous capsule, articular disc or meniscus.
   - The movement. Rotation axes. The movements on synovial joints.
3. MUSCULAR SYSTEM
   - Cytological aspects of muscle fibre
   - Physiology of muscle contraction.
   - Attachments and actions of main skeletal muscles.
4. CARDIOVASCULAR SYSTEM
   - Histological aspects of blood vessels and their relation with functional aspects.
   - The heart anatomy: cardiac chambers and valvular complexes.
   - Myocardium. Electrical events: depolarization and repolarization. Conducting system of myocardium.
   - Systole and diastole. Cardiac cycle.
   - Hemodynamics. Arterial pressure. Microcirculation.
   - Localization of main blood vessels of arterial and venous systems.
5. HAEMOLYMPHOID SYSTEM
   - Blood cells and their functions. Plasma
   - Haemopoiesis. Marrow bone. Physiological aspects of erythropoiesis.
   - Primary and secondary lymphoid tissue. Functions of B and T lymphocytes on immunological response.
   - Blood groups. AB0 and Rh systems. Others systems: Kell, Duffy, Kidd, Lutheran, Lewis, P.
   - Haemostasis
6. RESPIRATORY SYSTEM
   - Anatomical aspects: nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, lungs.
   - Histological aspects: respiratory epithelium, respiratory membrane.
   - Pulmonary ventilation, gas exchange and transport in the blood. Regulation
7. ALIMENTARY SYSTEM
   - Oral cavity and salivary glands. Oesophagus. Stomach: gastric mucosa. Small and large intestine.
   - Pancreas. Histological structure. Enzyme component and aqueous componente of pancreatic juice.
   - Liver. Structure of hepatic lobule. Blood circuitry in hepatic lobule. Hepatic function.
   - Physiolgy. Motility. Enzymatic activity. Absorption. Endocrine and paracrine mediators.
8. INTEGUMENTARY SYSTEM
   - Epidermis and dermis. Hair follicles. Sweat and sebaceous glands. Nails.

Recommended reading

1. Drake RL, Vogl AW, & AWM, Mitchell (Eds.). (2010). Gray's Anatomia para Estudantes (2ª ed.): Rio de Janeiro: Editora Elsevier.
2. Netter FH (7 Ed.). (2019). Atlas de Anatomia Humana: Editora Elsevier
3. Berne, R. M. , & Levy, M. N. (Eds.). (2004). Fisiologia. (5ª ed.): Rio de Janeiro: Mosby.
4. Rod R. Seeley, Trent D. Stephens, Philip Tate. (2011) Anatomia e Fisiologia: 8ª ed. - Loures : Lusociência
5. www. anatomy. tv

Teaching and learning methods

Theoretical-practical lessons are brief expositions of study subjects based on images, followed by interaction between groups of pupils. Tutorial lessons and individual work of the students are based on the search of answers for proposed questions oriented by the teacher using bibliography. The classes are full supported with live transmission using zoom.

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final)
   - Final Written Exam - 100% (Final exam - normal season)
2. Alternative 2 - (Regular, Student Worker) (Supplementary)
   - Final Written Exam - 100% (appeal exam for aproval or grades improvement)
3. Alternative 3 - (Regular, Student Worker) (Special)
   - Final Written Exam - 100% (Special Season. All the subject's program items are included.)

Language of instruction

1. Portuguese
2. Portuguese, with additional English support for foreign students.

Electronic validation

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14-04-2021	14-04-2021	15-04-2021	15-04-2021