Applied Anatomy and Physiology

Course Syllabus

London College of Osteopathy and Health Sciences
www.lcocanada.com
Lecture 1: Introduction to Anatomy and Physiology

- Anatomy & Physiology defined
- Scales of Anatomy
- Anatomical Terminology
- Anatomical Positions
- Directional References
- Anatomical Planes
- Sectional Anatomy
- Review: video tutorial
Lecture 2. Integumentary system
Tissues and Skin

- Organization of the body
- Primary tissue types classification
- Epithelium
- Connective Tissue
- Integumentary System (IS) overview
- IS functions
- IS structures
- Local control of the Integumentary system
- Review: video tutorial
Lecture 3. Connective tissue
Cartilage - Ligaments - Tendons

- Cartilage: structure and cellular organization
- Types of Cartilage
  - Hyaline
  - Fibro
  - Elastic
- Joints: classification
- Types of synovial joints
- Ligaments
- Articulation: form and function
- Diseases of articulation and aging
- Review: video tutorial
Lecture 4: Bone Tissue

- Functions of the Skeleton
- Bone as specialized connective tissue
- Composition
- Structure
- Anatomy
- Bones classification
- Growth and development
- Bone maintenance, remodelling and repair
- Review: video tutorial
Lecture 5. Muscle Tissue

- Terminology
- Types of muscle tissue:
  1. Skeletal
  2. Cardiac
  3. Smooth
- Skeletal muscle functions and structure
- Skeletal muscle levels of organization
- Skeletal muscle contraction
- Muscular hypertrophy/atrophy
- Muscle naming
- Muscle origin and insertion
- Review: video tutorial
Lecture 6: The Nervous System

Part I: Central Nervous System (CNS)
- Anatomy
- Spinal Cord
- Spinal Nerves
- Sensory Dermatomes
- Brain and cranial Nerves
- Blood flow
- Cerebrospinal Fluid (CSF)
- Brainstem organization and function

Part II: Peripheral Nervous System (PNF)
- Neural Pathways
- Neurons

Part III: Autonomic Nervous System Divisions
- Sympathetic NS
- Parasympathetic NS
- Adrenal Glands
- Visceral Sensory System
- Referred pain

Part IV: Organization of the Brain
- Limbic System
- Cranial Nerves - anatomy and functions
Lecture 7. The Cardiovascular System (CVS)

- CVS Overview
- Pathways of blood circulation
- Circuits
- Blood Vessels
- Blood Composition
- Plasma
- The Heart
  - Function
  - Anatomy
  - Blood flow
  - Regulation
  - Heart homeostasis
  - Baroreceptors
  - Chemoreceptors
  - Reflexes
- Disorders of the CVS
- CVS and the aging heart
Lecture 8. The Lymphatic System

- Lymphatic System overview
- Anatomy
- Functions
- Organization
- Lymphatic capillaries and vessels
- Lymph nodes
- Lymphatic ducts
- Lymphatic Immune System
- Lymphatics of the face
- Review: tutorial video
Lecture 9. The Respiratory System

- Respiration process overview
- Conducting zone
  - The nose
  - Nasal cavity, paranasal sinuses
  - Pharynx
  - Larynx
  - Trachea
- Respiratory zone
  - Gas exchange
- The Lungs
- The Diaphragm
- Muscles of inhalation and expiration
- Neural control of respiration
  - Peripheral chemoreceptors
- Pneumothorax
- Review video tutorial
Lecture 10: The Digestive System - Urinary System

- DS Overview
- Digestion process
- Chemical Digestion
- Organs of Digestions
  - Mouth
  - Salivary Glands
  - Esophagus
  - Small Intestine
  - Large Intestine
- Accessory Organs
  - Liver
  - Gallbladder
- The Excretory System overview
- Organs of excretion
  - Lungs,
  - Kidneys
  - Liver
- Urinary System
- Review: video tutorial
Lecture 11: Human Skeleton

- Human skeleton: functions
- Bones classification
- **Axial skeleton**
  - Skull
  - Cervical vertebrae
  - Thoracic vertebrae - ribs
  - Lumbar vertebrae
  - Sacrum
- **Appendicular skeleton**
  - Pectoral girdle
  - Humerus
  - Ulna & Radius
  - Hand bones
  - Pelvis

- Overview: skull anatomy
- Cranial bones (8)
- Sutures of the skull
- Facial skeleton
- Facial bones (14)
- Blood supply of the head & neck:
  - Arteries
  - Veins
- Muscles of the Head and Neck
- TMJ: mastication
- Muscles of facial expression
- Review: video tutorial
Lecture 13. Upper Limb Anatomy

This lecture provides a detailed overview of the movements in the structures of the upper limb and the muscles involved.

- Pectoral Girdle
  - Movements
  - Musculature
- Muscles acting on the Scapula
- Muscles acting on the Shoulder
- Rotator Cuff muscles
- Muscles of the Arm
- Muscles of the Forearm
- Muscles of the Wrist
- Fingers
Lecture 14. Spine and Trunk Anatomy

- Abdominal wall muscles
- Anterior trunk muscles
- Muscles of the vertebral column
- Muscles of respiration
- The Spine - functions
  - Motion segment
- Sagittal plane curvatures
- Regions of the Spine
- Basic vertebral structure
- Typical spinal vertebrae
  - Cervical
  - Thoracic
  - Lumbar
  - Sacrum
Lecture 14. (continued)

- Intervertebral joint
- Intervertebral disc
- Occipital joint
- Atlantoaxial joint
- Sacroiliac joint
- Ligaments
- Posterior spinal muscle groups
- Spinal nerve structure
- Meninges
- Spinal nerve topography
- Review: video tutorial
- Self-quiz
Lecture 15: Lower Limb Anatomy

This lecture provides a detailed overview of the movements in the structures of the lower limb and the muscles involved.

- Anatomy of the Lower Limb
- Muscle Groups
- The Hip
- The Thigh
- The Knee
- The Ankle
- The Digits
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THANK YOU