Anatomy & Physiology

Presentation guide

CC = Statement of the competence for a core competence
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Core Competence CC.1

Explain the anatomical structure and physiology of the human body with emphasis on the pulmonary and cardiovascular systems and other functionally related systems

E.1 Explain the overall organization and function of the human body

P1.1 Explain the chemical processes needed for the function of human physiology
P1.2 Explain the cellular mechanism as a fundamental and essential unit
P1.3 Distinguish between the functions of the principal human tissues

E.2 Describe the stages of prenatal development

P2.1 Describe the stages of pregnancy and delivery
P2.2 Describe the events of embryonic and fetal development
P2.3 Describe the newborn's adaptation to extrauterine life

E.3 Explain the function of the skin, bones and muscles

P3.1 Describe the integumentary system
P3.2 Explain the structure and function of the bones
P3.3 Explain the structure and function of the muscles
P3.4 Identify the changes and consequences of aging on the bones and muscles

E.4 Explain the fundamental function of the nervous system: its regulation and integration of the physiological processes

P4.1 Describe the structure and physiology of the nervous tissue
P4.2 Explain the function of the central nervous system
P4.3 Explain the function of the peripheral nervous system and the reflex activity
P4.4 Explain the function of the autonomic nervous system
P4.5 Identify the changes and consequences of aging on the nervous system

E.5 Explain homeostasis and the role of each contributing system

P5.1 Describe the composition and characteristics of venous and arterial blood
P5.2 Explain the functions of the lymphatic system
P5.3 Explain the functions of the immune system
P5.4 Explain the overall function of digestive system
P5.5 Explain the metabolism and function of the liver
P5.6 Explain the thermoregulatory mechanism with emphasis on the newborn

E.6 Explain the function of the urinary system

P6.1 Describe the anatomy of the kidney
P6.2 Explain the mechanism of urine formation
P6.3 Explain the functions of the urinary system in relation to the maintenance of homeostasis

E.7 Explain fluid equilibrium, electrolytes and acid-base balance

P7.1 Explain the regulation of water balance
P7.2 Explain the regulation of electrolytes: sodium, potassium, calcium, magnesium and anions
P7.3 Explain acid-base balance: chemical buffer systems, respiratory regulation and renal mechanisms

E.8 Describe the endocrine system

P8.1 Identify and locate the major endocrine organs
P8.2 Describe the functional role of the major endocrine organs: pituitary, thyroid, parathyroid, adrenal, pineal and thymus glands

E.9 Describe the anatomy and function of the pulmonary system

P9.1 Describe and locate each component of the pulmonary system
P9.2 Describe the role of each component of the pulmonary system
P9.3 Describe the relationship between the pulmonary system and the other systems
P9.4 Describe the changes to the pulmonary system throughout the course of life

E.10 Explain the functional principles of pulmonary ventilation

P10.1 Explain the principles of physics in relation to pulmonary ventilation
P10.2 Explain the functionality of inhalation and exhalation during one breath cycle
P10.3 Explain the function of external respiration
P10.4 Distinguish between lung volumes and lung capacities

E.11 Explain the neurological control of breathing and respiratory compensation

P11.1 Explain the regulation of breathing
P11.2 Distinguish between types of respiratory patterns
P11.3 Compare the reflect actions triggered by blood and pulmonary receptors with other factors which influence respiratory frequency and amplitude
P11.4 Compare the various mechanisms known to contribute to respiratory compensation

E.12 Explain the functional physiology of blood

P12.1 Compare the biochemical profile of venous and arterial blood
P12.2 Describe the composition of plasma and its components
P12.3 Explain the mechanism of blood coagulation
P12.4 Explain the principle of blood transfusion and restoration of blood volume
P12.5 Compare and contrast the flow and function of the pulmonary circulation versus the systemic circulation

E.13 Explain the principles associated with gas exchanges

P13.1 Compare the composition of atmospheric gases, alveolar gases and blood gases
P13.2 Explain gas exchange between blood, the lungs and the tissues
P13.3 Explain how gases are transported in the blood
P13.4 Distinguish between various anatomical and physiological factors known to affect gas exchange

E.14 Explain the functional physiology of the cardiovascular system

P14.1 Explain summarily the anatomy and function of the heart as an integral part of the cardiovascular system
P14.2 Explain the electromechanical physiology pertaining to each functional phase of a cardiac cycle
P14.3 Explain the physiology of blood circulation during one complete cardiac cycle
P14.4 Identify the changes and consequences of aging on the cardiovascular system

E.15 Explain the electrophysiology of the heart

P15.1 Explain summarily the neuro-chemical control of the cardiovascular system
P15.2 Explain the intrinsic conduction system and the extrinsic innervation of the heart
P15.3 Explain the graphic recording of electrical changes on an electrocardiogram during various heart activities