

Unit 2 Lecture Objectives

Upon completion of this unit, the student should be able to achieve the following performance objectives:

Utilize a vocabulary containing the following terms:

chemoreceptor	hypocalcemia
diabetes insipidus	hypoglycemia
diabetes mellitus	photoreceptor
diuresis	prostaglandins (PG)
dopamine	receptors
goiter	second messenger
hydrocephalus	serotonin
hypercalcemia	steroids
hyperglycemia	target organ/cell

Chapter 12

- 1 Describe the functions of the nervous system.
- 2 Subdivide the components of the nervous system, structurally and functionally, into the central nervous system (CNS), peripheral nervous system (PNS), the autonomic nervous system (ANS) and somatic nervous system (SNS).
- 3 Describe the types of neuroglial cells found in the CNS and PNS.
- 4 Identify the dendrites, axon and cell body of neurons and state their functions.
- 5 Describe neurons and classify them using the following terms: afferent, efferent, sensory, motor, multipolar, bipolar, unipolar and interneuron.
- 6 Describe the function of neurilemma in nerve cell regeneration.
- 7 Explain the generation and maintenance of the resting membrane potential.
- 8 Discuss the step-by-step mechanism of nerve impulse transmission along a neuron represented by changes in voltage and ion distribution.
- 9 List and describe the components of a synapse and its function.
- 10 Define presynaptic neuron and postsynaptic cell.
- 11 Describe the mechanism of a conduction of an action potential across a synapse.
- 12 Differentiate the effects of excitatory and inhibitory neurotransmitters.

Chapter 13

- 13 Discuss the location and structure of the spinal cord.
- 14 List the functions of the ascending and descending pathways in the spinal cord, using examples.
- 15 Explain the structure of the spinal nerves.
- 16 Discuss the structural and functional components of two and three-neuron reflex arcs.

Chapter 14

- 17 Identify and locate the layers of the meninges and the spaces associated with the meninges.
- 18 Describe the origin, composition, circulation and functions of cerebrospinal fluid.
- 19 Describe the function of the medulla, pons, thalamus, hypothalamus, cerebellum and cerebrum.
- 20 Describe the surface of the cerebrum with respect to structure, composition, and function.
- 21 Discuss the structure and functions of the cerebellum related to the control of skeletal muscles.
- 22 Identify function of cranial nerves I, II, VIII and X.

Chapter 15

- 23 Discuss the role of neurotransmitters of the CNS.
- 24 Describe the structure and function of the divisions of the autonomic nervous system including the length of the preganglionic and postganglionic neuron, location of ganglia, neurotransmitters, receptors and effectors.
- 25 Compare the functions of adrenergic and cholinergic fibers.

Chapter 16 & 17

- 26 Describe the layers of the eye and their functions.
- 27 Describe the location and functions of lens, ciliary body, iris, humors, fovea centralis, macula lutea, optic disc and optic nerve.
- 28 Describe the structure of the nervous tissue of the retina.
- 29 Compare the function and location of the rods and cones in the retina.
- 30 Describe the process of image formation in the eye.
- 31 State the function of Vitamin A and its relation to night blindness.
- 32 Identify common eye disorders including: myopia, presbyopia, astigmatism, cataract and glaucoma.
- 33 List and discuss the functions of the major anatomical components of the outer, middle and inner ear.
- 34 Trace a sound wave through the ear naming all structures involved and the energy transformations that occur.
- 35 Describe the location, organization, and function of the semicircular canals and vestibular apparatus.

Chapter 18

- 36 State the functions of the endocrine system.
- 37 Briefly describe the types of hormones and mechanisms of hormone action at the cellular level.
- 38 Locate the following primary endocrine glands: pituitary (hypophysis), pineal body (gland), thyroid, parathyroid, thymus, adrenal, pancreas, ovaries and testes.
- 39 Describe the following hormones as to endocrine gland, function, action and target: growth hormone, adrenocorticotropic hormone (ACTH), thyroid stimulating hormone (TSH), anti-diuretic hormone (ADH), thyroxine, calcitonin, parathyroid hormone, insulin, glucagon, aldosterone and cortisol.
- 40 Describe the subdivisions of the pituitary gland.
- 41 Explain the relationship between the hypothalamus and the anterior (adenohypophysis) and posterior (neurohypophysis) lobe of the pituitary.
- 42 Describe how hormone secretions are regulated by negative and positive feedback control mechanisms.
- 43 Explain the neuroendocrine function of the adrenal medulla.
- 44 Discuss the pancreas as both an endocrine and exocrine gland.
- 45 List the body organs from which androgens and estrogens can be obtained.