

UNIT V: THE CENTRAL NERVOUS SYSTEM AND SPECIAL SENSES

Instructional Objectives:

At the completion of this unit the student should be able to:

1. Recognize the derivation of key examples of anatomical terms used in this unit.
2. Discuss the structural and functional organizations of the nervous system.
3. Distinguish between neurons and neuroglia (glial cells) and compare their functions.
4. Describe the structures of a multipolar neuron. (See list.)
5. Understand the basis for the structural and functional classification of neurons.
6. Describe nerve impulse conduction.
7. Describe the structures involved in a reflex arc.
8. Discuss the structure, location and role of white matter and gray matter in processing and relaying sensory and motor information.
9. Identify the secondary brain vesicles and their associated structures. (See list.)
10. Identify the anatomical structures associated with the spinal cord. (See list.)
11. Identify the meninges and their associated structures. (See list.)
12. Discuss the origin, function, and circulation of cerebrospinal fluid.
13. Identify the 12 pairs of cranial nerves and their associated pathways. (See list.)
14. Identify nerve plexuses and their associated spinal nerves. (See list.)
15. Compare and contrast the anatomy and functions of the somatic nervous system and autonomic nervous system.
16. Identify and describe the structures of the ear and their roles in the processing of equilibrium sensations and conduction of sound for hearing. (See list.)
17. Identify and describe the structures of the eye and the function of each structure. (See list.)
18. Identify representative roots, prefixes and suffixes associated with this unit and their meanings. (See terminology list.)

LIST

Objective 4

dendrite

axon

cell body (soma)

nucleus

neurolemmocyte (Schwann cell)

neurofibril node (node of Ranvier)

telodendrion

synaptic knob

endoneurium

Objective 9

TELENCEPHALON

cerebrum

 cerebral hemispheres

longitudinal fissure

cerebral cortex

 gyri

 sulci

frontal lobe

temporal lobe

insula (also a lobe, deep to temporal)

parietal lobe

occipital lobe

corpus callosum

 commissural tracts

lateral ventricles

 interventricular foramina

 choroid plexus

 septum pellucidum

DIENCEPHALON

thalamus

hypothalamus

 pituitary gland

third ventricle

 choroid plexus

MESENCEPHALON

corpora quadrigemina (tectal plate)

 superior colliculi

 inferior colliculi

cerebral peduncles

mesencephalic (cerebral) aqueduct

METENCEPHALON

cerebellum

 cerebellar hemispheres

 folia

 vermis

 arbor vitae

 cerebellar peduncles

pons

fourth ventricle

MYELENCEPHALON

medulla oblongata

Objective 10

External Examination

anterior (ventral) median fissure
conus medullaris
filum terminale
cauda equina

Transverse Section

gray matter

gray commissure
central canal

horns:

posterior (dorsal)
lateral
anterior (ventral)

white matter

white (columns) funiculi
anterior (ventral)
lateral
posterior (dorsal)

posterior (dorsal) median sulcus

anterior (ventral) median fissure

posterior (dorsal) root

posterior (dorsal) root ganglion

anterior (ventral) root

spinal nerve

Objective 11

meninges

dura mater

falx cerebri
falx cerebelli
tentorium cerebelli
diaphragma sellae
dural sinuses

arachnoid mater

subarachnoid space

pia mater

denticulate ligaments

CRANIAL NERVES

Objective 13

<u>Nerve</u>	<u>Pathway</u>
I. Olfactory	Cribriform plate
II. Optic	Optic foramen
III. Oculomotor	Superior Orbital fissure
IV. Trochlear	Superior Orbital fissure
V. Trigeminal	
<u>Divisions:</u>	
1. Ophthalmic	Superior Orbital fissure
2. Maxillary	Foramen Rotundum
3. Mandibular	Foramen Ovale
VI. Abducens	Superior Orbital fissure
VII. Facial	Stylomastoid foramen
VIII. Vestibulocochlear (Auditory)	Internal Acoustic meatus
IX. Glossopharyngeal	Jugular foramen
X. Vagus	Jugular foramen
XI. (Spinal) Accessory	Jugular foramen
XII. Hypoglossal	Hypoglossal canal

Objective 14

cervical plexus

brachial plexus

 axillary nerve

 radial nerve

 ulnar nerve

 median nerve

lumbar plexus

sacral plexus

 sciatic nerve

 tibial nerve

 common fibular nerve

 superficial fibular nerve

 deep fibular nerve

Objective 16

EAR

external ear

auricle (pinna)

external auditory canal

tympanic membrane (tympanum)

middle ear

ossicles of the ear

malleus

incus

stapes

auditory tube (Eustachian tube)

inner ear (labyrinth)

vestibule

semicircular canals

cochlea

round window

oval window

auditory nerve (vestibulocochlear)

Objective 17

EYE

sclera

cornea

choroid

ciliary body

ciliary muscle

ciliary processes

iris

pupil

lens

suspensory ligaments

retina

fovea (centralis)

optic disc

optic nerve

anterior chamber

posterior chamber

vitreous chamber

UNIT V
TERMINOLOGY

Root

Af-
Arachn-
Aut-
Cephal-
Cerebr-
Cochle-
Committ-
Dendr-
Dur-
Ef-
En-
Fer-
Gangli-
Gli-
Labyrinth
Lemm-
Matr-
Mening-
Myel-
Ped-
Pi-
Plex-
Scler-
Sulc-
Tel-
Tympan-

Meaning

to, toward
spider, web
self
head
brain
snail shell
combine
tree
hard
away from
in, into
to carry
a swelling, knot
glue
a maze
covering
mother
membrane
spinal cord
foot
tender, soft
braid
hard
groove, furrow
afar
drum