

CNS-4 Brainstem, cerebellum, cranial nerves

OBJECTIVES OF THE CLASS:
THEORETICAL
1. to know the location and portions of the brainstem; 2. to know the location of the nuclei of the cranial nerves; 3. to know the organization of reticular formation and its functions;
THEORETICAL and PRACTICAL
4. to know the external features of the brainstem; 5. to know the sites of appearance of the cranial nerves at the base of encephalon; 6. to know external structure and the nuclei of the cerebellum; 7. to know the structure, recesses and connections of the fourth ventricle.

A student should be prepared theoretically for the lab class.

The information may be found in the chapters 5, 6, 9 and 11 (*Clinical neuroanatomy* by Snell) and in the lecture 4.

DURING THE SEMINAR:
<ul style="list-style-type: none">– a detailed description of the ventral and dorsal surface of the brainstem is presented;– the sites of appearance of the cranial nerves are described;– a description of external surface of the cerebellum is given;– the boundaries and recesses of the fourth ventricle are identified and named.

DURING THE PRACTICAL CLASS A STUDENT SHOULD RECOGNIZE AND IDENTIFY:
<ul style="list-style-type: none">– the external features of the brainstem;– the sites of appearance of the cranial nerves at the base of encephalon;– the boundaries and recesses of the fourth ventricle. <p>The student may use the list attached below as a reference of demanded structures.</p>

AFTER THE CLASS A STUDENT:
<ul style="list-style-type: none">– should know the location and portions of the brainstem;– should know the location of the nuclei of the cranial nerves;– should know the organization of reticular formation and its functions;– should be able to give a detailed description of the external features of the brainstem;– should be able to recognize the cranial nerves and the sites of their appearance at the base of the encephalon;– should be able to identify and describe the external features of the cerebellum and to identify and give names of its nuclei;– should be able to recognize and describe the fourth ventricle, its connections, boundaries and recesses.

At the end of the class a student should participate in the credit consisting of 6 MCQ and 4 pins in order to confirm the presence at the class and collect the points if successful.

EXAMPLE QUESTIONS (choose <u>one</u> correct answer):	
Which structure can be found in rhomboid fossa: <ul style="list-style-type: none">A. facial trigoneB. inferior colliculusC. tuberculum cuneatumD. locus coeruleusE. superior medullary velum	Which of the cranial nerves emerges at the level of mesencephalon: <ul style="list-style-type: none">A. oculomotorB. abducensC. facialD. vagusE. hypoglossal

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List of the structures to be practically identified and recognized by the student:

MESENCEPHALON

Cerebral peduncle
 Crus cerebri
 Tegmentum
Interpeduncular fossa
Posterior perforating substance
Tectum
 Lamina tecti = Quadrigeminal plate
 Superior colliculus
 Inferior colliculus
 Brachium colliculi superioris
 Brachium colliculi inferioris
Cerebral (mesencephalic) aqueduct
Superior cerebellar peduncle
Substantia nigra
Red nucleus

PONS

Bulbopontine groove
Basilar sulcus
Basilar eminence
Middle cerebellar peduncle

MEDULLA OBLONGATA

Anterior median fissure
Pyramis (Pyramid) of medulla oblongata
Decussation of pyramids = Pyramidal decussation
Anterolateral groove
Olive
Retrolivary groove
Posterolateral groove
Inferior cerebellar peduncle
Fasciculus cuneatus
Tuberculum cuneatum
Fasciculus gracilis
Tuberculum gracile
Posterior median groove

CEREBELLUM

Cerebellar hemisphere
Vermis cerebelli
Arbor vitae
Cerebellar tonsil
Flocculus
Nodulus

FOURTH VENTRICLE

Floor of the 4th Ventricle:
 Rhomboid fossa
 Lateral recess
 Median groove
 Medial eminence
 Sulcus limitans
 Vestibular area
 Locus coeruleus
 Striae medullares
 Facial colliculus
 Obex
Roof of the 4th Ventricle:
 Superior medullary velum
 Frenulum veli medullaris superioris
 Inferior medullary velum
 Choroid plexus of the 4th ventricle
 Median aperture of the 4th ventricle
 (of Magendie)
 Lateral aperture of the 4th ventricle
 (of Luschka)

CRANIAL NERVES

Olfactory nerves (I)
Optic nerve (II)
Oculomotor nerve (III)
Trochlear nerve (IV)
Trigeminal nerve (V)
 Sensory root
 Motor root
 Trigeminal ganglion
 Ophthalmic nerve (V1)
 Maxillary nerve (V2)
 Mandibular nerve (V3)
Abducens nerve (VI)
Facial nerve (VII)
 Intermediate nerve
Vestibulocochlear nerve (VIII)
Glossopharyngeal nerve (IX)
Vagus nerve (X)
Accessory nerve (XI)
 Cranial roots
 Spinal roots
Hypoglossal nerve (XII)