University of Rijeka
Faculty of Medicine
Course: Neuroanatomy
Course coordinator: Olga Cvijanović Peloza MD, PhD, Associate Professor
Department: Department of Anatomy
Study program: Integrated Undergraduate and Graduate University Study of Medicine in English
Year: 2nd year
Academic year: 2021./2022.

SYLLABUS

Course information (brief course description, general guidelines)

Neuroanatomy is a compulsory course of the second year (3rd semester) of Integrated Undergraduate and Graduate University Study of Medicine in English. It is consisted of 16 hours of lectures, 12 hours of seminars and 12 hours of practicles, a total of 40 hours (3 ECTS).

The course objective is to acquire knowledge about the organization and the structure of gray and white matter within the central nervous system. Except the latter, the goal of the course is to teach students how nerve impulses are transferred from the central nervous system to the target organ and vice versa. Students will also acquire knowledge of the inner ear, sensory areas that are located there and about retina of the eye bulb.

Course content:
Arrangement and functional organization of the gray and the white matter of the spinal cord; an overview of arrangement and functional organization of the gray and the white matter of the brain stem; arrangement and functional organization of the grey and white matter of the cerebellum; an overview of the diencephalon nuclei; pituitary and neurosectional systems; telecephalon (telencephalon medium, hemisphere, rhinencephalon); arrangement and functional organization of the gray and the white matter of the telecephalon; limbic system; reflex arc; non specific sensory pathways; specific sensory pathways; motor pathways; reticular formation; an autonomic nervous system (basic principle of structure and function), the sympathetic part of the autonomic nervous system; the parasympathetic part of the autonomic nervous system; inner layer of the eye bulb (retina); inner ear.

Assigned reading:

Friedrich Paulsen Tobias M. Böckers Jens Waschke. Sobotta Anatomy Textbook1st Edition. Urban & Fischer 2019.

Optional / additional reading:

Alan R Crossman, David Neary. Neuroanatomy 5th edition. Churchil Livingstone, 2015.
Werner Kahle, Michael Frotscher. Colored Atlas of Human Anatomy. Nervous System and Sensory Organs. Thieme, 6th Edition.

Course teaching plan:

List of lectures (with titles and description):

1st SEMESTER

L1 Introduction to neuroanatomy - Development, structure and morphology of the CNS
Learning outcomes:
To mark off and to describe the main parts of the central nervous system. To explain the linkage between development of the central nervous system and integral parts of the central nervous system. To explain the neural axis (neuroaxis) and to define the terms ventral/dorsal and the rostral/caudal in the central nervous system (Forel and Meynert axis). To explaine the morphology of the neuron and its functional characteristic. To describe neuroglial cells and their functions.

L2 Distribution of the grey and white matter in the CNS (pg.593-603).
Learning outcomes:
To describe the main morphological characteristic of the grey and white matter. To explaine the main distribution of the grey matter in CNS, point out the difference between superfitial grey matter (cortex) and deep nuclei. To explaine the fibre content in white matter and their functional characteristics.

L3 Telencephalon: classification
Learning outcomes:
To describe the main parts of the telencephalon. To describe the external features of the hemispheres (the lobes, gyruses and sulcuses). To explain the distribution of telencephalic grey and white matter and histological structure (layers) of the cerebral cortex. To explain the morphological and functional division of the cortex. To describe white matter of the telencephalon in sense of association, commissural and projection fibres. To describe the topographical anatomy of the basal ganglia. To describe the telencephalon medium as developmental part of telencephalon. To explain organization of white matter of the telencephalon (commissural, association and projection fibres).

L4 Diencephalon: thalamus (pg. 656-664)
Learning outcomes:
To describe the external features, position and relations of distinctive parts of the diencephalon. To explain inner organization of the thalamic nuclei. To position thalamus and explain its relationship with hypothalamus. To describe position and relations of the hypothalamus and to discuss its function and afferent/efferent connections.

L5 Subthalamus, epithalamus and metathalamus
Learning outcomes:
To describe constituent parts of the epithalamus and its position, structure and function. To describe the organization of grey and white matter of the subthalamus (fields of Forel, subthalamic nucleus). Metathalamic nuclei and its functions.

L6 Hypothalamus and hypophysis
Learning outcomes:
To explain the function of the hypothalamus, its nuclei and connections. To describe position of the pituitary gland and its division to adenohipophysis and neurohypophysis. To explain the control of hypophysis hormone stimulation and to understand the main principles of the neuroendocrinology. To link hypothalamus to the pituitary gland by means of neurosecretion and the portal system. To explain division of the hypothalamus into three horizontal and three vertical zones. To distinguish magnocellular from the parvocellular system of the hypothalamic neurons. To describe the function of hypothalamus with respect of

its connection to anterior and posterior lobe of the pituitary gland. To describe the position and relations of the pituitary gland as well as its division to adenohypophysis and neurohypophysis, control of the hormons secretion, and basic principles of the neuroendocrinology. To analyze portal circulation of the adenohypophysis and systemic circulation of the neurohypophysis.

L7 Brainstem. Mesencephalon (pg. 664-673).

Learning outcomes:

An overview of the division and external features of the brainstem. Students will learn to appoint and to describe the major parts of the medulla oblongata, pons and midbrain, and to explain their mutual relationship. To describe the internal structure of constituent parts of the brainstem. To analyze and discuss the arrangement of grey and white matter of the medulla oblongata, pons and midbrain. To know the structures of the midbrain cerebral aqueduct, cerebral crura, substantia nigra, nucleus ruber and corpora quadrigemina. To specify the origin of the cranial nerves and describe the external features of the midbrain. To recognize structures on horizontal and sagittal sections through the midbrain.

L8 Pons and medulla oblogata

Learning outcomes:

To identify and distinguish main tracts and nuclei of the brainstem and to analyze the differences of cross sections in the level of the caudal, mid and rostral medulla as well as pons and midbrain. To explain the functional organization of gray and white matter of the brain stem. To appoint and explain function of the reticular formation. To explain the longitudinal zones on the mediosagittal section of the brainstem (basis, tegmentum, tectum). Based on this, to analyze the position of cranial nerve nuclei and other specific nuclei of the brainstem. To analyze the position of the main ascending and descending tracts and reticular formation.

L9 Somatomotor system – central section (pg. 725-732).

Learning outcomes:

To explain the basic organization of the motor system. To explain the hierarchy of the motor system – from the skeletal muscle to the cerebral cortex. To explain the concept of the motor unit. To explain the role of the cerebral cortex in control of the volontary movements. To define primary motor and premotor cotrex. To describe pyramidal pathways (corticospinal and corticobulbar tracts). To explain somatotopic representation of the motor cortex. To understand the role of the basal ganglia in movements control. To list and describe the neuronal circuits of the basal gaglia. To understand the role of the cerebellum in movement control and motor learning.To explain major motor pathways and to distinct between pyramidal and extrapyramid tracts. To describe circuits and descending tracts of the extrapyramidal nervous system. To describe cerebellar pathways involved in motoric functions.

L10 Motor cortex and extrapyramidal centers

Learning outcomes:

To describe types of motoneurons (upper and lower motoneurons) in the cerebral cortex and spinal cord. To explain areal, laminar and modular orgnization of the motor cerebral cortex. To explaine the connection between motor nuclei and motor cortex. To explaine the execution of motoric information.

L11 Auditory system (pg. 742-746)

Learning outcomes:

To explain organization and structure of auditory system. To describe structures of the inner ear, functional anatomy of cochlea, as well as auditory pathways.

L 12 Vestibular system (pg. 746-748).

Learning outcomes:

To explain organization and structure of the vestibular system. To describe structures of the inner ear,

functional anatomy of the vestibule and semicircular canals as well as vestibular pathways.

L 13 Vestibular system, balance and posture
Learning outcomes:
To explain organization and structure of the vestibular system. To describe structures of the inner ear, functional anatomy of the vestibule and semicircular canals as well as vestibular pathways.

L14 Autonomic nervous system (pg. 755-768).
Learning outcomes:
To explain basic organization of the autonomic nervous system. To appoint the centers of the autonomic nervous system. To explain sypathetic afferent and efferent nerve fibres, sympathetic chain and ganglia.To explain parasympathetic efferent (cranio-sacral origin) and afferent nerve fibres. To compare the organization of the sympathetic and parasympathetic parts of the autonomic nervous system. To appoint the plexuses of the autonomic nervous system. To define parasympathetic ganglia. To explain the supervising function of the autonomic nervous system in control of the vital functions. To explain autonomic inervation of organs: lacrimal gland, heart, lung, stomac, intestine to the splenic flexure, colon (descending, sigmoid and rectum), the adrenal gland core, internal rectal sphincter, urinary bladder, autonomic control of the erection (penis and clitoris) and ejaculation.

L15 Limbic cortex
Learning outcomes:
To describe parts and function of the limbic system. To explain the hippocampal formation and its connections within the limbic system. To describe gyri of the limbic lobe (inner and outer ring). To describe structures of the hypocampus and gyrus dentatus. To define areas of limbic and paralimbic cortex.

L16 Limbic system (pg. 768-770)
Learning outcomes:
To describe connections of the limbic system. To explain Papez circuit. To describe corpus amygdaloideum and its connections.

List of seminars (with titles and description):

S1 External aspects of the cerebral hemispheres: functional localization of the lobi, sulci and gyri; major fibre systems in the telencephalon – task resolving (pg. 637-652). Neocortex, archicortex and paleocortex (pg. 638-652)
Learning outcomes:
To revise external features of the telencephalon (borders, position, division and relations to the lateral ventricles). To describe and show cerebral lobes, and the main gyri and sulci. To appoint and describe parts of the telencephalon (cortex, white matter, basal ganglia, lateral ventricles). To describe basal ganglia and their internal and external connections. To recognize structures on horizontal, frontal and sagittal sections through the telencephalon. To describe the layers and functional areas of the neocortex. To describe the centers of the archicortex and paleocortex.

S2 Cerebellum (pg. 673-679).
Learning outcomes:
To revise external features of the cerebellum (position, hemispheres, vermis, cerebellar peduncles, and relations to the fourth ventricle). To describe division of the cerebellum on three functional and phylogenetic parts. To describe the functional organization of the cerebellar cortex (cells of molecular layer, Purkinje cells layer, and granular cells layer) and afferent fibres (mossy and climbing fibres). To identify deep masses of

grey matter (nucleus dentatus, nucleus emboliformis, nucleus globosus and nucleus fastigii). To explain the tracts of the cerebellum: the major afferent and efferent connections and the position of the tracts inside the cerebelar peduncles.

S3 Spinal cord (pg. 711-721).
Learning outcomes:
To name and to describe the plexuses of the periferal nervous system.To describe the appearance and arrangement of gray and white matter of the spinal cord. To describe the organization of grey and white matter of the spinal cord. To explain the laminar structure of grey matter. To analyze the main ascending and descending tracts and their seating. To describe propriospinal fibres. To explain the origin of the spinal nerve and to describe the spinal nerve, with emphasis on dorsal and ventral nerve roots, dorsal root ganglion as well as division of the spinal nerve. To define the difference between spinal and autonomic ganglia.

S4 Extrapyramidal system and peripheral section of the somatomotor system (pg. 728-732)
Learning outcomes:
To understand the basics of the motor system setup. To describe hierarchy of the motor system, from the cerebral cortex to the skleletal muscle and vice versa. To explain afferent nerve endings and the concept of the muscle spindle and Golgi tendon organs. To explain efferent nerve endings and the concept of the motor unit, neuromuscular junctions and motor end-plates. To describe the pathways of the extrapyramidal system.

S5 Somatosensory system (pg. 732-738) and nociceptive system (pg. 752-754)
Learning outcomes:
Students will learn to describe and classify non-specific and specific ascending pathways. To understand components involved in transmission of the stimulus in the nervous system (receptors, ascending pathways, nuclei, cerebral cortex). To understand sensory perception and chemical senses (smell and taste). To explain the types of the sensory receptors and stimuli. To explain dorsal column-medial lemniscus pathway (DCML) that conveys sensations of fine touch, vibration, two-point discrimination, and proprioception (position) from the skin and joints. To explain and understand the spinothalamic tract (anterolateral system) that is constituted of anterior spinothalamic tract which caries information of crude touch and lateral spinothalamic tract which caries information of pain and temperature. To understand pain conduction and pain processing. To comprehand spinal modulation of incoming pain impulses and central modulation via descending tracts.

S6 Visual system (pg. 738-742).
Learning outcomes:
To revise structure of the retina. To describe primary visual pathway and primary visual cortex as well as visual association cortex of the occipital, temporal and parietal lobes. To describe pupillary reflex. To describe vestibular pathways and eye movement control.

List of practicals with description:

P1 Basal ganglia. Major fibre systems in the telencephalon
Learning outcomes:

P2 Ventricular system and relations of the diencephalon, fornix, hippocampus and amygdala – task reslolving (pg. 607-612).
Learning outcomes:
To inspect the available casts of the ventricular system and name the components.To observe and

recognize spatial relationships of the hippocampus, amygdala and fornix

P3 Cranial nerve nuclei (pg. 679-711) and functional organization of the spinal cord (pg. 715 -719) – task resolving

Learning outcomes:

To describe the cranial nerve nuclei according to embryonic origin: afferent nuclei (general sensory, specific sensory and visceral) and efferent nuclei (somatic, brachiomotor and parasympathetic).

P4 Motor functions of the spinal cord (720-722) , clinical remarks of the upper and lower motoneurons (pg. 730-732) and referred pain – task resolving

Learning outcomes:

To describe spinal ganglia and pseudounipolar neuron. To describe sctructural features of the reflex arc and define spinal reflexes: strech or myotatic reflex (monosynaptic reflex) and flexor or withdrawal reflex (polysynaptic reflex). Interpretation of the motoric and sensible failures with respect to the level of the spinal cord injury..

P5 Somatosensory cortex and pain processing (pg. 754-755) - task resolving

Learning outcomes:

To recognize centers of the somatosensory cortex. To revise structure of the retina. To describe primary visual pathway and primary visual cortex as well visual association cortex of the occipital, templral and parietal lobes. To describe autonomic control of the visual reflexes: accomodation-convergence reflex and pupillary reflex. To describe pathways by which is pain processed.

P6 Olfactory and gustatory (pg. 748-751) systems (pg. 742-748). – task resolving

Learning outcomes:

To describe olfactory and gustatory pathways as well as the pathways of the auditory and vestibular systems.

Final exam

ECTS Grading System:

Student grading will be conducted according to the current Ordinance on Studies of the University of Rijeka (approved by the Senate) and the Ordinance on Student Grading at the Faculty of Medicine in Rijeka (approved by the Faculty Council).

Student work will be assessed and graded during the course and on the final exam. During the course, a student may achieve up **to 50% of the grade** and at the final exam up to **50% of the grade, too**. Students are graded according to the ECTS credit (A-D) and numeric (1-5) system.

Students are obliged to attend all forms of teaching during the course and may be absent from 30% of the classes**. If a student is absent for more than 30% of the classes, he will not receive a signature and will have to re-enter the course. Also, a student who gains less than 25 credits must re-enter the course.**

During the course, students are awarded credits by taking two midterm exams. If a student does not pass a midterm exam, he may take the makeup midterm exam on the announced date. Each midterm has its own makeup date.

I. Assessment and grading during the course

Assessment will be carried out through two midterm exams:

1. Functional organization of gray and white matter of the central nervous system

2. Functional systems of the central nervous system

Midterm is a writen exam. Each midterm exam is comprised of 50 questions. Midterm exams are graded as follows:

Correct answers	Credits
25	12,5
26	13
27-28	14
29-30	15
31-32	16
33-34	17
35-36	18
37-38	19
39-40	20
41-42	21
43-44	22
45-46	23
47-48	24
49-50	25

II. **Requirements for the final exam:**

- A student who attended classes in accordance with the Ordinance on Studies of the University of Rijeka.

- A student who gained at least 25 out of maximum 50 credits at midterms.

III. Grading on the final exam:

The final exam is an oral exam and it is graded as follows:

Grade	Credits
Sufficient (2)	**25**
Good (3)	**30**
Very good (4)	**40**
Excellent (5)	**50**

The final grade consists of the sum of credits gained during the course and on the final oral exam.
Grading within the ECTS grading system is carried out with an absolute distribution, i.e. based on the final achievement:

A – (90 - 100%) EXCELLENT (5)
B – (75 - 89,9%) VERY GOOD (4)
C – (60 - 74,9%) GOOD (3)
D – (50 - 59,9%) SUFFICIENT (2)
F – (0 - 49,9%) INSUFFICIENT (1)

The numeric grading system, compared to the ECTS grading system, is as follows:
A = excellent (5)
B = very good (4)
C = good (3)
D = sufficient (2)
F = insufficient (1)

Course content and all the notifications regarding the course, including exam dates, can be found on the official web site - http://www.medri.uniri.hr , http://medical-studies-in-english.com/

COURSE SCHEDULE (for academic year 2021./2022.)

Date	Lectures (time and place)	Seminars (time and place)	Practicals (time and place)	Instructor
04/10/2021	L1 (10:15-11:00) f2f/online			Olga Cvijanović Peloza, Associate Professor
04/10/2021	L2 (11:15-12:00) f2f/online			Olga Cvijanović Peloza, Associate Professor
04/10/2021	L3 (16:15-17:00) f2f/online			Olga Cvijanović Peloza, Associate Professor
04/10/2021		S1G2 (13:00-14:30) f2f		Olga Cvijanović Peloza, Associate Professor
04/10/2021			P1G2 (14:30-16:00) f2f	Olga Cvijanović Peloza, Associate Professor
05/10/2021		S1G3 (8:00-9:30) f2f		Sanja Zoričić Cvek, Full Professor
05/10/2021			P1G3 (9:30-11:00) f2f	Sanja Zoričić Cvek, Full Professor
07/10/2021		S1G1 (8:00-9:30) f2f		Tanja Ćelić, Assistant Professor
07/10/2021			P1G1 (9:30-11:00) f2f	Tanja Ćelić, Assistant Professor
11/10/2021	L4 (11:15-12:00) f2f/online			Olga Cvijanović Peloza, Associate Professor
11/10/2021	L5 (12:15-13:00) f2f/online			Olga Cvijanović Peloza, Associate Professor
11/10/2021	L6 (16:15-17:30) f2f/online			Olga Cvijanović Peloza, Associate Professor
11/10/2021		S2G2 (13:00-14:30) f2f		Olga Cvijanović Peloza, Associate Professor
11/10/2021			P2G2 (14:30-16:00) f2f	Olga Cvijanović Peloza, Associate Professor

12/10/2021		S2G3 (8:00-9:30) f2f		Sanja Zoričić Cvek, Full Professor
12/10/2021			P2G3 (9:30-11:00) f2f	Sanja Zoričić Cvek, Full Professor
14/10/2021		S2G1 (8:00-9:30) f2f		Tanja Ćelić, Assistant Professor
14/10/2021			P2G1 (9:30-11:00) f2f	Tanja Ćelić, Assistant Professor
18/10/2021	L 7 (11:15-12:00) f2f/online			Olga Cvijanović Peloza, Associate Professor
18/10/2021	L8 (12:15-13:00) f2f/online			Olga Cvijanović Peloza, Associate Professor
18/10/2021		S3G2 (13:00-14:30) f2f		Olga Cvijanović Peloza, Associate Professor
18/10/2021			P3G2 (14:30-16:00) f2f	Olga Cvijanović Peloza, Associate Professor
19/10/2021		S3G3 (8:00-9:30) f2f		Sanja Zoričić Cvek, Full Professor
19/10/2021			P3G3 (9:30-11:00) f2f	Sanja Zoričić Cvek, Full Professor
21/10/2021		S3G1 (8:00-9:30) f2f		Tanja Ćelić, Assisstant Professor
21/10/2021			P3G1 (9:30-11:00) f2f	Tanja Ćelić, Assisstant Professor
25/10/2021		S4G2 (13:00-14:30) f2f		Olga Cvijanović Peloza, Associate Professor
25/10/2021			P4G2 (14:45-16:00) f2f	Olga Cvijanović Peloza, Associate Professor
26/10/2021		S4G3 (8:00-9:30) f2f		Sanja Zoričić Cvek, Full Professor
26/10/2021			P4G3 (9:30-11:00) f2f	Sanja Zoričić Cvek, Full Professor
28/10/2021		S4G1 (8:00-9:30) f2f		Tanja Ćelić, Assisstant Professor
28/10/2021			P4G1 (9:30-11:00) f2f	Tanja Ćelić, Assisstant Professor
1st MIDTERM EXAM (01/11/2021 – 05/11/2021)				
08/11/2021	L9 (11:15-12:00) f2f/online			Tanja Ćelić, Assisstant Professor
08/11/2021	L10 (12:15-13:00) f2f/online			Tanja Ćelić, Assisstant Professor
08/11/2020		S5G2 (13:00-14:30) f2f		Olga Cvijanović Peloza, Associate Professor

08/11/2020			P5G2 (14:30-16:00) f2f	Olga Cvijanović Peloza, Associate Professor
09/11/2020		S5G3 (8:00-9:30) f2f		Sanja Zoričić Cvek, Full Professor
09/11/2020			P5G3 (9:30-11:00) f2f	Sanja Zoričić Cvek, Full Professor
11/11/2020		S5G1 (8:00-9:30) f2f		Tanja Ćelić, Assisstant Professor
11/11/2020			P5G1 (9:30-11:00) f2f	Tanja Ćelić, Assisstant Professor
15/11/2020	L11 (11:15-12:00) f2f/online			Sanja Zoričić Cvek, Full Professor
15/11/2020	L12 (12:15-13:00) f2f/online			Sanja Zoričić Cvek, Full Professor
15/11/2020		S6G3 (13:00-14:30) f2f		Olga Cvijanović Peloza, Associate Professor
15/11/2019			P6G3 (14:30-16:00) f2f	Olga Cvijanović Peloza, Associate Professor
16/11/2020		S6G2 (8:00-9:30) f2f		Sanja Zoričić Cvek, Full Professor
16/11/2020			P6G2 (9:30-11:00) f2f	Sanja Zoričić Cvek, Full Professor
17/11/2021		S6G3 (8:00-9:30) f2f		Tanja Ćelić, Assisstant Professor
17/11/2021			P6G3 (9:30-11:00) f2f	Tanja Ćelić, Assisstant Professor
17/11/2021	L 13 (11:15-12:00) f2f/online			Sanja Zoričić Cvek, Full Professor
22/11/2021	L 14 (11:15-12:00) f2f/online			Sanja Zoričić Cvek, Full Professor
22/11/2021	L15 (11:15-12:00) f2f/online			Sanja Zoričić Cvek, Full Professor
25/11/2021	L16 (11:15-12:00) f2f/online			Olga Cvijanović Peloza Associate Professor
2nd MIDTERM EXAM (30/11/2021)				

	FINAL EXAM DATES
1.	15.12.2021.
2.	21.02.2022.
3.	04.07.2022.
4.	06.09.2022.
5.	20.09.2022.

List of lectures, seminars and practicles:

	LECTURES	Hours of classes	Place
L1	Development, structure and morphology of the CNS	1	Lecture room 5
L2	Distribution of the grey and white matter in the CNS	1	
L3	Telencephalon: Classification	1	
L4	Diencephalon: thalamus	1	Lecture room 8
L5	Subthalamus, epithalamus, metathalamus	1	
L6	Hypothalamus and hypophysis	1	
L7	Brainstem. Mesencephalon	1	Lecture room 1
L8	Pons and medulla oblongata	1	Top floor room
L9	Somatomotor system – central section	1	Lecture room 8
L10	Motor cortex and extrapyramidal centers	1	Top floor room
L11	Auditory system	1	Top floor room
L12	Vestibular system	1	Lecture room 1
L13	Vestibular system and balance	1	Lecture room 1
L14	Limbic cortex	1	
L15	Limbic system	1	
L16	Autonomic nervous system	1	
	The total number of hours of lectures	**16**	

	SEMINARS	Hours of classes	Place
S1	Cortex telencephali - neocortex, archicortex and paleocortex	2	Lecture room 4, 8 and Department of Anatomy
S2	Cerebellar cortex and nuclei Major fibre systems of cerebellum	2	Lecture room 5, 9 and Department of Anatomy
S3	Spinal cord grey matter Major fibre systems in spinal cord	2	Lecture rooms 4, 7 and 8
S4	Extrapyramidal system and peripheral section of the somatomotor system	2	Lecture rooms 5, 9 and Department of Anatomy
S5	Somatosensory system and nociceptive system	2	Top floor room, lecture room 5 and Department of Anatomy
S6	Visual system	2	Top floor room, lecture room 4 and Department of Anatomy
	The total number of hours of seminars	**12**	

	PRACTICALS	Hours of classes	Place
P1	Basal ganglia and major fibre systems in the telencephalon – task resolving	2	Lecture rooms 4, 8 and Department of Anatomy
P2	Ventricular system and relations of the diencephalon, fornix, hippocampus and amygdala – task reslolving	2	Lecture rooms 5, 9 and Department of Anatomy
P3	Cranial nerve nuclei and functional organization of the spinal cord– task reslolving	2	Lecture rooms 4, 7 and 8
P4	Motor functions of the spinal cord, clinical remarks of the upper and lower motoneurons and referred pain – task resolving	2	Lecture rooms 5, 9 and Department of Anatomy
P5	Somatosensory cortex and pain processing - task resolving	2	Top floor room, lecture room 5 and Department of Anatomy
P6	Olfactory and gustatory systems – task resolving	2	Top floor room, lecture room 4 and Department of Anatomy
	The total number of hours of practicles	**12**	