



Universitat de Lleida

DEGREE CURRICULUM

NEUROLOGICAL DISEASES

Coordination: PURROY GARCIA, FRANCISCO

Academic year 2023-24

Subject's general information

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|---|---|---------------|------------------|------------------|
| Subject name | NEUROLOGICAL DISEASES | | | |
| Code | 100573 | | | |
| Semester | 2D SEMESTER - DEGREE - JUN/SET | | | |
| Typology | Degree | Course | Character | Modality |
| | Bachelor's Degree in Medicine | 4 | COMPULSORY | Attendance-based |
| Course number of credits (ECTS) | 6 | | | |
| Type of activity, credits, and groups | Activity type | PRALAB | PRAULA | TEORIA |
| | Number of credits | 0.6 | 1.6 | 3.8 |
| | Number of groups | 5 | 4 | 1 |
| Coordination | PURROY GARCIA, FRANCISCO | | | |
| Department | MEDICINE AND SURGERY | | | |
| Important information on data processing | Consult this link for more information. | | | |

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Learning objectives

The aim of learning is for students to have knowledge to recognize, diagnose and guide the management of the main pathologies of the central and peripheral nervous system. Students should assess the risk / benefit of diagnostic and therapeutic procedures. Know the biochemical, cytogenetic and molecular biology markers applied to clinical diagnosis. You will also need to know how to assess the indications of radiological studies and electrophysiology in the different neurological diseases and treat the diseases pharmacologically knowing the interaction and the adverse effects of the treatments.

Thus, after receiving training in Central Nervous System Diseases, students will have acquired the necessary skills

to recognize the signs and symptoms of the most common neurological entities. He will also have knowledge of the epidemiology, pathophysiology, diagnosis and treatment of major neurological diseases. He will also be able to discern in which cases neurological patients will require urgent specialized care in the hospital setting and which patients will benefit from outpatient care. At the end of the course, the student will have acquired the ability to guide the patient syndromically, select the most appropriate complementary tests and indicate the most correct treatment.

Competences

At the end of the course, the student will have the following abilities (learning outcomes) derived from the Book of professional skills to be achieved during the undergraduate training period of the Faculty of Medicine of the University of Lleida (2005), of the White Book, and the Ministerial Order.

Following the methodology of the White Paper, the following are the competencies that the student must know and those that he must know how to do:

| Objectives / Competences | Learning Outcomes |
|--------------------------|-------------------|
| | |

Recognize, diagnose and guide the management of the main pathologies of the CNS and SNP (ECI / 332/2008)

To know the main problems of pathology of the nervous system (Book of competences Faculty of Medicine UdL)

- Episodic alteration of consciousness. Epilepsy
- Coma, stupor and delirium
- Memory disorders
- Abnormal movements
- Speech disorders, apraxia
- Headache
- Eye movement disorders and impaired vision
- Movement and gait disorders
- Ataxic disorders
- Muscle weakness
- Sensitive anomalies
- Sleep disturbance
- Brainstem syndromes

Recognize, manage and treat neurological emergencies initially (UdL Competence Book)

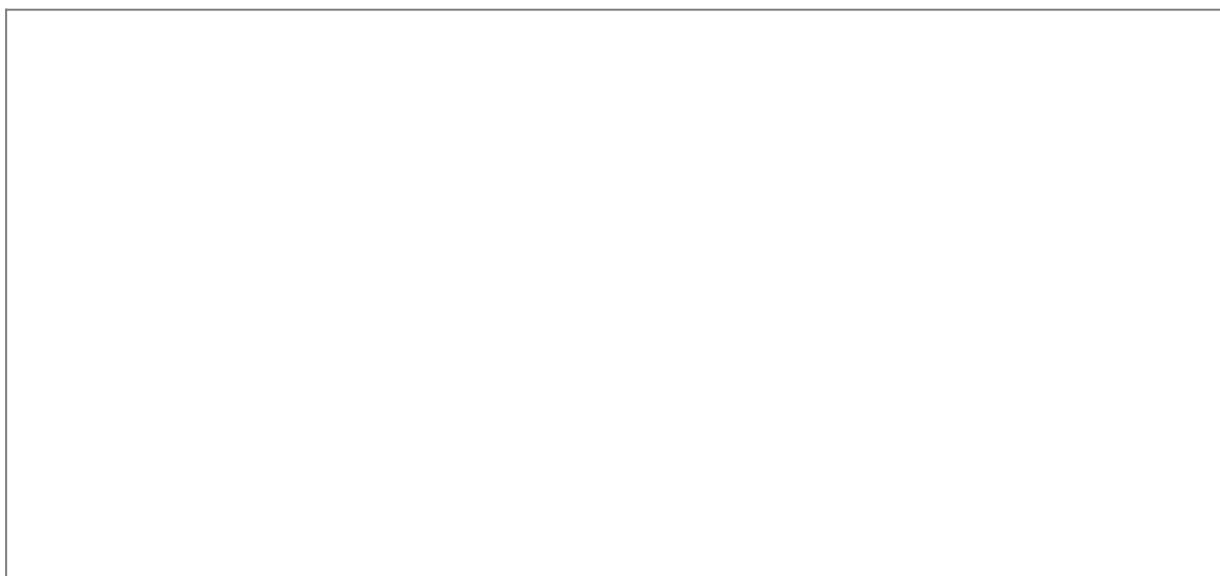
- Cerebrovascular disease
- Deterioration of the level of consciousness
- Spinal cord compression
- Epileptic seizures, epileptic status and post-critical condition

- Cranial trauma
- Sudden headache
- Acute endocranial hypertension
- Acute neuropathy

Know, diagnose and treat the main diseases of the nervous system (UdL Competence Book)

- Headaches
- Epilepsy
- Cerebrovascular diseases
- Nervous system infections
- Movement disorders
- Demyelinating diseases
- Dementia
- Peripheral neuropathies
- Cranial neuropathies
- Muscle and neuromuscular diseases
- Neoplasms of the nervous system
- Surveillance disorders
- Diseases of the spinal cord
- Ataxia
- Disorders of cerebrospinal fluid circulation
- Nervous system development disorders
- Cranio-encephalic injuries
- Deficiency neurological diseases
- Toxic neurological diseases
- Metabolic neurological diseases
- Sleep disorders

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| <p>Identify and interpret complementary studies in Neurology (ECI / 332/2008)</p> | <p>Interpret the main diagnostic methods in Neurology and know their indication Neuroimaging techniques: cranial CT, cranial MRI, SPECT, cerebral PET Electrophysiological techniques Techniques for obtaining and studying cerebrospinal fluid Ultrasonographic techniques</p> |
| <p>Knowing how to examine a patient neurologically (ECI / 332/2008)</p> | <p>Explore awareness and guidance Explore visual fields Value language Assess the main higher functions (praxis, calculation, memory) Explore cranial pairs Explore strength, muscle tone and stiffness Assess the gait Explore the vestibular system, cerebellar Explore sensitivity in all its aspects (painful, tactile, vibratory). Assess the tremor</p> |
| <p>Knowing how to do a complete interview focused on the neurological patient (ECI / 332/2008)</p> | <p>Conduct the clinical interview to extract relevant clinical data from patients with neurological diseases</p> |
| <p>Knowing the Pharmacology of the Nervous System (ECI / 332/2008)</p> | <p>Know the main groups of drugs, doses, routes of administration and pharmacokinetics Know the interactions and adverse effects Know how to use drugs in the main diseases of the CNS</p> |
| <p>Knowing the pathological anatomy of the Nervous System (ECI / 332/2008)</p> | <p>To know the tissue alterations of the main degenerative diseases of the central nervous system: Alzheimer's dementia Synucleinopathies Taupathies Lewy body diseases Fronto-temporal dementia Myopathies</p> |



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|--|--|
| <p>Competencias específicas de la memoria del título</p> | <p>CG7. Understand and recognize the normal structure and function of the human body, at the molecular, cellular, tissue, organic and systemic levels, in the different stages of life.</p> <p>96. Recognize, diagnose and guide the management of the main pathologies of the central and peripheral nervous system.</p> <p>126. Pathological anatomy of the different apparatuses and systems</p> <p>127. Biochemical, cytogenetic and molecular biology markers applied to clinical diagnosis</p> <p>139 Pharmacology of the central and peripheral nervous system</p> <p>143 Know the main indications of electrophysiological techniques (EEG, EMG)</p> <p>155 Know how to use the various drugs properly.</p> <p>156 Know how to perform and interpret an electroencephalogram</p> |
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Subject contents

Below are listed first the -s that make up the subject and then analyze the objectives of each theoretical -. Practical seminars are also presented.

- 1. Introduction

Reminder of functional neuroanatomy

Vascularization of the central nervous system

Topographic syndromes

Main diagnostic techniques in Neurology: Cranial CT, cranial Rm, EEG, EMG, evoked potentials

- 2. Headaches and craniofacial pain

Introduction. Epidemiology

Classification

Primary headaches: Migraine, tension headache and cluster

Secondary headaches

Neuralgias

- 3. Epilepsy

Epidemiology

Epileptogenesis

Classification

Semiology of crises

Major focal and generalized epileptic syndromes

Epileptic status

Diagnosis

Treatment

- 4. Cerebrovascular diseases

Epidemiology of cerebrovascular diseases

Nomenclature of cerebrovascular diseases

Risk factors, etiology and pathophysiology of ischemic stroke

Ischemic stroke clinic

Classification of ischemic stroke

Risk factors, etiology and pathophysiology of hemorrhagic stroke

Classification of hemorrhagic stroke

Treatment of cerebrovascular diseases

Cerebral venous thrombosis

- 5. Movement disorders

- Reminder of the functional neuroanatomy of the basal ganglia

- Parkinsonian syndromes: Parkinson's disease, Multisystem atrophy, Progressive supranuclear palsy, Cortico-basal degeneration, Secondary Parkinsonism.

- Tremble

- Korea: Huntington's disease and other Koreas

- Late dyskinesia

- Dystonia

- Wilson's disease

- Tics. Tourette's syndrome

- Myoclonus

- Facial hemispasm

- 6. Demyelinating diseases
 - Multiple sclerosis: Definition, epidemiology, pathophysiology, clinic, forms of presentation and evolutionary stages, diagnosis, diagnostic criteria and treatment
 - Other demyelinating diseases

- 7. Dementia
 - Epidemiology
 - Definition
 - Classifications
 - Alzheimer's disease
 - Frontotemporal dementias
 - Parkinsonian dementias
 - Vascular dementia
 - Prion dementia
 - Treatable dementias

- 8. Peripheral neuropathies
 - Concept
 - Pathological classification
 - Clinical classification
 - Diagnosis
 - Mononeuropathy
 - Multineuritis
 - Polyneuropathy
 - Hereditary neuropathies

- 9. Muscle and neuromuscular junction diseases
 - Introduction. Signs and symptoms of muscle diseases
 - Classification
 - Diagnosis
 - Muscular dystrophies

- Congenital myopathies
 - Mitochondrial diseases
 - Inflammatory myopathies
 - Acquired myopathies
 - Neuromuscular diseases: Myasthenia gravis, Eaton-Lambert syndrome and Botulism
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- 10. Neoplasms of the Nervous System
 - Epidemiology of primary brain tumors
 - Clinical manifestations and complications
 - Etiopathogenesis
 - Classification of tumors
 - Treatment of primary tumors of the nervous system
 - Metastasis in the nervous system
 - Paraneoplastic disorders
-
- 11. Diseases of the spinal cord
 - Clinic of spinal cord involvement.
 - Spinal cord syndromes: complete spinal cord section, spinal cord hemisection, occipital hole, terminal cone, ponytail
 - Spinal cord injuries: Etiopathogenesis and mechanism of injury
 - Vascular diseases of the spinal cord: spinal cord ischemia, haemorrhage and spinal cord vascular malformations
 - Inflammatory diseases
 - Spinal cord infections
 - Neoplastic diseases
 - Radicomedullary compressions due to herniated discs and spondyloarthritis degeneration
 - Developmental disorders: Syringomyelia
-
- 12. Degenerative diseases of motor neurons
 - Amyotrophic lateral sclerosis: Epidemiology, etiopathogenesis, pathological anatomy, clinical, diagnosis and treatment
 - Other motor neurone diseases: Primary lateral sclerosis, inherited spastic paraplegia and motor food-borne motor neurone diseases
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- 13. Cerebral edema and disorders of cerebrospinal fluid circulation

- Physiology of cerebrospinal fluid
 - Cerebral edema: Etiopathogenesis, clinic, classification, diagnostic tools and treatment
 - Idiopathic intracranial hypertension: clinical features, diagnosis and treatment
 - Hydrocephalus: Definition, hydrocephalus in children, hydrocephalus in adults, ...
 - Hydrocephalus with normal pressure: definition, clinic, diagnosis and treatment
 - Liquor hypotension
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- 14. Disorders of the development of the nervous system
 - Brief reminder of the embryological and fetal development of the nervous system
 - Type of embryological development disorders
 - Congenital craniospinal neurological disorders: spina bifida, malformation of Arnold Chiari
 - Facomatoses: Tuberous sclerosis, Neurofibromatosis
 - Cerebral palsy: Diagnosis, etiology and treatment
 - Brain retardation
 - The autism spectrum: Diagnosis, clinic, etiology and treatment
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- 15. Vigilance disorders
 - Delirium and acute confusional state: Definition, etiology, clinic, diagnosis and treatment
 - Alterations in the level of consciousness: coma, vegetative state, persistent or chronic vegetative state, minimally conscious state and locked-in syndrome
 - Examination of the patient with decreased level of consciousness
 - Prevalence, etiology, prognosis and attitude towards alterations in the level of consciousness.
 - Brain death: definition and diagnosis
-
- 16. Cranial neuropathies
 - olfactory nerve
 - Optic nerve: neuroanatomy, symptomatology and most frequent diseases
 - Oculomotor pathology (III, IV and VI cranial nerves): clinic: the diplopia, most frequent responsible diseases. painful ophthalmoplegia
 - Trigeminal nerve: neuroanatomy, semiology, and etiology. essential trigeminal neuralgia
 - Facial nerve: neuroanatomy, symptoms, facial paralysis and hemifacial spasm
 - Glossopharyngeal nerve: neuroanatomy, etiology of IX nerve palsy
 - Pneumogastric nerve: neuroanatomy, symptomatology and etiology
 - Spinal nerve: neuroanatomy, symptomatology and etiology

- Hypoglossal nerve: neuroanatomy, symptomatology and etiology

- Multiple cranial nerve palsies

- 17. Cranio-encephalic traumatisms

- Epidemiology and aetiopathogenesis

- Pathological anatomy

- Diagnosis

- Treatment

- Sequelae of trauma

- 18. Deficiency neurological diseases, toxic pharmacological and metabolic

neurological deficiency diseases

- Vitamin B1 deficiency: Wernicke-Korsakov encephalopathy, Beri-beri

- B12 deficiency: subacute combined spinal cord degeneration

- Nicotinic acid deficiency: Pellagra

- Vitamin E deficiency

- Tobacco-alcoholic amblyopia

Toxic-pharmacological neurological diseases

- Neurological syndromes of iatrogenic-pharmacological origin: Myopathies and Sd. myasthenics, polyneuropathies, ototoxicity, optic atrophy, pseudotumor cerebri, Sd. meningia, abnormal movements, Sd. malignancy of neuroleptics and serotonergic SD

- Neurological manifestations of alcoholism

- Heavy metal poisoning

- Organophosphate poisoning

- Carbon monoxide poisoning

metabolic encephalopathies

- Acute hypoxic-ischemic encephalopathy. Hypoglycemic encephalopathy. Encephalopathy due to respiratory insufficiency. Encephalopathy due to renal failure.

- 19. Sleep disorders

- Anatomy and physiology of sleep

- Classification of sleep disorders and the eve

- Insomnia: associated with psychiatric disorders, associated with abnormal movements of the legs, the elderly and neurological diseases

- Hypersomnia: Narcolepsy, Kleine Levin's syndrome, sleep apnea syndrome
- Parasomnias
- Eve-sleep rhythm disorders

- 20. Disorders of the cerebellum and degenerative ataxias

hereditary ataxias

Recessively inherited ataxias: Frataxinopathies- Friedrich's disease: clinic, etiopathogenesis and genetic aspects, differential diagnosis, prognosis and treatment. Other recessive ataxias

Dominantly Inherited Ataxias: Classification and Symptom Diversity

Acquired ataxias

- 21. Neuropharmacology
- Mechanisms of action of drugs in diseases of the Nervous System
- Indications
- Side effects

- 22. Pathological anatomy of the Nervous System

- Neurovascular Pathology
- Degenerative diseases
- Brain tumors

Seminars:

| Type | Title |
|---------------------|--|
| Small group | Neurological Examination Seminar Ecodopler Seminar Lumbar Puncture Seminar |
| Medium group | Pathological anatomy seminar Neurosurgery concepts seminar Pharmacology seminars 1 Pharmacology seminars 2 Stroke Seminar Headache seminars Demyelinating Diseases Seminar Abnormal Mov Seminar Epilepsy Seminar Rehabilitation Seminar |

Methodology

A. THEORETICAL CLASSES: the contents of the syllabus will be treated

B. PRACTICAL CLASSES

- Seminars will be held based on clinical assumptions to explain the etiology, clinic, diagnosis, prognosis and treatment of different types of neurological diseases. The aim is for the student to apply the theoretical concepts to practical cases.
- There will also be seminars in small practical groups on lumbar puncture, neurological examination and ecodoppler of supraortic and transcranial trunks.

C. CONTINUOUS EVALUATION ACTIVITIES

During the course of the subject, continuous assessment activities will be carried out on the Sakai platform to consolidate competencies.

Evaluation

The assessment will be based on 1) the continuous activity with activities hanging in the Sakai environment that will have to be done individually and 2) the performance of a test-type assessment. both assessments will weigh 50%.

Both activities must be completed independently.

Attendance at seminars must be at least 80%.

Bibliography

Books:

- Compendium of Internal Medicine:

o Fauci A S, Braunwald E, Isselbacher K J, Wilson J D, Martin J B, Kasper D L, Hauser S L, Longo D L. Harrison Principles of Internal Medicine .. Ed Mc GrawHill.

or Ferreras P, Rozman C. Internal Medicine .. Ed Mosby / Doyma Books.

- Compendium of Neurology.

or Bradley W G, Daroff R B, Fenichel G M, Jankovic J. Clinical Neurology. Diagnosis and treatment. Ed Butterworth heibemann.

o Victor M, Ropper A H. Principles of Neurology. Ed Mc Graw-Hill.

o Afifi A K, Bergman R A, Functional Neuroanatomy - Text and atlas. Ed Mc Graw-Hill Inter-American.

o Zarranz, J.J .: Neurology .. Elsevier Madrid

or Bradley, W.G., Daroff R. B., Fenichel G.M., Jankovic, J. Clinical Neurology.Elsevier ..

- Compendiums of physical / neurological examination

o Falguera, M. Clinical history: a practical guide. C.Health 1999.

o Wiebers, D. O., Dale A.J.D., Kokmen, E., Swanson J.W. Clinical examination in Neurology. Mayo Clinic. Editorial JIMS.

Periodicals

- Neurology

- Journal of Neurology (free internet access)

- The Lancet of Neurology

- Neurology

- Stroke

- Current opinion of Neurology

- Journal of Neurology, Neurosurgery and Psychiatry

- Annals of Neurology

Internet addresses

- <http://www.sen.es> - Website of the Spanish Society of Neurology
- <http://www.scn.es> - Website of the Catalan Society of Neurology
- <http://www.Medscape.com> - Medical website that includes recent free information on all the scientific news of the different medical specialties including neurology
- <http://www.bic.mni.mcgill.ca/brainweb/> - Cranial Brain Resonance Simulator
- [http://medweb.bham.ac.uk/http/caa/cases/cases.caselist.fcgi\\$neurology](http://medweb.bham.ac.uk/http/caa/cases/cases.caselist.fcgi$neurology) - Interactive clinical cases
- <http://www.med.harvard.edu/> - Digital Neuroimaging Atlas
- <http://icarus.med.utoronto.ca/NeuroExam/> - University of Toronto Neurological Research Page
- http://library.med.utah.edu/neurologicexam/html/home_exam.html - University of Utah Neurological Research Page
- <http://medinfo.ufl.edu/year1/bcs/clist/neuro.html>. University of Florida Neurological Examination Page
- <http://cim.ucdavis.edu/EyeRelease/Interface/TopFrame.htm> Very good quality eye motion simulation developed by UC Davis School of Medicine
- <http://www.mult-sclerosis.org/opticneuritis.html> Simulator of Optical Neuritis Symptoms
- <http://www.eustatiantube.org/clinic/neuroexam/cranialnerves/> Page on cranial pair exploration
- <http://www.neuroexam.com> Neurological examination page
- <http://neurobsesion.com/> Page of neurologists where topics of Neurology and current affairs are treated
- <http://www.hipocampo.org/mapadelsitio.asp>. Dementia website. He has the scientific endorsement of the Spanish Society of Neurology