



TEHRAN UNIVERSITY
OF
MEDICAL SCIENCES

School of Medicine

Specialty of Neurosurgery Curriculum

General structure of the educational period

Length of education period for residency: 5 years

General structure

Year of residency	Ward/unit (court of education)	Contents	Length of time
1 st year	Neurosurgery ward	<ul style="list-style-type: none"> Obtaining history and performing physical exam Ordering and analyzing the lab tests 	8 months
	Neurosurgery ICU	<ul style="list-style-type: none"> Intensive care of the patients 	
	General surgery ward, emergency room and classroom	<ul style="list-style-type: none"> Pre- and post-operative care Familiarity with emergent surgical procedures and trauma Managing water and electrolyte disorders Management of shock Suturing and wound healing General topics (will be mentioned later) 	4 months
2 nd year	Neurology ward	<ul style="list-style-type: none"> Neurological diseases Neuroelectrophysiology 	3 months
	Neurosurgery ward and OR	<ul style="list-style-type: none"> Diagnosis and management of neurosurgical patients LP, myelography, angiography Wound debridement, trephination, and ventricular drainage Cranial tractions 	9 months
3 rd year	Pathology ward	<ul style="list-style-type: none"> Neuropathology, cellular and molecular CNS and PNS pathology 	3 months
	Selective ward*	<ul style="list-style-type: none"> According to the selected ward 	3 months
	Neurosurgery ward and OR	<ul style="list-style-type: none"> Diagnosis and management of neurosurgical patients Management of depressed skull fracture Shunt placement Evacuation of chronic subdural hematoma Evacuation of epidural, subdural, and intracranial hematomas 	6 months
4th year	Neurosurgery ward and OR	<ul style="list-style-type: none"> Diagnosis and management of neurosurgical patients Neuroendoscopy Stereotactic biopsy Simple laminectomy and discectomy Directing journal clubs 	12 months
5th year	Neurosurgery ward and OR	<ul style="list-style-type: none"> Diagnosis and management of neurosurgical patients Management of the ward Directing journal clubs 	12 months

* selective ward will be chosen from one the following options according to the trainees' desire: Neuro-ophthalmology, neuroradiology, stereotaxis, radiosurgery, forensic medicine or any other courses accepted by the department with a maximum length of three months.

Titles of the required theoretical lessons: (Syllabus)

Neurosurgery

SECTION I

Introduction to Neurological Surgery

PART 1

Basic Science for the Neurological Surgeon

- 1- Surgical Anatomy of the Brain 5
- 2- Neuro embryology
- 3- Histology of the Brain
- 4- Cerebral Metabolism and the Pathophysiology of Ischemic Brain Damage
- 5- The Blood-Brain Barrier
- 6- Physiology of the Cerebrospinal Fluid and Intracranial Pressure
- 7- Cellular and Molecular Mechanisms Mediating Injury and Recovery in the Nervous System
- 8- Electrophysiological Properties of the Mammalian Central Nervous System
- 9- Neurosurgical Epidemiology and Outcomes Assessment

PART 2

Approach to the Patient

- 10- History and Physical Examination
- 11- Differential Diagnosis of Altered States of Consciousness
- 12- Neuro-ophthalmology
- 13- Neuro-otology
- 14- Neuro-urology
- 15- Neuropsychological Assessment of the Neurosurgical Patient
- 16- Brain Death
- 17- Legal Issues

PART 3

Fundamentals of Radiology

- 18- Radiology of the Skull
- 19- Magnetic Resonance Imaging of Brain
- 20- Molecular Imaging of the Brain with Positron Emission Tomography
- 21- Radiology of the Spine

PART 4
Perioperative Evaluation and Treatment

- 22- Anesthesia:
- 23-Complication Avoidance in Neurosurgery

PART 5
Surgical Exposures and Positioning

- 24- General Principles of Operative Positioning
- 25- Surgical Positioning and Exposures for Cranial Procedures
- 26- Surgical Exposures and Positioning for Spinal Surgery
- 27-Peripheral Nerves

SECTION II
PART 1

- 28- Brain Tumors: General Considerations
- 29-Histopathologic Classification of the Brain Tumors
- 30- Basic Principles of Central Nervous System Immunology
- 31- Proliferation Markers in the Evaluation of Gliomas
- 32- Molecular Genetics and the Development of Targets for Glioma Therapy
- 33- Growth Factors and Brain Tumors
- 34- Tumor Suppressor Genes and the Genesis of Brain Tumors
- 35- Molecular and Cytogenetic Techniques
- 36- Invasion in Malignant Glioma
- 37- Angiogenesis and Brain Tumors
- 38- Brain Edema and Tumor-Host Interaction
- 39- Brain Tumors: Population-Based Epidemiology, Environmental Risk Factors, and Genetic and Hereditary

PART 2
Approach to the Patient: Medical Considerations

- 40-clinical Features: Neurology of Brain Tumor and Paraneoplastic Disorders
- 41- Radiologic Features of Central Nervous
- 42- Endovascular Techniques for Brain Tumors
- 43- Brain Tumors during Pregnancy
- 44- Principles of Chemotherapy
- 45- Aspects of Immunology Applicable to Brain Tumor Pathogenesis and Treatment

PART 3
Surgical Considerations

- 46- Basic Principles of Cranial Surgery for Brain Tumors
- 47- Basic Principles of Skull Base Surgery

48- *Surgical Complications and Their Avoidance*
49- *Surgical Navigation for Brain Tumors*

PART 4
Intrinsic Tumors

50- *Low-Grade Gliomas*
51- *Malignant Gliomas*
52- *Unusual Gliomas*
53- *Primitive Neuroectodermal Tumors*
54- *Pineal Tumors*
55- *Medulloblastoma*
56- *Ependymoma*
57- *Hemangioblastomas of the Central Nervous System*
58- *Cerebral Lymphoma*
59- *Metastatic Brain Tumors*

PART 5
Extrinsic Tumors

60- *Meningioma*
61- *Meningeal Hemangiopericytoma*
62- *Meningeal Sarcoma*
63- *Acoustic Neuroma*
64- *Pituitary Adenoma*
65- *Craniopharyngioma in the Adult*
66- *Epidermoid, Dermoid, and Neuroenteric Cysts*
67- *Neoplastic Management*

PART 6
Ventricular Tumors

PART 7
Skull and skull base tumors

68- *Skull and Skull Base Tumors*
69- *Chordoma and Chondrosarcoma*
70- *Glomus Jugular Tumors*
71- *Neoplasms of the Paranasal Sinuses*
72- *Esthesioneuroblastoma*
73- *Trigeminal Schwannomas*
74- *Juvenile Angiofibroma*
75- *Osseous Tumors*
76- *Orbital Tumors*
77- *Skull Tumors*
78- *Scalp Tumors*

PART 8

Non-Neoplastic Disorders Mimicking Brain Tumors

79- Pseudo tumor Cerebri

80- Sarcoidosis, Tuberculosis, and Xanthogranuloma

81- Multiple Sclerosis

SECTION III

Vascular

PART 1

82- Cerebral Blood Flow and Metabolism

PART 2

Approach to the Patient

83- Acute Medical Management of Ischemic Disease and Stroke

PART 3

Anesthesia for Neurovascular Procedures

84- Anesthesia in Cerebrovascular Disease

85- Intraoperative Cerebral Protection

86- Deep Hypothermic Circulatory Arrest

PART 4

Vascular and Blood Flow Evaluation

87- Transcranial Doppler Ultrasonography

88- Neurosonology

89- Xenon Computed Tomography

90- Magnetic Resonance Angiography

91- Positron Emission Tomography in Cerebrovascular Disease

PART 5

Occlusive Vascular Disease

92- Carotid Occlusive Disease: Natural History and Medical Management

93- Carotid Endarterectomy

94- Carotid Angioplasty and Stenting

95- Traumatic Carotid Injury

96- Nonatherosclerotic Carotid Lesions

97- Extracranial Vertebral Artery Disease

98- Intracranial Occlusion Disease and Moyamoya

99- Cerebral Venous and Sinus Thrombosis

PART 6

Intracerebral Hemorrhage

100- Spontaneous Intracerebral Hemorrhage: Non-Arteriovenous Malformation, Non aneurysm

PART 7

Hemorrhagic Vascular Disease: Aneurysms

101-Genetics of Intracranial Aneurysms

102- Natural History of Enraptured Saccular Cerebral Aneurysms

103- Surgical Decision Making for the Treatment of Cerebral Aneurysms

104- Preoperative Management of Subarachnoid Hemorrhage

105- Cerebral Vasospasm

106- Surgical Approaches for anterior circulation Aneurysms

107-Surgical Treatment of Intracavernous and Paraclinoid Internal Carotid Artery Aneurysms

108- Intracranial Internal Carotid Artery Aneurysms

109- Anterior Communicating Artery and Anterior Cerebral Artery Aneurysms

110- Distal Anterior Cerebral Aneurysms

111- Middle Cerebral Artery Aneurysms

112- Surgical Approaches for Posterior Circulation Aneurysms

113- Vertebral Artery, Posterior Inferior Cerebellar Artery and Vertebra Basilar Junction Aneurysms

114- Basilar Trunk Aneurysms

115- Basilar Apex and Posterior Cerebral Artery Aneurysms

116- Endovascular Treatment of Aneurysms

117- Giant Aneurysms

118- Infectious Aneurysms

119- Revascularization Techniques for Complex Aneurysms and Skull Base Tumors

120- Traumatic Cerebral Aneurysms Secondary to Penetrating Intracranial Injuries

PART 8

True Arteriovenous Malformations

121- Natural History of Intracranial Vascular Malformations

122- Classification and Decision Making in Treatment and Perioperative Management, for AVM

123-Endovascular Management of AVM

124- Embolization of AVM

125-Surgical Management of Supratentorial AVM

126-Posterior Fossa AVM

127-Surgical and Radiosurgical Management of Giant AVM

128-Treatment of Dural AVM

PART 9

Cavernous Malformations

- 129- *Epidemiology and Natural History*
- 130- *Genetics of Cerebral Cavernous Malformations*
- 131- *Surgical Management of Supratentorial Cavernous Malformations*
- 132- *Infratentorial Cavernous Malformations*
- 133- *Cavernous Carotid Fistulas*

PART 10
Spinal AVM

- 134- *Classification of Spinal Cord Vascular Lesions*
- 135- *Endovascular Treatment of Spinal AVM*
- 136- *Spinal Arteriovenous Malformations*

PART 11
Pregnancy and Treatment of Vascular Disease

Section IV
Epilepsy
PART 1

- 137- *General and Historical Considerations of Epilepsy Surgery*
- 138- *Basic Science of Post-traumatic Epilepsy*
- 139- *Diagnosis and classification of Epilepsy*
- 140- *Antiepileptic Medications*
- 141- *SPECT and PET*
- 142- *Preoperative Evaluation for Epilepsy*
- 143- *The Intracarotid Amobarbital Procedure Wada Test*
- 144- *Functional Magnetic Resonance Imaging in Epilepsy Surgery*
- 145- *Identification of Candidates for Epilepsy Surgery*
- 146- *Intracranial Monitoring*
- 147- *Surgery for Extra temporal Lobe Epilepsy*
- 148- *Standard Temporal Lobectomy and Transsylvian Amygdalohippocampectomy*
- 149- *Tailored Resections for Epilepsy*
- 150- *Topectomy*
- 151- *Multiple Subpial resection*
- 152- *Vagus Nerve Stimulation for Intractable Epilepsy*

SECTION V
Functional neurosurgery

- 153- *History of Functional Neurosurgery*
- 154- *Rationale for Surgical Interventions in Movement Disorders*
- 155- *Anatomy and Synaptic Connectivity of the Basal Ganglia*
- 156- *Neuropathology of Movement Disorders*
- 157- *Approach to Movement Disorders*
- 158- *Patient Selection in Movement Disorder Surgery*

- 159- *Positron Emission Tomography in Movement Disorders*
- 160- *Thalamotomy for Tremor*
- 161- *Pallidotomy for Parkinson's Disease*
- 162- *Surgery for Dystonia*
- 163- *Deep Brain Stimulation for Movement Disorders*
- 164- *Cellular Transplantation in the Central Nervous System*
- 165- *Neurosurgery of Psychiatric Disorders*

- 166- *Ablative Surgery for Spasticity*
- 167- *Management of Spasticity by Central Nervous System Infusion Techniques*
- 168- *Selective Peripheral Denervation for Spasmodic Torticollis*
- 169- *Treatment of Intractable Vertigo*

SECTION VI

Pain

PART 1

- 180 *Pain: General Historical Considerations*
- 181-*Basic Science: Physiologic Anatomy of pain*
- 182- *Approach to the Patient with Chronic pain*
- 183 *Medical Management of Chronic Pain*
- 184 *Management of Pain by Anesthetic Techniques*
- 185 *Trigeminal Neuralgia*
- 186 *Neurosurgical Management of Intractable Pain*
- 187 *Dorsal Rhizotomy and Dorsal Root Ganglionectomy*
- 188 *Dorsal Root Entry Zone and Brainstem Ablative Procedures*
- 189 *Cordotomy for Pain*
- 190 *Brainstem Procedures for Management of Pain*
- 191 *Caudalis Nucleus Dorsal Root Entry Zone Procedure for the Treatment of Intractable Facial Pain*
- 192-*Sympatohotomy for Pain*
- 193- *Spinal Cord & peripheral nerve stimulation for chronic intractable pain*
- 194- *Deep Brain Stimulation for Chronic Pain*
- 195- *Intrathecal Drug Infusion for Pain*

SECTION VII

Pediatric

PART 1

Overview

- 196- *General and Historical Considerations*
- 197- *Neurological Examination in Infancy and Childhood*
- 198- *Neuro anesthesia in Children*

PART 2

Developmental and Acquired Anomalies

- 199- Encephaloceles
- 200- Myelomeningocele and Myelocystocele
- 201- Lipomyelomeningocele
- 202- Tethered Spinal Cord
- 203- Occult Spinal Dysraphism
- 204- Dandy- Walker Syndrome
- 205- Arachnoid Cysts

PART 3
Craniosynostosis, Chiari Malformation, and Achondroplasia

- 206- Nonsyndromic Craniosynostosis and Abnormalities of Head Shape
- 207- Craniofacial Syndromes
- 208- Developmental Abnormalities of the Craniovertebral Junction
- 209- Chiari Malformations
- 210- Achondroplasia and Other Dwarfism

PART 4
Hydrocephalus

- 211- Physiology of Cerebrospinal Fluid Shunt Devices
- 212- Hydrocephalus in Children
- 213- Infantile Post Hemorrhagic Hydrocephalus
- 214- Shunt Infection
- 215- Neuro endoscopy

PART 5
Vascular Disease

- 216- Vein of Galen Malformations
- 217- Arteriovenous Malformations and Intracranial Aneurysms in Children

PART 6

- 218- Mild Brain Injury in Children
- 219- Pediatric Head Injury

PART 7
Birth Trauma

- 220- Birth Head Trauma
- 221- Birth Brachial Plexus Injury
- 222- Child Abuse
- 223- Pediatric Vertebral Column and Spinal Cord Injuries

PART 8

Benign Spine Lesions in children

- 224- Intervertebral Disk Disease in Children*
- 225- Spondylolisthesis*
- 226- Benign Tumors of the Vertebral Column in Children*

PART 9 Tumors in children

- 227 Optic Pathway and Hypothalamic Gliomas in Children*
- 228 Intracranial Germ Cell Tumors*
- 229 Choroid Plexus Tumors*
- 230- Intracranial Ependymomas*
- 231- Medulloblastoma*
- 232- Cerebellar Astrocytomas in Children*
- 233- Brainstem Gliomas*
- 234- Craniopharyngiomas*
- 235- Brain Tumors of Disordered Embryogenesis*
- 236- Pediatric Cerebral Hemispheric Tumors*
- 237- Intraspinal Tumors in Infants and Children*
- 238- Benign Tumors of the Skull, including Fibrous Dysplasia*

PART 10 Cerebral Palsy and Other Spastic Entities

- 239- Cerebral Palsy: An Overview*
- 240- Selective Dorsal Rhizotomy for Spastic Cerebral Palsy*
- 241- Intrathecal Baclofen Infusion*

PART 11 Surgical Treatment of Epilepsy in Children

- 242- Recognition of Surgical Candidates and the Pre surgical Evaluation*
- 243- Temporal and Extratemporal Lobe Resections for Childhood Intractable Epilepsy*

PART 12 Rehabilitation

- 244- Acute Pediatric Neurorehabilitation*

SECTION VIII Peripheral Nerve PART 1

- 245- Basic Science*
- 246- Physiology of the Peripheral Nerve*
- 247- Approach to the Patient Nerve*

248- *Peripheral Neuropathies*

249- *Electrophysiological Evaluation of Peripheral Nerves: Electromyography, Somatosensory*

Evoked Potentials, Nerve Action Potentials

250- *Magnetic Resonance Imaging for Peripheral Nerve Disorders*

Part 2

Management of peripheral nerve Injuries

251- *Carpal Tunnel Syndrome*

252- *Ulnar Nerve Entrapment at the Elbow*

253- *Entrapment Syndromes of Peripheral Nerve Injuries*

254- *Management of Peripheral Nerve Tumors*

255- *Diagnostic Biopsy of Peripheral Nerves and Muscle*

256- *Management of Acute Peripheral Nerve Injuries*

SECTION IX

Radiation Therapy and Radio surgery

PART 1

Overview

257- *General and Historical Considerations of Radiotherapy and Radio surgery*

PART 2

Basic Science of Radiotherapy

258- *Radiobiology*

259- *Principles of Radiotherapy*

PART 3

Fractionated Radiation Therapy

260- *Fractionated Radiation Therapy for Malignant Brain Tumors*

261- *Radiotherapy for Benign Skull Base Tumors*

262- *Functional Radiation Therapy for Pituitary Adenoma*

263- *Radiotherapy of Tumors of Spine*

264- *Radiosurgery for AVM*

265- *Functional Radio surgery*

266- *Interstitial and Intracavitary Irradiation of Brain Tumors*

PART 4

Techniques of Radiosurgery

267- *Linac Radiosurgery*

268- *Gamma Knife Radiosurgery*

269-Proton Radiosurgery

270- Fractionated & Stereotactic Radiation, Extracranial Stereotactic Radiation, Intensity Modulation, Multi leaf Collimation

SECTION X

Spine

PART 1

Overview and Historical Consideration

PART 2

Basic Science

271- Biologic Strategies for Central Nervous System Repair

272- Concepts and Mechanisms of Biomechanics

273- Intra operative Electrophysiological Monitoring of the Spinal Cord and Nerve Roots

274- Normal and Abnormal Embryology of the Spinal Cord and Spine

PART 3

Approach to the Patient

275-Approach to the Patient and Medical Management of Spinal Disorders

276- Evaluation and Management of the Failed Back Syndrome

277-Metabolic and Other Non-Degenerative Causes of Low Back Pain

PART 4

Infections

278- Infections of the Spine and Spinal Cord

PART 5

Degenerative Disease

279- Treatment of Disk and Ligamentous Diseases of the Cervical Spine

280-Posterior Approach to Cervical Degenerative Disease

281- Anterior Approach including Cervical Corpectomy (Degenerative)

282-Cervical Spondylotic Myelopathy

283- Spondyloarthropathies,

284- Ossification of the Posterior Longitudinal Ligament and Other Enteropathies

285- Benign Extradural Lesions of the Dorsal Spine

286- Treatment of Disk Disease of the Lumbar Spine

287-Lumbar Spinal Stenosis

288-Spondylolysis and Spondylolisthesis

289- Adult Thoracolumbar Scoliosis

PART 6

Adult Congenital Abnormalities

290- *Acquired Abnormalities of the Craniocervical Junction*

PART 7 Techniques

291- *Basic Principles of Spinal Internal Fixation*

292- *Technical Aspects of Bone Graft Harvest and Spinal Fusion*

293- *Biology of Bone Grafting and Healing in Spinal Surgery*

PART 8 Instrumentation

294- *Anterior Cervical Instrumentation*

295- *Posterior Cervical Stabilization and Fusion Techniques*

296- *Occipitocervical Fusion*

297- *Anterior Thoracic Instrumentation*

298- *Posterior Thoracic Instrumentation*

299- *Anterior Lumbar Instrumentation*

300- *Posterior Lumbar Instrumentation*

301- *Image-Guided Spinal Navigation*

299 *Thoracoscopic Approaches to the Spine*

300 *Intradiscal and Percutaneous Treatment of Lumbar Disk Disease*

PART 9 Tumors of the Spine

301 *Tumors of the Craniovertebral Junction*

302- *Spinal cord tumors in adult*

303- *Tumors of the Vertebral Axis*

PART 10 Spinal column & cord Infection, Spine Trauma

304- *Approach to the Patient and Diagnostic Evaluation*

305- *Cervical Spine Trauma*

306- *Hyperextension and Hyperextension Injuries of the Cervical Spine*

307- *Treatment of Occipital C1 Injury*

308- *Treatment of Axis Fractures*

309- *Thoracic spine fractures*

310- *Thoracolumbar and lumbar spine Injuries*

311- *Sacral fractures*

SECTION XI Trauma

PART 1
Overview

312- Modern Traumatology

PART 2
Basic Science

313- Cellular Basis of Injury & Recovery from Trauma
314- Clinical Pathophysiology of Traumatic Brain Injury

PART 3
Mild Head Injury in Adults

PART 4
Moderate and Severe Traumatic Brain Injury

315- Initial Resuscitation and Patient Evaluation
316- Critical Care Management of Traumatic Brain Injury
317- Surgical Management of Traumatic Brain Injury
318- Sequelae of Traumatic Brain Injury
319- Traumatic Cerebrovascular Injury
320- Bullet Wounds to the Brain
321- Craniofacial Trauma
322- Traumatic Cerebrospinal Fluid Fistulas
323- Diagnosis and Management of Seventh and Eighth Cranial Nerve Injuries due to Temporal Bone Fractures

PART 5
Rehabilitation and Prognosis after Traumatic Brain Injury

Neurology

Section 1
Symptoms of neurologic disorders

1- Delirium & dementia
2- Aphasia, Apraxia & Agnosia
3- Syncope, seizures & their mimics

- 4-coma
- 5- Diagnosis of pain & paresthesia
- 6-Dizziness & Hearing loss
- 7- Impaired vision
- 8- Headache
- 9-Involuntary Movements
- 10- Syndromes caused
- 11- Gait Disorders

Section II

How to select Diagnostic Tests

- 13-CT & MRI
- 14- EEG & Evoked potentials
- 15- EMG, NCS & magnetic stimulation
- 16- Neurovascular Imaging
- 17-Lumbar puncture & CSF examination
- 18-muscle & Nerve Biopsy
- 19- Neuropsychological Evaluation
- 20- DNA Diagnosis

Section III

Infections of CNS

- 21-Bacterial Infection
- 22- Focal Infections
- 23-Viral Infections
- 24-AIDS
- 25- Fungi & Yeast Infections
- 26-Spirochete Infections, Neurosyphilis
- 27- Leptospirosis
- 28- Lyme Disease
- 29- parasitic Infections
- 30- Bacterial Toxins
- 31- Reye Syndromes
- 32- prion Diseases
- 33- whipple disease

Section IV

Vascular Disease

- 34-TIA
- 35- Cerebral Infection
- 36- Genetics of stroke
- 37- Differential Diagnosis of Stroke
- 38- Stroke in children
- 39- Cerebral vein & sinuses

40-*Vascular Disease of the spinal cord*

Section V
Disorders of CSF & Brain Fluids

41- *Hydrocephalus*

42- *Brain Edema & Disorders of Intracranial pressure*

43- *Superficial Sclerosis of the CNS*

44- *Hyperosmolar Hyperglycemic Nonketotic syndrome*

Section VI

45- *Thoracic outlet syndrome*

46- *Neuropathic pain*

47- *Radiation Injury*

48- *Electrical & Lightning Injury*

49- *Decompression Sickness*

50- *Marcus Gunn & Mobius syndrome*

Section VII
Genetic Disease of the CNS

Section VIII
Mitochondrial DNA Disorders

Section IX
Neurocutaneous Disorders

51- *Neurofibromatosis*

52- *Encephalotrigeminal Angiomatosis*

53- *Incontinentia pigmenti*

54- *Tuberous Sclerosis*

Section X
Peripheral Neuropathy

55- *General Considerations*

56- *Hereditary Neuropathies*

57- *Acquired Neuropathies*

Section XI
Dementia

Section XII
Hereditary Ataxia

Section XIII
Movement Disorders

- 58- Huntington
- 59- Sydenham & other forms of chorea
- 60- myoclonus
- 61- Gilles de La Tourette Syndrome
- 62- Dystonia
- 63- Essential tremor
- 64- Parkinsonism
- 65- progressive supranuclear palsy
- 66- Tardive Dyskinesia & other neuroleptic – Induced syndromes

Section XIV
Spinal cord Disease

- 67- Hereditary & Acquired spastic paraplegia
- 68- Hereditary & Acquired motor neuron Disease
- 69- Syringomyelia

Section XV
Disorders of the neuromuscular junction

- 70- Myasthenia Gravis
- 71- Lambert- Eaton syndrome
- 72- Botulism & Antibiotic – Induced Neuromuscular Disorders
- 73- Acute quadriplegic myopathy

Section XVI
Myopathies

- 74- Progressive muscular Dystrophies
- 75- Familial periodic paralysis
- 76- Congenital Disorders of muscle
- 77- Myoglobinuria
- 78- Muscle cramps & Stiffness
- 79- Dermatomyositis
- 80- polymyositis, Inclusion Body Myositis
- 81- Related myopathies
- 82- Myositis ossificans

Section XVII
Demyelinating Disease

- 83- Multiple sclerosis
- 84- Marchia fava – Bignami Disease
- 85- Central pontine myelinolysis

Section XVIII

Autonomic Disorders

- 86- Neurogenic orthostatic Hypotension & Autonomic failure
- 87- Acute Autonomic Neuropathy
- 88- Familial Dysautonomia

Section XIX Paroxysmal Disorders

- 89- Migraine & other Headache
- 90- Epilepsy
- 91- Febrile Seizure
- 92- Transient Global Amnesia
- 93- Meniere syndrome
- 94- Sleep Disorders

Section XX Systemic Disease & General medicine

- 95- Endocrine Disease
- 96- Hematologic & Related Disease
- 97- Hepatic Disease
- 98- Cerebral complication of cardiac surgery
- 99- Bono Disease
- 100- Renal Disease
- 101- Respiratory support for Neurologic Disease
- 102- paraneoplastic syndromes
- 103- Nutritional Disorders
- 104- Vasculitis syndromes
- 105- Hypertrophic pachymeningitis
- 106- Neurologic Disease During pregnancy
- 107- Hashimoto Encephalopathy

Section XXI Psychiatry & Neurology

- 108- Mood Disorders
- 109- Anxiety Disorders
- 110- Schizophrenia
- 111- Somato form Disorders

Section XXII Environmental Neurology

- 112- Alcoholism
- 113- Drug Dependence
- 114- Iatrogenic Disease

- 115- Complications of cancer chemotherapy*
 - 116-Occupational & Environmental Neurotoxicology*
 - 117- Fetal Alcohol & Drug Effects*
 - 118-Falls in the elderly*
-

Anatomy

- 1- Organization of the Nervous system*
 - 2- Anatomic Nervous system*
 - 3- Development of the Nervous system*
 - 4- Cranial meninges*
 - 5- Cranial Meanings*
 - 6- Ventricular system &cerebrospinal fluid*
 - 7- Vascular of the brain*
 - 8- Spinal cord*
 - 9- Brain stem*
 - 10- Cerebellum*
 - 11- Diencephalonia*
 - 12- Cerebral hemisphere*
 - 13- Basal ganglia*
 - 14- Cranial Nerve*
 - 15- Special senses*
 - 16- Skull and mandible*
 - 17- Development of the skull*
 - 18- Orbit and its contents*
 - 19- Macroscopic anatomy of the spinal cord and spinal nerves*
 - 20- Development of the vertebral column*
-

References

- 1- Neurological Surgery YOUMANS
- 2- Operative Neurosurgical Technique Schmideck
- 3- Merritt's Neurology
- 4- Gray's Anatomy
- 5- Carpenter Neuroanatomy
- 6- Cranial Anatomy & Surgical Approaches Roton
- 7- Diagnostic Images of Brain Osborn
- 8- Micro neurosurgery Yassargil
- 9-Atlas of Neurosurgical Techniques (Brain, spine)

Student Evaluation

A- Method of evaluation

- MCQs
- Periodical OSCE exams
- DOPS exams
- Logbook

B- Frequency of evaluation

Evaluations will be conducted continuously, monthly, yearly and at the end of the entire course.

Each of the trainees should register his/her proposal for the thesis at the end of his/ her second year of education (as a prerequisite to advance to third year). The progress of the research should also be gradually reported to the supervising professor(s). Defending the thesis should also take place before the final exams and acceptance of the thesis is a prerequisite to earn permission to participate in those examinations.