2026/2027

Univerza v Mariboru
Medicinska fakulteta

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Ime predmeta:	**Nevrokirurgija**
Course title:	**Neurosurgery**

Študijski program in stopnja Study programme and cycle	Študijska smer Study option	Letnik Year of study	Semester Semester
Splošna medicina, enovit magistrski študijski program		Četrti	8.
General medicine, Uniform master's degree study program		Fourth	8th

Vrsta predmeta (obvezni ali izbirni) / Course type (compulsory or elective)	obvezni compulsory
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	Seminar Seminar	Vaje Tutorial			Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
		AV	LV	RV				
15	30						45	3

Nosilec predmeta / Course coordinator:	**doc. dr. Janez Ravnik**
Jeziki /Languages: **Predavanja / Lectures:**	slovenski/slovene
Vaje / Tutorial:	slovenski/slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites for enrolling in the course or for performing study obligations:**
ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV 80% prisotnost pri seminarjih (vsaj pri 12 seminarjih od skupno 15) in vsaj 50% udeležba na predavanjih (vsaj pri 4 od skupno 8). Udeležba se preverja s podpisi. POGOJI ZA PRISTOP K POSAMEZNEMU PREVERJANJU ZNANJA Prisotnost pri seminarjih (vsaj pri 12 seminarjih od skupno 15) in predavanjih (vsaj pri 4 od skupno 8). Opravljen praktični del izpita v sklopu seminarja.	ACADEMIC OBLIGATIONS OF STUDENTS: 80% attendance at seminars (at least 12 out of 15) and 50% attendance at lectures (at least 4 out of 8). Participation will be verified by the signatures. REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING: 80% attendance at seminars (at least 12 out of 15) and 50% attendance at lectures (at least 4 out of 8). Passed practical examination at seminars.

Vsebina (kratek pregled učnega načrta):

- Predstavitev nevrokirurgije, kratek zgodovinski pregled
- Kirurška anatomija možganov
- Nevroni in nevroglija
- Glavne preiskovalne metode v nevrokirurgiji
- Razvojne nepravilnosti osrednjega živčevja (hidrocefalus, kraniosinostoza, encefalokela, mielomeningokela, Arnold-Chiaryjev sindrom, Dandy-Walkerjev sindrom)
- Poškodbe glave in možganov (zlomi lobanjskega svoda in lobanjske baze, intrakranialni hematomi, strelne poškodbe, poškodbe glave in možganov pri otrocih, zdravljenje možganskega edema, prognoza bolnikov s poškodbo glave in možganov)
- Tumorji osrednjega živčnega sistema (WHO klasifikacija tumorjev osrednjega živčevja, biologija in imunologija možganskih tumorjev, intrinzični tumorji, ekstrinzični tumorji, ventrikularni in bazalni tumorji, tumorji hrbtenjače)
- Žilne bolezni (spontane možganske krvavitve, subarahnoidna krvavitev, možganske anevrizme, arteriovenske malformacije, kavernomi, spinalne arteriovenske malformacije)
- Okužbe v živčnem sistemu (možganski absces, meningitis, ventrikulitis, okužbe drenažnih sistemov, subduralni empijem, hrbtenične okužbe)
- Degenerativne bolezni hrbtenice (kila medvretenčne ploščice, spinalna stenoza, spinalna nestabilnost)
- Poškodbe perifernega živčevja, kompresijske in utesnitvene nevropatije
- Funkcionalna in stereotaktična nevrokirurgija (kirurško zdravljenje Parkinsonove bolezni, spastičnosti, spastičnega tortikolisa, tremorja)
- Nevrokirurško zdravljenje bolečine (balonska kompresija ganglijev, mikrovaskularna dekompresija, vstavitev stimulatorjev in črpalk)
- Osnove stereotaktične radiokirurgije (LINAC, gama nož)
- Operacije in posegi v nevrokirurgiji

Content (syllabus outline):

- Introduction to neurosurgery and short historical review
- Surgical Anatomy of the Brain.
- Neurons and Neuroglia.
- Main diagnostic procedures in neurosurgery.
- Developmental and Acquired anomalies: Hydrocephalus, Craniosynostosis, Encephaloceles, Myelomenigocele, Arnold.Chiary and Dandy Walker syndrome…
- Head and Brain Trauma: fractures of the skull and skull base, intracranial haematomas, penetrated injuries, peculiarities of brain trauma in children, treatment of brain oedema and prognostic factors in brain trauma.
- Brain Tumours: WHO classification, Basic science of Neuro-oncology, Intrinsic Tumours, Extrinsic Tumours, Ventricular and Skull Base Tumours, Spinal Cord Tumours.
- Vascular diseases: Intracerebral Haemorrhage, Aneurysms, Arteriovenous Malformations, Cavernous Malformations, Spinal Arteriovenous Malformations.
- Infections: Cerebral Abscess, Meningitis, Ventriculitis, Shunt Infection, Subdural Empyema, Spine Infections.
- Approach to the Patient and Medical Management of Spinal Disorders: Intervertebral Disc Herniation, Spinal Stenosis, Spondylolisthesis.
- Management of Peripheral Nerve Injuries
- Functional and Stereotactic Neurosurgery: Movement Disorders, Spasticity.
- Surgical Treatment of Pain
- Stereotactic Radiosurgery (LINAC, Gamma knife)
- Operations and Procedures in Neurosurgery

Temeljni literatura in viri / Reading materials:

Temeljna literatura:

- Strojnik T (ur.). Izbrana poglavja iz nevrokirurgije. 1 izd. Maribor. Medicinska fakulteta, 2010.
- Greenberg, MS, ed. Handbook of Neurosurgery, 10h edition. New York: Thieme; 2023.

Dodatna literatura:

Kirollos R, Helmy A, Thomson S, Hutchinson P, eds. Oxford Textbook of Neurological Surgery. Oxford: Oxford University Press; 2019.

Winn HA, Youmans and Winn Neurological Surgery, 8th edition. Amsterdam: Elsevier Health Sciences; 2022.

Baehr M, Frotcher M., eds. Topical Diagnosis in Neurology: Anatomy, Physiology, Signs, Symptoms, 6th edition. Stuttgart: Thieme; 2019.

Cilji in kompetence:

Slušateljem bomo predstavili sodobno nevrokirurško prakso. Pri pouku bomo z njimi razpravljali o glavnih diagnostičnih postopkih, patofiziologiji in konzervativnem oz. kirurškem zdravljenju pogostih nevrokirurških stanj. Poudarek bo na reševanju ilustrativnih kliničnih primerov, z namenom, da slušatelji osvojijo znanje o pravočasnem prepoznavanju in napotitvi potencialnega nevrokirurškega bolnika na zdravljenje. Prav tako bomo slušatelje seznanili s posebnostmi ambulantnega vodenja nevrokirurških bolnikov in jih naučili prepoznavati in ukrepati ob morebitnih zapletih. Poseben poudarek, zlasti na seminarjih, bo na prepoznavanju in ukrepanju pri nujnih nevrokirurških stanjih. Ob delu s slušatelji nam bo osnovno vodilo to, da osvojijo zmožnost kritičnega mišljenja in logičnega razmišljanja.

Objectives and competences:

Contemporary neurosurgical praxis will be presented to our students. During the lessons main diagnostic procedures, pathophysiology and treatment options of common neurosurgical problems will be discussed. We will mainly focus on illustrative clinical cases with purpose that our students will be able to timely recognize common neurosurgical conditions that require neurosurgical treatment. Characteristics of neurosurgical outpatients' department work as well as dealing with neurosurgical complications will also be discussed. Special attention especially during practical work will be given to common neurosurgical urgencies. Our main guidance during our work with the students will be that they conquer the ability for logical and critical thinking

Predvideni študijski rezultati:

Znanje in razumevanje:
Študent medicine mora iz literature ali opisa spoznati in uvrstiti klinično sliko bolečine, razvojnih nepravilnosti, tumorjev baze lobanje, žilne nepravilnosti, da si lahko poišče dodatne informacije. Študent medicine mora poleg znanja opisanega zgoraj tudi znati obravnavati bolnika z intrinzičnimi in ekstrinzičnimi možganskimi tumorji, poškodbo možganov in degenerativnimi obolenji hrbtenice (za to klinično sliko pozna simptome, znake, postopek diagnoze in diferencialne diagnoze ter splošna načela zdravljenja).
Prenesljive/ključne spretnosti in drugi atributi:
Slušatelji naj osvojijo znanje o pravočasnem prepoznavanju in napotitvi potencialnega nevrokirurškega bolnika na zdravljenje. Prav tako bomo slušatelje seznanili s posebnostmi ambulantnega vodenja nevrokirurških bolnikov in jih naučili prepoznavati in ukrepati ob morebitnih zapletih.

Intended learning outcomes:

Knowledge and Understanding:
Medical student should be able to recognize clinical picture of typical pain syndromes, developmental and acquired anomalies, skull base tumours, vascular abnormalities, so that he/she can find additional information's. Beside this student should be able to deal with the patients with intrinsic and extrinsic brain tumours, brain injury, and degenerative spine diseases. Student should be familiar with clinical picture, symptoms and signs, diagnostic procedures, differential diagnosis and treatment options.
Transferable/Key Skills and other attributes:
Students should be able to timely recognize common neurosurgical conditions that require neurosurgical treatment. Characteristics of neurosurgical outpatients' department work as well as dealing with neurosurgical complications will also be discussed.

Metode poučevanja in učenja:

Predavanja, seminarji, opazovanje operativnih posegov po dogovoru.

Learning and teaching methods:

Lectures, seminars, observation of common neurosurgical procedures upon request.

Načini ocenjevanja:	Delež (v %) / Share (in %)	**Assessment methods:**
Pisni izpit Opombe: Pisni izpit - esejska vprašanja. Skupna ocena: 91–100 % = odlično (10) 81–90 % = prav dobro (9) 71–80 % = prav dobro (8) 61–70 % = dobro (7) 51–60 % = zadostno (6)	**100**	Written exam Notes: Written exam - essay type questions. Total grade: 91 – 100% = excellent (10) 81 – 90% = very good(9) 71 – 80% = very good (8) 61 – 70% = good (7) 51 – 60% = satisfactory (6)

Reference nosilca / Course coordinator's references:

1. Rowbottom H, Šmigoc T, Ravnik J. Malignant Meningiomas: From Diagnostics to Treatment. Diagnostics (Basel) 2025;15:538

2. Rowbottom H, Končnik R, Ravnik J, Šmigoc T. Posterior Fossa Stereotactic Biopsy with Leksell Vantage Frame-Case Series and Review of Literature. J Clin Med 2025;14:609

3. Ravnik J, Rowbottom H, Snyderman CH, Gardner PA, Šmigoc T, Glavan M, Kšela U, Kljaić N, Lanišnik B. The Impact of Surgical Telementoring on Reducing the Complication Rate in Endoscopic Endonasal Surgery of the Skull Base. Diagnostics (Basel) 2024;14:1874

4. Ravnik J, Rowbottom H. The Impact of Molecular and Genetic Analysis on the Treatment of Patients with Atypical Meningiomas. Diagnostics (Basel) 2024;14:1782