

COURSE INFORMATION					
Course Title	Code	Semester	L+P Hour	Credits	ECTS
Neurosurgery (Clinical Clerkship)	MED 506	Phase 5/9-10	29+29	3	3*

\* ECTS credits are the university credits of the courses in Yeditepe University, Faculty of Medicine, Undergraduate Medical Education Program

<b>Prerequisites</b>	The student that joins this course, should completed Phase 1, 2, 3 and 4 courses of medical faculty.
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<b>Language of Instruction</b>	English
<b>Course Level</b>	Second Cycle including First Cycle Degree (One Tier Programme)
<b>Course Type</b>	Compulsory Professional/Clinical Clerkship (Professional and Clinical Skills: clinical skills performance at introductory clerkship level)
<b>Course Coordinator</b>	Uğur Türe MD Prof.
<b>Instructors</b>	M.Gazi Yaşargil MD Prof. Uğur Türe MD Prof. Ahmet Hilmi Kaya MD Prof. Aikaterini Panteli MD Assist. Prof.
<b>Assistants</b>	
<b>Goals</b>	To convey necessary knowledge on common neurosurgical diseases including pathology, symptomatology and clinical findings of neurosurgical diseases required to organize early treatment and referral of patients to appropriate center upon indication

Learning Outcomes	Program Learning Outcomes	Teaching Methods	Assessment Methods
At the end of this clerkship, the student should be able to:			
<b>KNOWLEDGE:</b>			
1) Recognize general clinical presentation in neurosurgical patients	1.1, 1.13, 1.14, 1.21, 1.22	1.1, 1.3, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
2) Describe neurosurgical emergencies (head and spinal trauma, intracerebral hemorrhage and peripheral nerve injuries)	1.1, 1.2, 1.3, 1.5, 1.8, 1.11, 1.13, 1.14, 1.16, 1.18, 1.21, 1.22	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
3) a. Describe intracranial hypertension and brain herniation syndromes b. Recognize skull base fractures and CSF fistulas	1.1, 1.3, 1.17	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	A.a, A.c, D.a
4) Describe clinical findings in common brain tumors to refer patients to appropriate centers	1.1, 1.4, 1.7, 1.13, 1.14, 1.21, 1.22	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	A.a, A.c, D.a
5) Describe spinal trauma and spinal cord injury in early period and transfer of patient to appropriate center based on knowledge of immobilization status.	1.1, 1.5, 1.11, 1.13, 1.16, 1.18, 1.21, 1.22	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	A.a, A.c, D.a

6) Describe non-traumatic neck, dorsal and low back pain	1.1, 1.6, 1.13,1.14, 1.20, 1.21	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
7) Describe differential diagnosis of metastatic spinal tumors and primary spinal tumors with other spinal disorders.	1.1, 1.7, 1.21	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
8) Describe peripheral nerve compression syndromes and nerve injuries	1.1, 1.8, 1.13, 1.14,1. 21	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
9) Describe hydrocephalus, craniostyostosis and spinal dysraphism.	1.1, 1.9, 1.13, 1.14,1.19, 1.21, 1.22	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
10) Describe infections meningitis, brain abscess, tuberculosis, brucellosis	1.1, 1.10,1.13, 1.14, 1.21,1.22	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	A.a, A.c, D.a
11) Describe management of plegic patients to prevent bedsores, encourage mobilization and hygiene.	1.1, 1.11, 1.21, 1.22	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
<b>SKILLS:</b>			
1. Performs patient history taking	1.13	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
2. Performs neurological examination in neurosurgical patients	1.14	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
3. Performs resuscitation, intravenous catheter placement, wound cleaning and closure in neurosurgical emergencies.	1.15	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	A.a, A.c, D.a
4. Performs immobilization, applies corset in spinal trauma and knows how to transfer a patient with penetrating head trauma to start early emergent treatment	1.16	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	A.a, A.c, D.a
5. Performs initial treatment of increased intracranial pressure	1.17	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	A.a, A.c, D.a
6. Performs initial treatment of neurogenic, spinal and hemorrhagic shock.	1.18	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	A.a, A.c, D.a
7. Performs wound cleaning in meningomyelocele for protection of sac	1.19	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
8. Provides advice on protective precautions in degenerative spinal diseases	1.20	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7	A.a, A.c, D.a
<b>ATTITUDES:</b>			
1. Be alert to the importance of early treatment in neurosurgical emergencies and referral of patients to appropriate center when necessary	1.21	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	C.d, D.d, E.d

2. Be alert to protective precautions in neurosurgical patients in addition to referral	1.22	1.1, 1.3, 1.6, 2.1, 2.2, 4.2, 4.3,4.7, 4.8	C.d, D.d, E.d
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**COMPETENCIES:**

1. Start emergency and early treatment in neurosurgical emergencies
  
2. Organize referral of patients

● **CONTACT HOURS (CH)**

1. Theoretical-Class/Auditorium/Conference Hall/Multimedia
  - 1.1. Lecture/Tutorial
  - 1.2. Case report
  - 1.3. Case presentation
  - 1.5. Research seminar Seminar
  - 1.6. Student seminar/Journal club
  - 1.7. Invited speaker
  - 1.8. Hospital conference
  - 1.9. Online/Distance or e-learning (paper based or ICT based)
  - 1.10. Other:
2. Theoretical-Group Activity/Interactive
  - 2.1. Case discussion
  - 2.2. Discussion class
  - 2.3. Small group study session/Problem solving session/Brainstorm session
  - 2.4. Exercise class
  - 2.5. Oral presentation and criticism
  - 2.6. Panel
  - 2.7. Workshop
  - 2.8. Online/Distance or e-learning (paper based or ICT based)
  - 2.9. Other:
3. Practice Based-Laboratory/Class
  - 3.1. Demonstration class
  - 3.2. Laboratory teaching
  - 3.3. Clinical skills laboratory
  - 3.4. Small group study session/Problem solving session
  - 3.5. Exercise class
  - 3.6. Workshop (practical class)
  - 3.7. Other:
4. Clerkship (Clinical practice and training)
  - 4.1. Field study/Fieldwork
  - 4.2. Outpatient clinic
  - 4.3. Patient bedside
  - 4.4. Imaging round
  - 4.5. Laboratory round
  - 4.6. Work based practice
  - 4.7. Grand round
  - 4.8. Operating room
  - 4.9. Invasive Intervention room
  - 4.10. Night shift at ward
  - 4.11. Night shift at intensive care unit
  - 4.12. Night shift at emergency care unit
  - 4.13. Other:
5. Work placement/Internship (Clinical performance under supervision)
  - 5.1. Field study/Fieldwork
  - 5.2. Outpatient clinic
  - 5.3. Patient bedside
  - 5.4. Imaging round
  - 5.5. Laboratory round
  - 5.6. Work based practice
  - 5.7. Grand round
  - 5.8. Operating room
  - 5.9. Invasive intervention room

**Teaching Methods:**

- 5.10. Night shift at ward
- 5.11. Night shift at intensive care unit
- 5.12. Night shift at emergency care unit
- 5.13. Other:
- **INDEPENDENT STUDY HOURS (ISH)**
- 6. KNOWLEDGE (Levels: Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation)
  - 6.1. Theoretical/Written/Oral exam/s
  - 6.2. Presentation
  - 6.3. Seminar
  - 6.4. Discussion
  - 6.5. Session
  - 6.6. Research paper writing
  - 6.7. Project writing
  - 6.8. Report writing
  - 6.9. Dissertation writing
  - 6.10. Homework
  - 6.11. Investigation/Survey study
  - 6.12. Other:
- 7. SKILLS: (Levels: Imitation, Manipulation, Precision, Articulation, Naturalization)
  - 7.1. Oral/practical exam/s
  - 7.2. Presentation
  - 7.3. Seminar
  - 7.4. Discussion
  - 7.5. Session
  - 7.6. Exercise
  - 7.7. Workshop
  - 7.8. Imaging round
  - 7.9. Laboratory round
  - 7.10. Grand round
  - 7.11. Other:
- 8. ATTITUDES (Receiving, Responding, Valuing, Organization, Characterization)
  - 8.1. Questionnaire (self-assessment)
  - 8.2. Paper case
  - 8.3. Other:
- 9. COMPETENCY (Doing/Making, Co-ordinating/Operating, Observing/Analyzing/Listening to/ Controlling/Driving, Choosing/Communicating/Enhancing, Conceiving/Visioning/Foreseeing)
  - 9.1. Portfolio preparation
  - 9.2. Clinical performance at outpatient wards
  - 9.3. Clinical performance at inpatient wards
  - 9.4. Clinical performance at night shifts (ward, emergency care unit, intensive care unit)
  - 9.5. Other: (e.g. mini-clinical exam, etc.)
- 10. PROFICIENCY (Doing/Making, Co-ordinating/Operating, Observing/Analyzing/Listening to/ Controlling/Driving, Choosing/Communicating/Enhancing, Conceiving/Visioning/Foreseeing)
  - 10.1. Portfolio preparation
  - 10.2. Clinical performance at outpatient wards
  - 10.3. Clinical performance at inpatient wards
  - 10.4. Clinical performance at night shifts (ward, emergency care unit, intensive care unit)
  - 6.8. Other: (e.g. mini-clinical exam, etc.)

**Assessment Methods:**

- A. Knowledge Assessment
  - a. Written Exam (MCQ+EMQ+KFQ) (F, S)
  - b. Objectively Structured Oral Examination (S)
  - c. Oral Examination (F)
  - d. Other:
- B. Skills Assessment
  - a. Practical Examination (F)
  - b. Objectively Structured Practical Examination (S)
  - c. Mini Clinical Examination (S)
  - d. Other:
- C. Attitude Assessment
  - a. Mini Clinical Examination (S)
  - b. Questionnaire (self-assessment) (F)
  - c. Paper case (S)
  - d. Observation of behaviour (360°) (F, S)

<ul style="list-style-type: none"> <li>e. Other:</li> <li>D. Competency Assessment <ul style="list-style-type: none"> <li>a. Mini Clinical Examination (S)</li> <li>b. Clerkship/Internship Guide/Checklist Assessment (F, S)</li> <li>c. Professional Portfolio Assessment (F)</li> <li>d. Presentation Performance Assessment (F)</li> <li>e. Seminar Performance Assessment (F)</li> <li>f. Project Writing Assessment (S)</li> <li>g. Other:</li> </ul> </li> <li>E. Proficiency Assessment <ul style="list-style-type: none"> <li>a. Mini Clinical Examination (S)</li> <li>b. Clerkship/Internship Guide/Checklist Assessment (F, S)</li> <li>c. Professional Portfolio Assessment (F)</li> <li>d. Presentation Performance Assessment (F)</li> <li>e. Seminar Performance Assessment (F)</li> <li>f. Other:</li> </ul> </li> <li>d. *F: Formative, S: Summative</li> </ul>
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<b>COURSE CONTENT</b>		
<b>Week</b>	<b>Topics</b>	<b>Study Materials</b>
1	Neuroanatomy review	Textbook and PowerPoint Presentation
1	Neurological examination of the neurosurgical patient	Textbook and PowerPoint Presentation
1	Head Trauma	Textbook and PowerPoint Presentation
1	Spinal Trauma	Textbook and PowerPoint Presentation
1	Intracranial Hypertension	Textbook and PowerPoint Presentation
1	Hydrocephalus	Textbook and PowerPoint Presentation
1	Intracranial tumors	Textbook and PowerPoint Presentation
1	Spinal tumors	Textbook and PowerPoint Presentation
1	Vascular neurosurgery	Textbook and PowerPoint Presentation
1	Degenerative spinal disease	Textbook and PowerPoint Presentation
1	Spinal stenosis/ spondylolisthesis	Textbook and PowerPoint Presentation
1	Pediatric neurosurgery	Textbook and PowerPoint Presentation
2	Neurosurgical infections	Textbook and PowerPoint Presentation
2	Functional neurosurgery	Textbook and PowerPoint Presentation
2	Nerve entrapment syndromes and peripheral nerve injury	Textbook and PowerPoint Presentation

<b>NCC 2014 - Essential Medical Procedures (National Core Curriculum)</b>	<b>Performance Level</b>
General and symptom-based history taking	3
Mental status evaluation	3
Consciousness assessment and psychiatric examination	3

Musculoskeletal system examination	3
Neurological examination	3
Preparing patient file	3
Ability to prescription	3
Glascow-coma-scale assessment	3
Appropriate patient transportation	3
Giving patient recovery position	3
Performing lomber puncture	1
Minimental status examination	1
Cervical collar application	3
Superficial suturing and removal of sutures	1

#### ASSESSMENT

<b>Questions Types (Pencil-Paper Tests)</b>	<b>Proportion (in Pencil-Paper Tests)</b>
Multiple Choice Questions	60%
Extended Matching Questions	20%
Key Features	20%
<b>Total</b>	<b>100 %</b>
<b>Other Assessment Methods and Tools</b>	<b>Proportion (in Other Assessments Methods and Tools)</b>
Oral Exam (OE)	80%
Evaluation of Case Presentation	10%
Evaluation of Student's Seminar	10%
<b>Total</b>	<b>100 %</b>
<b>Pass/Fail Decision</b>	<b>Proportion (in Pass/Fail Decision)</b>
Pencil-Paper Tests	60%
Other Assessments Methods and Tools	40%
<b>Total</b>	<b>100 %</b>

<b>RECOMMENDED SOURCES</b>	
<b>Textbook</b>	1- Handbook of Neurosurgery 9th edition M. Greenberg Thieme 2- Neurology and Neurosurgery Illustrated 5th Edition Elsevier 3- Bate's Guide to Physical Examination and History Taking 12th edition Wolters Kluwer
<b>Additional Resources</b>	Lecture notes

<b>MATERIAL SHARING</b>	
<b>Documents</b>	PowerPoint presentations
<b>Assignments</b>	Student seminars
<b>Exams</b>	Not shareable

COURSE'S CONTRIBUTION TO PROGRAM						
	PODG.1. Basic Professional Competencies	Contribution				
	POD.1.1. Clinical Competencies	1	2	3	4	5
PO.1.1.1.	<b>values</b> preventive health services, <b>offers</b> primary prevention (i.e. prevention of diseases for the protection of health), secondary prevention (i.e. early diagnosis and treatment) tertiary prevention (i.e. rehabilitation) and quaternary prevention (i.e. prevention of excessive and unnecessary diagnosis and treatment) services, <b>provides</b> consultancy on these issues.					X
PO.1.1.2.	<b>employs</b> a patient-centered approach in patient management.					X
PO.1.1.3.	<b>recognizes</b> most frequently occurring or significant clinical complaints, symptoms, signs, findings and their emergence mechanisms in clinical conditions.					X
PO.1.1.4.	<b>takes</b> medical history from the applicant himself/herself or from the individual's companions.					X
PO.1.1.5.	<b>does</b> general and focused physical and mental examination.					X
PO.1.1.6.	<b>interprets</b> findings in medical history, physical and mental examination.					X
PO.1.1.7.	<b>employs</b> diagnostic procedures that are used frequently at the primary health care level.					X
PO.1.1.8.	<b>selects</b> tests that have evidence-based high efficacy at the primary health care level and <b>interprets</b> results.					X
PO.1.1.9.	<b>makes</b> clinical decisions using evidence-based systematic data in health care service.					X
PO.1.1.10.	<b>performs</b> medical interventional procedures that are used frequently at the primary health care level.					X
PO.1.1.11.	<b>manages</b> healthy individuals and patients in the context of health care services.					X
PO.1.1.12.	<b>keeps</b> medical records in health care provision and <b>uses</b> information systems to that aim.					X
	<b>POD.1.2. Competencies related to Communication</b>					
PO.1.2.1.	throughout his/her career, <b>communicates</b> effectively with health care beneficiaries, co-workers, accompanying persons, visitors, patient's relatives, care givers, colleagues, other individuals, organizations and institutions.					X
PO.1.2.2.	<b>collaborates</b> as a team member with related organizations and institutions, with other professionals and health care workers, on issues related to health.					X
PO.1.2.3.	<b>recognizes</b> the protection and privacy policy for health care beneficiaries, co-workers, accompanying persons and visitors.					X
PO.1.2.4.	<b>communicates</b> with all stakeholders taking into consideration the socio-cultural diversity.					X
	<b>POD.1.3. Competencies Related to Leadership and Management</b>					
PO.1.3.1.	<b>manages</b> and <b>leads</b> within the health care team in primary health care organization.					X
PO.1.3.2.	<b>recognizes</b> the principles of health management and health sector economy, models of organization and financing of health care services.					X

<b>PO.1.3.3.</b>	<b>recognizes</b> the resources in the health care service, the principles for cost-effective use.					X
	<b>POD.1.4. Competencies related to Health Advocacy</b>					
<b>PO.1.4.1.</b>	<b>recognizes</b> the health status of the individual and the community and the factors affecting the health, <b>implements</b> the necessary measures to prevent effects of these factors on the health.					X
<b>PO.1.4.2.</b>	<b>recognizes</b> and <b>manages</b> the health determinants including conditions that prevent access to health care.					X
	<b>POD.1.5. Competencies related to Research</b>					
<b>PO.1.5.1.</b>	<b>develops, prepares</b> and <b>presents</b> research projects					X
	<b>POD.1.6. Competencies related to Health Education and Counseling</b>					
<b>PO.1.6.1.</b>	<b>provides</b> consultancy services and <b>organizes</b> health education for the community to sustain and promote the health of individual and community.					X
	<b>PODG.2. Professional Values and Perspectives</b>					
	<b>POD.2.1. Competencies related to Law and Legal Regulations</b>					
<b>PO.2.1.1.</b>	<b>performs</b> medical practices in accordance with the legal framework which regulates the primary health care service.					X
	<b>POD.2.2. Competencies Related to Ethical Aspects of Medicine</b>					
<b>PO.2.2.1.</b>	<b>recognizes</b> basic ethical principles completely, and <b>distinguishes</b> ethical and legal problems.					X
<b>PO.2.2.2.</b>	<b>pays importance to</b> the rights of patient, patient's relatives and physicians, and <b>provides</b> services in this context.					X
	<b>POD.2.3. Competencies Related to Social and Behavioral Sciences</b>					
<b>PO.2.3.1.</b>	<b>relates</b> historical, anthropological and philosophical evolution of medicine, with the current medical practice.		X			
<b>PO.2.3.2.</b>	<b>recognizes</b> the individual's behavior and attitudes and factors that determine the social dynamics of the community.			X		
	<b>POD.2.4. Competencies Related to Social Awareness and Participation</b>					
<b>PO.2.4.1.</b>	<b>leads</b> community with sense of responsibility, behavior and attitudes in consideration of individual behaviors and social dynamics of the community, and if there is a necessity, <b>develops</b> projects directed towards health care services.					X
	<b>POD.2.5. Competencies Related to Professional Attitudes and Behaviors</b>					
<b>PO.2.5.1.</b>	<b>displays</b> a patient-centered and holistic (biopsychosocial) approach to patients and their problems.					X
<b>PO.2.5.2.</b>	<b>respects</b> patients, colleagues and all stakeholders in health care delivery.					X
<b>PO.2.5.3.</b>	<b>displays</b> the proper behavior in case of disadvantaged groups and situations in the community.					X
<b>PO.2.5.4.</b>	<b>takes</b> responsibility for the development of patient safety and healthcare quality.					X
<b>PO.2.5.5.</b>	<b>evaluates</b> own performance as open to criticism, <b>realizes</b> the qualifications and limitations.					X
	<b>PODG.3. Professional Development and Self-Worth</b>					

<b>PODG.3.1. Personal Development and Values</b>						
<b>PO.3.1.1.</b>	<b>embraces</b> the importance of lifelong self-learning and <b>implements</b> .					X
<b>PO.3.1.2.</b>	<b>embraces</b> the importance of updating knowledge and skills; <b>searches</b> current advancements and <b>improves</b> own knowledge and skills.					X
<b>PO.3.1.3.</b>	<b>uses</b> English language at least at a level adequate to follow the international literature and to establish communication related to the profession.					X
<b>POD.3.2. Competencies Related to Career Management</b>						
<b>PO.3.2.1.</b>	<b>recognizes</b> and <b>investigates</b> postgraduate work domains and job opportunities.				X	
<b>PO.3.2.2.</b>	<b>recognizes</b> the application requirements to postgraduate work/job domains, and <b>distinguishes</b> and <b>plans</b> any requirement for further training and work experience.				X	
<b>PO.3.2.3.</b>	<b>prepares</b> a resume, and <b>recognizes</b> job interview methods.				X	
<b>POD.3.3. Competencies Related to Protection and Development of Own Physical and Mental Health</b>						
<b>PO.3.3.1.</b>	<b>implements</b> the rules of healthy living.				X	
<b>PO.3.3.2.</b>	<b>displays</b> appropriate behavior specific to work under stressful conditions.					X
<b>PO.3.3.3.</b>	<b>uses</b> self-motivation factors.					X

<b>ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION</b>			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (2 weeks)	10	6	60
Hours for off-the-classroom study (Pre-study, practice, review/week)	10	2	20
Homework	-	-	-
Exam	1	2	2
<b>Total Workload</b>			82
<b>Total Workload / 30 (h)</b>			2.73
<b>ECTS Credit of the Course</b>			3