



**Jordan University of Science and Technology**  
**Faculty of Medicine**  
**Doctor Of Medicine (Md) Department**

MED557 Neurosurgery

Second Semester 2022-2023

**Course Catalog**

2.25 Credit Hours. Course Title: Clinical Neurosurgery ? M557. Department: Neurosurgery Duration: 2 weeks Academic year: 5th year medical students Academic semester: 1st, 2nd, and summer semester Credit hours: 2, 1/4 hours Course coordinators: Prof. Mohammad Jamous (majamous@just.edu.jo), Dr. Amer Jaradat (aajaradat9@just.edu.jo) Periods Offered: continuous through the academic year for 5th year medical students. Course Description: During the rotation, the students will learn how to approach patients with neurosurgical pathologies. The rotation will enhance the student's ability to write a pertinent history and to do neuro-exam. Students will also learn to formulate a differential diagnosis and plan of evaluation, including the need for special diagnostic procedures. Pre- and post-operative management for common neurosurgical procedures will be taught. The student will also gain exposure to neurosurgical procedures (in an elective manner for the interested students). Students will attend daily morning report, outpatient clinics, clinical rounds, daily seminar, and assist in day-to-day inpatient and operative care of neurosurgical patients. Course Objectives: A. KNOWLEDGE

1. History taking and neurological Examination · The students should be able to take a detailed history for neurosurgical presentation. · Evaluate patient's mental status and speech. · Examine the cranial nerves. · Examine central and peripheral sensory function. · Examine motor function. · Examine cranial and peripheral reflexes · Examine cerebellar function and gait.
2. Fundamentals of Neuroimaging · Recognize common spine fractures and dislocations · Differentiate on computerized images between blood, air, fat, CSF, and bone · Distinguish the typical imaging characteristics of epidural hematoma, acute subdural hematoma, chronic subdural hematoma, intracerebral hemorrhage, and subarachnoid hemorrhage brain and spinal tumor and variable spine related pathology (disc herniation , spinal fractures , spondylolisthesis , spondylodiscitis).
3. Intracranial Hypertension · Define cerebral perfusion pressure, and explain how it is used in the management of patients with elevated intracranial pressure. · Describe how blood gases, fluids, and electrolyte balance influence intracranial pressure · Describe clinical manifestations of acute brain herniation, including transtentorial, uncal, & subfalcine herniation syndromes.
4. Diagnosis and Management of Head Trauma · Assign the Glasgow Coma Score · Initiate management of elevated intracranial pressure in head trauma · Define concussion, brain contusion, and diffuse axonal injury, and initiate management of each · Distinguish anatomically and radiographically acute subdural and epidural hematoma, & describe the surgical indications for each · Describe the initial management of penetrating high and low velocity head trauma · Describe the management of chronic subdural hematoma
5. Spine Trauma · Describe the rapid assessment of the patient with spinal trauma. · Recognize the common spine fractures on X-ray. · Initiate acute management of spinal cord injury including immobilization, steroids, and systemic measures. · Define the unstable spine
5. Diagnosis and Management of Intracerebral Aneurysm/AVM. · Distinguish and define the signs and symptoms of ruptured and un-ruptured aneurysm/AVM. · Describe & understand the indications for treatment & the various treatment modalities underlying cerebrovascular diseases
6. Diagnosis and Management of Intracranial and Spinal Tumor. · Distinguish and define the red flags for spinal and brain tumors. · Know the relative incidence and location of the major types of primary and secondary brain tumors · Describe the general clinical presentations of brain tumors in the following locations: cerebral hemisphere, cerebellum, brainstem, pituitary, and cerebellopontine angle. · Define various types of brain and spinal tumor and understand the radiological appearance of each category. · List the advantages and limitations of different diagnostic tools used in the elevation of brain tumors. · Understand the treatment alternatives dependent on the pathology: open surgical resection, gamma-knife radiosurgery , whole brain/spine radiation and chemotherapy.
7. Diagnosis and Management of Nontraumatic Neck and Back Problems. · Define radiculopathy, myelopathy, and cauda equine syndrome. · Describe the general management of cervical disc herniation, lumbar disc herniation, lumbar instability, and low back pain. · List the most common examples of extradural, intradural-extramedullary, and intramedullary spine tumors.
8. Diagnosis and Management of Hydrocephalus and Spinal Dysraphism. · List common symptoms and signs of acute hydrocephalus in children. · List common symptoms and signs of normal pressure hydrocephalus in adults. · Define communicating and non-communicating hydrocephalus and describe the differences in their treatments. · List two examples each of open and closed spinal Dysraphism. · Describe the principles of management of myelomeningocele.

B. INTERPERSONAL AND COMMUNICATIONS SKILLS

1. Case Presentation. · Present a case to your preceptor and include relevant history, neurological examination, imaging findings, and treatment plan.
2. Participation on the Wards. · Ask neurosurgical staff (residents, attendings, etc.) questions, as appropriate, to enhance learning opportunities both in and out of the OR.

C. PROFESSIONALISM

1. Operating Room · Demonstrate professionalism in the operating room; do not be disruptive, but feel free to participate, including asking questions, reviewing images, pathology, intraoperative findings, etc. · Demonstrate level of interest by scrubbing in on cases at the discretion of the resident and attending.
2. Conferences. · Attend all scheduled local conferences. · Feel free to participate and ask questions

References: · Neurology and neurosurgery illustrated ? 5th edition · Handbook of Clinical Neurosurgery, by Mark Greenberg. · Macleod's Clinical Examination

Lecture Schedule and Class Activities: · Neurosurgery Morning report is 8 am to 9 am at the neurosurgery department , 4th floor D . · Daily 5th year medical student lecture is from 1 pm to 2 pm at the blue hall , floor -1.

Methods to Evaluate Student Performance: · (15 %) Evaluation based on participation, case discussions and observations. · (40 %) End of the rotation clinical exam. · (45%) end of the year MCQs exam.

<b>Text Book</b>	
<b>Title</b>	Neurology and neurosurgery illustrated ? 5th edition
<b>Author(s)</b>	Kenneth W. Lindsay
<b>Edition</b>	5th Edition
<b>Short Name</b>	Ref 1
<b>Other Information</b>	

#### Course References

<b>Short name</b>	<b>Book name</b>	<b>Author(s)</b>	<b>Edition</b>	<b>Other Information</b>
Ref 2	Handbook of Clinical Neurosurgery, by Mark Greenber	Mark Greenberg	9th Edition	
Ref 3	Macleod's Clinical Examination	J. Alastair Innes BSc PhD FRCP	14th Edition	

<b>Instructor</b>	
Name	<b>Prof. Mohammad Jamous</b>
Office Location	King Abdulla University Hospital, 7th floor
Office Hours	
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<b>Class Schedule &amp; Room</b>
Section 1: Lecture Time: Sun, Mon, Tue, Wed, Thu : - Room: U

<b>Tentative List of Topics Covered</b>		
<b>Weeks</b>	<b>Topic</b>	<b>References</b>
Week 1	History, neurological examination, and localization	From <b>Ref 3</b>
Week 1	Congenital CNS anomalies	From <b>Ref 1</b> , From <b>Ref 2</b>
Week 1	clinical neuroradiology	From <b>Ref 1</b>
Week 2	Subarachinoid hemorrhage, cerebral aneurysms, AVM	From <b>Ref 1</b> , From <b>Ref 2</b>
Week 2	Head and spine injuries	From <b>Ref 1</b> , From <b>Ref 2</b>
Week 2	Brain and spine tumors	From <b>Ref 1</b> , From <b>Ref 2</b>

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Demonstrate medical knowledge of the basic and clinical sciences, including anatomy, physiology, pathology, and pharmacology related to neurosurgical diseases	20%	
The students should be able to take a detailed history for neurosurgical illnesses, evaluate patient's mental status and speech , examine the cranial nerves ,examine central and peripheral sensory function , examine motor function , examine cranial and peripheral reflexes , examine cerebellar function and gait. The student should be able to use history and neuro-exam to build differential diagnosis and localize the pathology.	30%	
Select the appropriate methods for the diagnosis of neurosurgical disorders and diseases of the peripheral and central nervous system	10%	
Understand the principles of management of the neurosurgical disorders and the principles of medical care of neurosurgical patients. Identify neurological disorders that are best treated by surgery and be aware of the appropriate surgical techniques and recommended postoperative care.	30%	
Communicate with patients, colleagues and staff verbally and in writing , apply the problem solving approach in the practice of medicine, work with others in team and develop the capacity of life-long self learning	10%	

Relationship to Program Student Outcomes (Out of 100%)													
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PLO13	PLO14

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