كلية الطب

كلية الطب البشري
Faculty of Medicine

Faculty of Medicine

الجامعـــــــة الهاشميـــــــة

The Hashemite University

Syllabus: Neuroscience (2) (0111501306)
Third Year-Second Semester
2025/2026

COURSE INFORMATION	
Course Name: Neurosciences II **Semester:** Second **Department:** Department of Anatomy, Physiology and Biochemistry **Faculty:** Faculty of Medicine	**Course Code: 0111501306** **Section:** All **Curriculum**: MD program
Day(s) and Time(s): Sunday to Thursday Day(s) and Time(s): 9 am to 3:30 pm **Classroom:** Faculty of Medicine auditorium ***Theoretical lectures:*** Faculty of Medicine auditorium ***Practical sessions:*** labs of Faculty of Medicine	**Credit Hours:** 4 **Prerequisites**: None

COURSE DESCRIPTION

This is an integrated system-based module which explores anatomy, physiology, pharmacology, microbiology, pathology and Community Medicine of the nervous system. The course provides integrated knowledge covering the peripheral nervous system including peripheral nerves, nerve plexuses and peripheral nerve branches cranial nerves and special senses. The course also highlights structures in the head and neck relevant to cranial nerves.

Based on an understanding of normal structure, function relationship, neural connections of peripheral nervous system and special senses. Students will learn pathophysiological basis of various neurological disorders of nervous system. In addition, the course introduces common tumors and degenerative diseases of the nervous system, their pathology and histopathology. Common diseases affecting the nervous system and their epidemiology are also covered.
Pharmacology of autonomic nervous system and pharmacology management of peripheral nervous disorders are also discussed.

The overall goal of this course is to provide medical students with foundations for understanding the impairments of sensory and motor functions, diseases, and pharmacological management of these disorders and the application of knowledge and foundation in in clinical practice. The objectives of this course are achieved via selected lectures and relevant laboratory sessions.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active classroom-based discussion
- Collaborative learning through small groups acting in an interdisciplinary context.
- Video lectures.

FACULTY INFORMATION

Course Coordinator	
Name:	Dr. Wala'a Al-Zboun
Academic title:	Assistant Professor
Office Location:	Second floor, Faculty of Medicine – Hashemite University
Telephone	0770678385
Email Address:	Wallag@hu.edu.jo
Office Hours:	**Sunday** (11 am -1 pm), **Wednesday** (11 am -1 pm). Please send an e-mail to meet at any other time.

Other Faculty staff members

Subject	Members	Email Address	Office location	Office Hours
Anatomy	Dr. Wala'a Al-Zboun	Wallag@hu.edu.jo	1032	Sunday 11-1 Wednesday 11-1
	Dr. Mustafa Saad	mustafas@hu.edu.jo	3015	Sunday 12-2 Monday 12-2
Physiology	Dr. Iman Olymat	imank@hu.edu.jo	3033	Tuesday 8:30-10 Thursday 8:30-10
Pathology	Dr. Ola Abu Al Karsaneh	Olaa@hu.edu.jo	1017	Sunday 10-12 Tuesday 10-12
	Dr. Dua Abuquteish	dua@hu.edu.jo	1020	Sunday 11-1 Wednesday 11-1
Pharmacology	Dr. Ola Ebbeni	OLAEBBENI@hu.edu.jo	1014	Sunday 8-10 Monday 8-10
Microbiology	Dr. Hala Tabl	halaa_mo@hu.edu.jo	1041	Sunday 11-1 Tuesday 11-1
Biochemistry	Dr. Nebras Melhem	nebras@hu.edu.jo	1039	Sunday 9-12 Tuesday 11:30-1
Community Medicine	Dr. Eman Al-kamil	emana_sa@hu.edu.jo	3034	
Clinical lectures	Dr. Luay Abu Alia		-	-

REFERENCES AND LEARNING RESOURCES

ANATOMY:

- Clinical Neuroanatomy. By R. S. Snell.
- Clinical Anatomy for Medical Students. By R. S. Snell.
- Principles of Human Anatomy. By G. J. Tortora.
- Basic Histology. By C. Junqueira.
- Before We Are Born. By K.L. Moore and T.V.N. Persaud.

PHYSIOLOGY:

- Guyton and Hall Textbook of Medical Physiology, 14th Edition
- By John E. Hall, PhD and Michael E. Hall,
- Ganong's Review of Medical Physiology, Twenty-Sixth Edition
- Kim E. Barrett, Susan M. Barman, Heddwen L. Brooks, Jason X.-J. Yuan

BIOCHEMISTRY:

- Harper's Biochemistry. By Robert K. Murray and Co.,
- Supplementary Departmental Handouts.

PATHOLOGY:

- Essential Pathology, by Emanuel Rubin. -
- Basic Pathology, by Kumar, Cotran and Robbin.

MICROBIOLOGY:

- Medical Microbiology. By John C Sherris.

PHARMACOLOGY:

- Lipincott's Illustrated Reviews: Pharmacology 7th edition
- Goodman and Gilman's: The pharmacological basis of therapeutics.13th edition
- Basic and clinical pharmacology, Bertram and Katzung.12th edition
- Clinical Pharmacology.D.R. Laurence, P.N. Bennet, and M.J. Brown.11th edition

COMMUNITY MEDICINE:

- Community Medicine with Recent Advances Third Edition.
- Parks Textbook of Preventive & Social Medicine 23rd Edition
- Monica's Text Book Community Medicine.

CLINICAL LECTURES

- Overview of Peripheral Nervous System Disorders https://www.msdmanuals.com/professional/neurologic- disorders/peripheral-nervous-system-and-motor-unit-disorders/overview-of-peripheral-nervous-system- disorders

TOPICS DETAILS/ STUDENT LEARNING OUTCOMES MATRIX *				
Program Learning Outcomes	**Course Student Learning Outcomes**			**Assessment Method**
	TOPIC (SUBJECTS& NUMBER OF LECTURES/ SUBJECT)	**SUBJECT**	**Intended Learning Outcomes**	
D1 **D2** **D3** **D5** **D6** **E1** **E2**	**T1** **Central nervous system:** **7 lectures):** **Pathology 3** **Microbiology 4**	**Pathology** **Lecture (1&2)** CNS tumors	• Classify & describe the Unique Characteristics of the CNS tumors. • Describe the general, gross & Microscopic Features of Astrocytomas (Pilocytic, diffuse, anaplastic, and & Glioblastoma), Oligodendrogliomas, and Ependymomas. • Describe the definition and general features of neuronal tumors including Central Neurocytoma, Gangliogliomas, & Dysembryoplastic Neuroepithelial Tumor • Describe the pathogenesis, gross, microscopic features and routes of spread of Medulloblastoma • Define and describe the general features of Primary CNS Lymphoma &Germ-Cell Tumors • Describe the Gross & Microscopic Features of Meningiomas • Describe the metastatic secondaries in the CNS • Mention some paraneoplastic syndromes • Define the causes & pathologic features of the Familial Tumor Syndromes associated with CNS tumors (Von Hippel-Lindau Disease, & Tuberous Sclerosis).	MCQ exams

		Pathology **Lecture (3)** Primary Diseases of Myelin	• Define the Demyelinating & Dysmyelinating Diseases of the CNS. • Describe the causes, pathogenesis, clinical, gross & microscopic features of Multiple Sclerosis (MS) • Define and discuss (1) Acute Disseminated Encephalomyelitis, (2) Acute Necrotizing Hemorrhagic Encephalomyelitis, (3) Central Pontine Myelinolysis, & Leukodystrophies.	MCQ exams
		Microbiology **Lecture (1)** **Meningitis I**	• Review definition, pathogenesis, clinical presentations & complications of meningitis. • Provide different classifications of meningitis. • List important bacterial pathogens causing septic (purulent) meningitis. • Describe microbiological aspects, virulence factors, pathogenesis, epidemiology and prevention of Neisseria meningitides, Streptococcus pneumonia, Hemophilus influenza type B, Streptococcus agalactiae, Listeria monocytogenes, E. coli and other gram negative rods.	MCQ exams
		Microbiology **Lecture (2)** **Meningitis II**	• Define aseptic meningitis and enumerate its important causes. • List viral causes of aseptic meningitis with special stress on Enteroviruses and Herpes simplex virus. • List bacterial causes of aseptic meningitis with special stress on Tuberculous meningitis. • List fungal causes of aseptic meningitis with special stress on Cryptococcal meningitis.	MCQ exams

			• List parasitic causes of aseptic meningitis. • Illustrate laboratory diagnosis of meningitis; Specimen Collection, CSF Analysis and findings in different types of meningitis & Microbiological Examination. • Illustrate treatment of different types of meningitis.	
		Microbiology **Lecture (3)** **Encephalitis**	• Review definition, pathogenesis, clinical presentations & complications of encephalitis. • List microbial causes of encephalitis. • Describe morphology, epidemiology, clinical aspects, diagnosis and prevention of medically important Arboviruses. • Describe morphology, pathogenesis, clinical findings, diagnosis, treatment and prophylaxis against Rabies virus. • Describe pathogenesis, routes and microbial causes of brain abscess.	MCQ exams
		Microbiology **Lecture (4)** **Poliomyelitis & Prion disease**	• Describe morphology, epidemiology, pathogenesis, clinical findings, immunity, diagnosis, treatment and prophylaxis against Polioviruses. • Define and list infection-related causes of encephalopathy. • Define and describe structure, properties and pathogenesis of prions. • List different prion diseases and describe their pathogenesis, clinical findings, diagnosis, treatment and prevention.	MCQ exams
D1 **D3** **D5** **E2** **E3**	**T2** **Special senses &Cranial nerves:** **17 lectures)** **Anatomy 8** **Physiology 8**	**Anatomy** **Lecture (1)** **Central pathways for special senses**	• Describe olfactory pathway. • Describe taste pathway. • Describe auditory pathway. • Describe vestibular pathway. • Describe visual pathway	MCQ exams

	Biochemistry 1	**Anatomy** **Lecture (2)** **Orbit &eye I**	• Describe the bony orbit regarding its forming bones, boundaries, and openings. • List the various structures that are found inside the orbit. • Describe the lids and understand their structure and functions. • List the extrinsic muscles of the eye. Know their nerve supply and functions. • Describe the various components of the lacrimal apparatus. • Understand the nerve and vascular supply of the orbit.	MCQ exams
		Anatomy **Lecture (3)** **Orbit &eye II**	• Describe the anatomical features of the three layers of the wall of the eyeball: the fibrous layer, the vascular layer, and the retina. • Describe the cavities and chambers of the eyeballs and the structures found in the interior of the eye. • Understand the nerve and vascular supply of the eyeball.	MCQ exams
		Anatomy **Lecture (4)** **Orbit & eye III**	• Describe the main histological features of the various parts of the eyeball. • Correlate appearance with function. • Understand the main events in the development of the eye.	MCQ exams
		Anatomy **Lecture (5&6)** **External, middle, inner ear & cranial nerve VII &VIII.**	• Identify the different parts of the ear. • Describe the features of the different parts of the external ear: auricle, external acoustic meatus, and tympanic membrane. • Describe location and walls of the middle ear and identify their relations. • Describe the different features of the ear ossicle: malleus, incus, and stapes. • Describe course of facial nerve in relation to the ear. • Identify the location of the inner ear. • Describe the features of the different parts of the inner	MCQ exams

			ear: the labyrinth and the cochlea. • Describe the main histological features of the sensory receptors in the ear. • Follow the course of the vestibulocochlear nerve to the brainstem.	
		Anatomy **Lecture (7)** **Trigeminal nerve &Facial nerve.**	• Discuss briefly how the face is developed. • Follow up the trigeminal nerve its course from its central connections, exit from the brain and down to its target organs. • Describe nerve supply of the face. • Follow up the course of facial nerve from its point of central connections, exit and down to its target areas. Make a list of types of nerve fibers it contains.	MCQ exams
		Anatomy **Lecture (8)** **Cranial nerves IX, X, XI &XII**	• Follow up the glossopharyngeal nerve IX, its course from its central connections, exit from the brain and down to its target organs. • Follow up the vagus nerve, its course from its central connections, exit from the brain and down to its target organs. • Make note of plexuses it creates in the mediastinum. • Follow up cranial nerve XI its course from its central connections, exit from the brain and down to its target organs. • Follow up the hypoglossal nerve XII from its central connections, exit point, and its target organs.	MCQ exams
		Physiology **Lecture (1&2)** **Physiology of vision** **1. Physiology of the eye** **2. Pupil Reflexes and accommodation**	• Describe the function of the various components of the eye. • Describe the light refraction by the eye and know the refractive indices of the cornea, lens, aqueous humour and vitreous humour. • Explain how light rays in the environment are brought to a focus on the retina.	MCQ exams

			• Describe physiological mechanism involved in near vision including convergence, accommodation and pupil constriction. • Explain the refractive deficits responsible for hyperopia, myopia, presbyopia, and astigmatism. • Outline the neuronal pathways of accommodation and pupil reflexes and clinical significance of these pathways.	
		Physiology **Lecture (3)** **Neurophysiology of retina**	• Describe the functional organization of the retina • List the sequence of events involved in photo transduction and the ionic basis of photo transduction • Describe different types of neuronal cells in the retina and their synaptic connections (neural circuit in retina) • Describe the electrical responses produced by bipolar cells, horizontal cells, amacrine cells, and ganglion cells. annd the function of these cells in processing of visual signals • Define dark and light adaptation and mechanism of adaptation. • Define visual acuity and function of the fovea.	MCQ exams
		Physiology **Lecture (4)** **Central neurophysiology of vision**	• Define the visual field and describe monocular and binocular visual fields. • Review the neuronal visual pathway from the retina of the visual cortex. • Identify the major relay stations in the visual pathway and their function. • Describe the function of visual cortex in processing of visual signals. • Outline the pathway for white and black vision and the pathway for color vision.	MCQ exams

			• Define scotoma in the visual, there field and predict the visual field deficits that would occur after lesions within specific part of neural visual pathway.	
		Physiology **Lecture (5)** **Physiology of Hearing: Part I and Part II**	• Describe the functions of the external, middle, and inner ear. • Explain the roles of the tympanic membrane, the auditory ossicles (malleus, incus, and stapes), and Scala vestibule in sound transmission) • Outline the properties of traveling waves and describe how, via these waves, particular movement of the foot plate of the stapes produce maximal deflection of the basilar membrane at a particular point in the organs of Corti. • Describe the functions of the organs of Corti and describe how deformation of the basilar membrane is converted to impulses in auditory fibers. (ionic basis of auditory signal transduction) • Explain how pitch, loudness, are coded in the auditory pathways. • Review central auditory pathway from the cochlear hair cells to the cerebral cortex. • Describe the role of auditory cortex in sound perception and sound localization. • Describe the function of major relays of the auditory pathway (for example thalamus, inferior colliculus and superior olive).in processing of auditory signal • Compare the causes of conductive and sensorineural hearing loss and the tests used to distinguish between them.	MCQ exams

		Physiology **Lecture (6)** **Balance & Equilibrium.**	• Review the functional anatomy of vestibular apparatus. • Explain how the sensory receptors in the semicircular canals detect rotational acceleration and how the sensory receptors in the saccule and utricle detect linear acceleration. • Explain the ionic basis of sensory transduction in sensory organs of the vestibular system. • Review the central neuronal pathway and neuronal relays of vestibular nerve and the functional significance of these neuronal pathways. • Review the major neuronal connections of the vestibular system with the brainstem and cerebellum and describe their function. • List the major sensory input that provide the information which is synthesized in the brain into the sense of position in space.	MCQ exams
		Physiology **Lecture (7)** **Eyes movements** **Vestibulo- ocular reflexes (VOR)**	• List& define the major types of eye movements. • Describe the function of each type of eye movement. • Briefly outline the neuronal pathways controlling these eye movements. • Define strabismus and list the major cause of strabismus. • Describe the role of the vestibular system in stabilizing eye movements during acceleration. • Define the VOR. • Outline the neuronal pathway for the VOR. • Describe the function of VOR how it is initiated by	MCQ exams

			rotational movements. • Describe the neural mechanisms for vestibular Nystagmus and how nystagmus can be used as a diagnostic indicator of the integrity of brain stem	
		Physiology **Lecture (8)** **Chemical senses, taste & smell.**	• Describe the olfactory receptors and the mechanism of their excitation. • Outline the central neuronal pathway of olfaction. • List the main abnormalities of taste sensations and their pathophysiology • Describe the primary taste of modalities. • Discuss the characteristics of taste buds and distribution in relation to the primary taste modalities. • List major substances that produce sweet, sour, bitter and salty taste and comment on their interaction. • Describe the mechanism of excitation of taste receptors and impulse generation in the primary afferents carrying taste sensation's sensations. • Identify the central pathway of gustatory signals and the functions central nervous system areas in perception of sensations. • List main abnormalities of taste sensations and their primary cause of these abnormalities.	MCQ exams
		Biochemistry **Lecture (1)** **Biochemistry of vision**	• Describe the biochemical principles of normal vision and diseased states and discuss the role of vitamin A in normal vision.	MCQ exams
D1 **D2** **D3** **D5** **D6** **E1** **E2** **E7**	**T3: Peripheral nervous system (17 lectures)** **Anatomy 4** **Pathology 3** **Microbiology 1** **Biochemistry 1** **Pharmacology 6** **Community medicine 2**	**Anatomy** **Lecture (9)** **Cervical plexus**	• Make a list of contributing roots. • Discuss the general arrangement. • Describe the location of this plexus. • Make a list of the out coming nerves. • Follow the branches to their target organs. • Point out the point where the	MCQ exams

			major cutaneous nerves emerge. • Follow the cutaneous branches to their destinations.	
		Anatomy **Lecture (10)** **Brachial plexus**	• Make a list of the contributing spinal nerve • Discuss the general arrangement of the plexuses • Locate the plexus in the axilla • Note the important relations to blood vessels. • Make a list of local branches with short notes on its target organs • Discuss the effect of brachial plexus lesion. • Discuss the effect of peripheral nerve injury	MCQ exams
		Anatomy **Lecture (11)** **Lumbosacral plexus**	• Make a list of contributing spinal nerves to the lumbar plexus. • Discuss the arrangement of the plexus. • Describe the location of this plexus and its relation to the psoas muscle. • List the terminal branches and follow up each branch to its final destination. • Make a list of contributing spinal nerves to the sacral plexus. • Discuss the arrangement of this plexus. • Describe the location of this plexus. • List its terminal branches and follow up each branch to its target organs. • Follow up each nerve down to its target joints (cont) myotomes and dermatomes. • Discuss the effect of lumbosacral and peripheral nerve injuries.	MCQ exams
		Anatomy **Lecture (12)** **Sympathetic and parasympathetic nervous system.**	• Review the subdivisions of the nervous system. • Review the general arrangement and compare the sympathetic and parasympathetic parts. • Describe the following	MCQ exams

			plans Para vertebral ganglia. Prevertebral ganglia. Parasympathetic ganglia. Splanchnic nerves. Autonomic plexuses. • Map out the various plexuses in head and neck, thorax, abdomen and pelvis. • Make a list of the components of the system. • Review the basic structure of sympathetic trunk. • Describe the source of sympathetic system in the neck and make a list of target organs. • Describe the Para vertebral sympathetic ganglia in the abdomen, their locations and target organs. • Discuss the relation of this system to the adrenal medulla. • Discuss the sympathetic innervation of blood vessels. • Make a list of cranial nerves having parasympathetic activity. • Describe the parasympathetic ganglia in the head and neck, their locations and target organs. • Describe the sacral parasympathetic out flow. • Make a list of its target organs.	
		Pathology **Lecture (4)** **Peripheral nerves Diseases and tumors**	• Describe Patterns of Peripheral Nerve Injury, Including Wallerian Degeneration and segmental demyelination • Describe the disorders Associated with Peripheral Nerve Injury Particularly Causes, Pathologic Features, & Effects of Guillain-Barré Syndrome. • Describe the general, gross & Microscopic Features, & Effects of Schwannoma, Cutaneous & Plexiform neurofibromas, &	MCQ exams

			Malignant Peripheral Nerve Sheath Tumor • Define the Causes & Pathologic features of the Familial Tumor Syndromes Neurofibromatosis.	
		Pathology **Lecture (5&6)** **CNS infections & Prion Diseases**	• Describe the Pathologic Features, Causes, Routes of infection, and Effects of Prion Diseases, including Sporadic, Familial, Iatrogenic & Variant Forms (vCJD) of Creutzfeldt-Jakob disease. • Describe the causes, routes of infection, pathologic features, CSF Findings, effects, & complications of meningitis. • Describe the most Characteristic Histologic Features of Viral Encephalitis. • Pathologic Features of nervous System Infection by: Arboviruses; Herpes Simplex Virus Type 1& 2, Varicella-Zoster Virus, & Cytomegalovirus, Poliovirus, Rabies, & Progressive Multifocal Leukoencephalopathy and fungi. • Understand peripheral neuropathies including diabetic neuropathy and vitamins involved (especially thiamine and pyridoxine)	MCQ exams
		Microbiology **Lecture (5)** **Infectious diseases of the peripheral nervous system**	• List infectious diseases of the peripheral nervous system. • List neurotoxin producing organisms. • Describe microbiological aspect, virulence factors, pathogenesis, clinical aspect, diagnosis, treatment and prevention of Clostridium tetani (Tetanus). • Describe microbiological aspect, virulence factors, pathogenesis, clinical aspect, diagnosis, treatment and prevention of Clostridium botulinum (Botulism). • Describe microbiological aspect, virulence factors,	MCQ exams

			pathogenesis, clinical aspect, diagnosis, treatment and prevention of Mycobacterium leprae (Leprosy). • Define and list infection-related causes of Guillain-Barre syndrome.	
		Biochemistry **Lecture (2)** **Biochemistry of peripheral nerves**	• Describe the biochemical principles of peripheral neuropathies including diabetic neuropathy and the vitamins involved (especially thiamine and pyridoxine).	MCQ exams
		Pharmacology **Lecture (1)** **Directly acting cholinergic agonists**	• Identify the anatomical and functional divisions of nervous system • Describe the Sympathetic and parasympathetic functions • Describe the Adrenergic and cholinergic receptors distributions • Review the steps involved in the synthesis, storage, release and the termination of action of acetylcholine • Mention examples on inhibitors of acetylcholine synthesis, storage, and release. • List the locations and types of acetylcholine receptors in various organ systems. • Describe the effects of acetylcholine on major organ systems. • List the major clinical indications and adverse effects of cholinomimetic agonists.	MCQ exams
		Pharmacology **Lecture (2)** **Indirectly acting cholinergic agonists**	• Describe the distribution and function of cholinesterase • Provide a classification and examples on drugs that inhibit cholinesterase • List the major clinical indications and adverse effects of reversible cholinestrase inhibitors. • Treatment of myathenia gravis	MCQ exams

			& differences between myathenic and cholinergic crises • List the major signs and symptoms of organophosphate insecticide poisoning. • Describe the treatment modalities of organophosphate poisoning.	
		Pharmacology **Lecture (3)** **Cholinergic antagonists**	• Describe the MOA of NMBs • Mention clinical use of NMBs • Mention examples of NMBs • Mention the two types of NMBs • Describe the differences between depolarizing and non-depolarizing NMBs • Describe the effects of cholinergic antagonists on various organ systems. • List the major clinical indications of muscarinic antagonists • List the major adverse effects of anti- muscarinic agents. • Describe the signs, symptoms and treatment of atropine poising.	MCQ exams
		Pharmacology **Lecture (4&5)** **Adrenergic agonists.**	A) • Review the steps involved in the synthesis, storage, release and the termination of action of epinephrine and norepinephrine • List examples on the inhibitors of norepinephrine synthesis, storage, release and re-uptake. • List the locations, types and effects of adrenergic receptors in various organ systems. • Describe the major systemic effects, clinical applications and major adverse effect of endogenous catecholamines. B) • List the classification, the major clinical applications and adverse effect of of α & β receptor agonists.	MCQ exams

			• List the major clinical applications and adverse effect of indirect acting sympathomimetic amine.	
		Pharmacology **Lecture (6)** **Adrenerg antagonists.**	A) • Provide a classification for alpha receptor antagonists • List the main indications and the major adverse effects of alpha receptors antagonists. B) • Compare the pharmacokinetics of various ß receptor antagonists • Describe the main indications and major adverse effects of ß receptors antagonists • Medical Treatment of glaucoma.	MCQ exams
		Community medicine **Lecture (1)** **Epidemiology of common peripheral nervous system disorders**	• Explain the epidemiology of some infections of the peripheral nervous system like tetanus, clostridium botulism, leprosy, syphilis poliomyelitis, Guillain-Barre syndrome, rabies and herpes zoster.	MCQ exams
		Community medicine **Lecture (2)** **Epidemiology of diseases and infections of the peripheral nervous system**	• Explain the risk factors of peripheral nervous system infections. • Describe the epidemiological features of common peripheral nervous system infections. • Explain preventive measures for peripheral nervous system infections.	MCQ exams
E1 **E2** **E6**		**Clinical sessions (2)**	1. Examine the PNS systematically (motor, sensory, reflexes, special tests). 2. Localise lesions (nerve, root, plexus, or polyneuropathy). 3. Diagnose common PNS disorders (e.g., carpal tunnel, Guillain-Barré, radiculopathy).	MCQ exams

			4. Select appropriate investigations (NCS/EMG, MRI, labs) and interpret key findings. 5. Recognise red flags requiring urgent referral (e.g., cauda equina, rapidly progressive weakness).	

Program Learning Outcomes	Students learning outcomes of the practical sections		Assessment methods
D1 **D2** **D3** **D5** **E2** **E3**	**Anatomy Lab (1)** • **Central pathways of special senses.** • **Eye, and Ear**	• Follow the central pathways of the special senses from the receptors to the cerebral cortex. • Identify the bones that form the orbit. • Identify the parts of the lacrimal apparatus, the main features of the eyelids, and the muscles of the eye. • Identify the main parts of the eyeball. • Identify the various layers of the retina. • Identify the different parts of the ear and their main features.	MCQ exams
	Anatomy Lab (2) • **Cranial nerves.** • **Sympathetic and parasympathetic nervous system.** • **Spinal plexuses.**	• Identify and recognize cranial nerves concerning their courses, branches, distributions. • Identify the components of Sympathetic and parasympathetic nervous system. • Identify the loction of the parasympathetic ganglia in the head. • Identify the cervical plexus and its branches • Identify brachial plexus and Nerves of the upper limb. • Identify Lumbo-sacral plexus and nerves of the lower limb. • Compare & contrast between student's understanding and the real thing seen in the lab.	

	Physiology Lab • **Visual acuity test, Snellen Charts.** • **Color vision test using Ischihara charts.** • **Auditory tests, including Rennin's and Webber's tests.**	• To perform visual acuity test Color vision test, experiments demonstrating and interpret the results • To perform: Auditory tests, including Rennin's, Webber's, and interpret the results	MCQ exams
	Pathology Labs (1&2) • **Pathological lesions of the various CNS disorders**	• Describe the gross and microscopic features of the pathological lesions of the various CNS and peripheral nervous system disorders (tumors, myelin diseases).	MCQ exams
	Microbioloy Lab • **CSF test**	• Identify CNS pathogens using CSF analysis. • Identify the method of specimen collection: indications and contraindications, equipment, process of lumbar puncture, transportation of specimen, storage and complications of LP. • Identify media used for cultures , Identify the pathogenic organisms	MCQ exams
	Biochemistry Lab • **Vitamin B12**	• Understand the steps of performing blood vitamin B12 level, interpret results, discuss their clinical significance especially on peripheral nerves and provide an accepted treatment approach for cases of vitamin B12 deficiency.	MCQ exams

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate, and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual needs.
Special Needs Section: Student Services and Care Unit Tel:
053903333 ext. 4132 / 4583 / 5023
Location: Deanship of Students Affairs Email:
stydent@hu.edu.jo

COURSE REGULATIONS

Participation
Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the**

first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.

In exceptional cases, the student, with the Instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The Instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

Plagiarism

Plagiarism is considered a serious academic offense and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviors that compromise his/her own integrity as well as that of the Hashemite University.

Plagiarism includes the following examples, and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

The Instructor has the right to fail the coursework or deduct marks where plagiarism is detected.

Late or Missed exams:

In all cases of assessment, students who fail to attend an exam, on the scheduled date without prior permission, and/or are unable to provide an accepted medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term assignment or class project on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission, in line with University regulations, an incomplete grade for the specific assessment will be awarded, and an alternative assessment or extension can be arranged.

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non- academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Course Calendar and Assessment

Students will be graded through the following means of assessment, and their final grade will be calculated from the forms of assessment as listed below, with their grade weighting taken into account.

For the modules OR general courses WITH PRACTICAL SESSIONS, please use the following table:

Assessment	Grade Weighting	Deadline Assessment
Mid Exam	40%	TBD
Practical Exam	20%	TBD
Final Exam	40%	TBD

Description of Exams

Test questions will predominately come from the material presented in the lectures. The exam will consist of multiple-choice questions for the regular exams and short essay questions for makeup exams (for students with accepted excuses, only documented absences will be considered as per HU guidelines). Detailes are explained at the end of the file.

Grades are not negotiable and are awarded to the *MD program* according to the following criteria*:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

Will be announced 1 week before starting the course /module