

Syllabus*: Neurosciences II (111501306) Third Year-Second Semester-2023/2024

COURSE INFORMATION				
Course Name: Neurosciences II Course Code: 11150130				
	Section: Preclinical Modules			
Semester: 2nd	Core Curriculum: MD program			
Department: Anatomy, physiology & biochemistry				
Faculty: Medicine				
Day(s) and Time(s): Variable	Credit Hours: 4			
	Prerequisites: NA			
Classroom: Faculty of Medicine Theatre				
Theoretical lectures: Faculty of Medicine Theatre				
Practical sessions: labs of Physiology				
COURSE DESCRIPTION				
This is an integrated system-based module which explores anatomy physiology pharmacology				

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
- Relevant papers and reading materials
- E-learning resources: e-reading assignments, virtual meetings, and practice quizzes through Microsoft Teams.

FACULTY INFORMATION

Course Coordinator	
Name	Dr. Amany Mohamed Allam Swilam
AcademicTitle:	Assistant Professor- Anatomy& Embryology
Office Location:	Ground floor (1031), Faculty of Medicine – Hashemite University
Telephone	0779513469
Email Address:	amany@hu.edu.jo
Office Hours:	Office hours: Sunday (11-1 pm), Tuesday (11-1 pm).

Faculty members:

Subject	Members	Email Address	Office location	Office hours
Anatomy	Dr Ashraf Sadek	ashrafm@hu.edu.jo	3031	Sunday 11-1 Tuesday 11-1
	Dr. Heba Ali	Heba ali@hu.edu.jo	1092	Sunday 12-2 Monday 12-2
Physiology	Dr. Shimaa Nasr	<u>shaimaa@hu.edu.jo</u>	3020	Sunday 11-1 Wednesday 11-1
Pathology	Dr. Ola Karasneh	Olaa@hu.edu.jo	1017	Sunday 10-12 Tuesday 10-12
Pharmacology	Dr. Yassmin Sleim	yasmeenm@hu.edu.jo	1022	Sunday 10.5-12.5 Tuesday 10.5-12.5
Microbiology	Dr. Hala tabl	halaa_mo@hu.edu.jo	1041	Sunday 11-1 Tuesday 11-12
Biochemistry	Dr. Ahmed Salem	asalem@hu.edu.jo	1019	Monday &Wednesday 9 - 1
Community Medicine	Dr. Omnia Anwer	omnia@hu.edu.jo	1021	Monday &Wednesday 11- 12, 1-2
Clinical	Dr. Abd El Halem	newhaleem@gmail.com		

lectures		

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.
- www.medicalstudent.com or search the www for any subject of your preference.

PHYSIOLOGY:

• Textbook of Medical Physiology, by Guyton and Hall.

BIOCHEMISTRY:

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

PATHOLOGY:

- Basic Pathology. By Kumar, Cotran and Robbins.
- Essential Pathology. By Rubin.
- Supplementary handouts

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, AH Suryakantha, JAYPEE BROTHERS MEDICAL PUBLISHERS (P) LTD
- Parks Textbook Of Preventive & Social Medicine 23rd Edition
- Monica's Text Book Community Medicine Part 1
- Monica's Text Book Community Medicine Part 2

CLINICAL LECTURES

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

TOPICS DETAILS/ STUDENT LEARNING OUTCOMES MATRIX *				
Course Objectives			Course Student Learning Outcomes	Assessment Method
Learning objectives outcomes	TOPIC (SUBJECTS & NUMBER OF LECTURES / SUBJECT)	SUBJECT	Intended Learning Outcomes	-Online quizzes. -Exams
 A-Biomedical: 1. Describe the functions of the central and peripheral nerves and relate structure to function. 2. Describe and identify the gross morphology and microanatomy of the of the peripheral nerves of peripheral 	<u>*T1</u> <u>Central</u> <u>nervous</u> <u>system :</u> <u>The total</u> <u>number of</u> <u>lectures for</u> <u>the topic:18</u> <u>lectures):</u> Anatomy 7 Pathology 6 Microbiolog 4 Community medicine 1	<u>Anatomy:</u> Face, scalp & trigeminal nerve. The external, middle ear & cranial nerve VII Inner ear & cranial nerve VIII. The neck. Triangles of the neck & cranial nerves XII. Development of head & neck. Cranial nerves IX & X Tongue, submandibular region & cranial nerve XI.	 Identify the gross anatomy and structural component of the skull and neck, especially structures related to cranial nerves. Identify the name number of cranial nerves and describe their sensory or motor functions of these nerves. Describe the origin, branches, route and final destinations and structures innervated by cranial nerves, and autonomic and somatic component of cranial nerves. Define the major clinical manifestations of each cranial nerve injury and understand the neurological sequel of lesions in cranial nerves. 	
 a. Outline the of the origin and destination of peripheral nerves and cranial and describe their sensory and motor functions. 4. Identify the organs of the special senses and describe their anatomical features, 		<u>*Pathology:</u> CNS tumors Primary Diseases of Myelin CNS infections & Prion Diseases	 Describe common disorders of special sensations caused by damage in sensory organs or lesions in neuronal pathways and neurological sequelae of these lesions. Describe the general features of primary CNS tumors in comparison to other tumors in the body, classify and know the gross, the histopathological features and the prognosis of the various types of primary CNS tumors. Describe the common malignant Metastatic Secondaries in the CNS, their pathologic characteristics & define the Paraneoplastic Syndromes. 	

	histology and			emphasis on Multiple Sclerosis, its	
	function.			clinical & morphological	
5.	Review the			characteristics	
	neurotransmitt			Describe the Pathologic Features,	
	ers and drugs			Causes, Routes of infection, and Effects	
	modifying the			of Prion Diseases, including Sporadic,	
	functions of			Familial, Iatrogenic & Variant Forms	
	the autonomic			(vCJD) of Creutzfeldt-Jakob disease.	
	nervous		Microbiology	Describe the Pathologic Features,	
-	system.		Purulent bacterial	Causes, Routes of CNS infection, and	
6.	List most		meningitis	Effects of	
	important		Prion disease	Prion disease	
	drugs used in		CNS infectious		
	the treatment		diseases		
	of disorders		Aseptic meningitis		
	that affect the		encephalitis		
	peripheral				
	nervous				
	systems		C		
	including their		<u>Community</u>	Derkinson's discass, and moningitis	
	pharmacologic		<u>medicine</u>	Farkinson's disease, and mennights	
	properties		Epidemiology of		
	indications		the meningitis,		
	dosos and sido		stroke, Parkinson's		
	offoots		disease		
7	List the				
7.	List the	<u>T2</u> Special	Anatomy	Identify central Pathways for special	
	pathologic	<u>Special</u>	Central pathways for	senses (olfactory, taste, visual, auditory	
	disorders that	The total	special senses	& vestibular pathways).	
	affect the	number of	The orbit	Describe the gross anatomy, histology	
	central and	lectures for	&The eye Optic	and functions of special sensory organs.	
	peripheral	the topic : 12	nerve		
	nervous	lectures)			
	systems, their		<u>Physiology</u>	.1	
	pathogenesis,	Anatomy 3	Physiology of the	Identify The principle function of	
	manifestations		eye.	the special sensory organs	
	, and	Physiology 8	Pupil Reflexes and		
	histological	Die ek ensistere	accommodation	Describe the structure and function of	
	features.	Biochemistry	retina	the neural elements of ergens (encoded)	
8	List the	1	Central	the neural elements of organs (special	
0.	common	*	neurophysiology of	sensory receptors).	
	diseases of the		vision	Explain how various environmental	
	normous			stimuli are converted to sensory signals	
	nervous		Biochemistry	(ionic basis of sensory transduction and	
	system,		of vision	mechanism of sensory coding.	
	including their		Physiology of	Outline and identify the components of	
	etiologic		Hearing	the central neuronal pathways carrying	
	agents,		Vestibulo- ocular	special sensations to the cerebral cortex	
	pathogenesis,		reflexes (VOR) &	and their function.	
	manifestations		Eye movements Balance &		
	, describe the		Equilibrium		

enidemiology		Chemical senses.		Outline important biochemical basis of	
of diseases		taste & smell		vision and describe the role of vitamin	
that affact the				A in vision	
				A III VISIOII	
nervous					
system and					
management if	Т2.	Anotomy		Identify aning names at different lavels	
possible.	<u>13:</u> Dominihanal	Histology of		Identity spinal herves at different levels	
9. List most	<u>Peripiteral</u>	nistology of		of spinal cord and their functions.	
important	system	system		Describe the structure of nerve plexuses	
drugs used in	The total	Cervical plexus		and identify the distribution of nerves of	
the treatment	number of	Brachial plexus		the cervical plexus, brachial, lumbar and	
of disorders	lectures for	Lumbosacral plexus.		sacral plexuses.	
that affect the	the topic : 13	Sympathetic and		Identify the origin, branches, route and	
peripheral	lectures)	parasympathetic		final destinations and structures	
nervous		nervous system		innervated by autonomic component of	
systems	Anatomy 2			peripheral nerve and cranial nerves.	
including their	Pharmacolog		6.	Define the major clinical manifestations	
nbarmaaala =i=	6 De the less 2			of spinal nerves injury and understand	
pharmacologic	Pathology 2 Microbiology			the neurological sequel of lesions in	
properties,	MICFODIOIOgy			these nerves	
indications,	1 Community		7	Use this information to build a diagnosis	
doses and side	medicine 1		7.	of different neurological disenders	
effects.	Biochemistry			of different neurological disorders	
10. Correlate the basic	1			resulted from lesions involving PNS,	
biomedical knowledge				and cranial nerves or spinal cord trauma.	
to the clinical skills			8.	Describe the clinical significance of	
B -Critical thinking				dermatomes.	
ekille.					
<u>SKIIIS.</u>					
1-Observe, identify and		Pharmacology_		Describe drugs affecting modifying	
predict health problems		Directly acting		autonomic nervous system	
based on previous		cholinergic		transmission, their classification, their	
experience and make		agonists		effects mechanism of action and use in	
decisions based on		Indirectly acting		management of peripheral nervous	
evidence rather than		cholinergic		diseases.	
opinion		agonists		Identify drugs used in the management	
2-Draw conclusions		Cholinergic		of common neurological disorders of	
about the collected data		antagonists		the nervous system and describe their	
(inference).		Adrenergic		mechanism of action side effects and	
		agonists.		rational of using those drugs	
3-Maintain good		Adrenergic		rational of using these drugs.	
communication habits,		agonists.			
such as active listening		Adrenergic			
and respect.		agonists.			
4-Improve problem-		Adrenergic			
solving skills		antagonists			
See and Section		Adrenergic			
5- Demonstrate		antagonists			
knowledge of resources					
			1		1

and tools available to	Pathology and	Describe common disorders of special
support lifelong	biochemistry	sensations caused by damage in
learning	Peripheral nerves	sensory organs or lesions in neuronal
	Diseases	pathways and neurological sequelae of
		these lesions.
		beschbe the Origin, types, sites, gross
		& microscopic features and effects of
		each one of the peripheral nerve tumors.
		Define the Causes & Pathologic features
		of the three Familial Tumor Syndromes:
		Type 1 & 2 Neurofibromatosis,
		Von Hippel-Lindau Disease, and
		Tuberous Sclerosis.
		Know the various causes and types of
		peripheral neuropathies.
		Describe the biochemical principles of
		peripheral neuropathies including
		diabetic neuropathy and vitamins
		involved (especially thiamine and
		pyridoxine)
		Describe the causes, routes of infection.
		pathologic features CSF Findings
		effects & complications of (1) Acute
		pyogenic meningitis (2) Asentic
		meningitis (3) Chronic Tuberculous
		moningitis (4) Nourosymbilis
		Describe the most Characteristic
		L'istaliai East and Minil
		Histologic Features of Viral
		Encephalitis.
		comment on the 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
	Microbiology	Describe the Pathologic Features,
	Infectious diseases	Causes, Routes of peripheral nervous
	of the peripheral	system infections
	nervous system:	
	<u>Community</u>	describe the epidemiology of common
	medicine	infectious diseases affecting
	Epidemiology of	theperipheral nervous system.
	infections of the	
	peripheral nervous	
	system&	
	Epidemio logy of	
	common	

	peripheral nervous		
	system disorders		
Clinical sessions (2)	1	-
-peripheral neuropa	y uthy		
-peripheral nerve ir	niury: types and management	nt	
-infections of the P	NS		
-tumors of PNS			
-clinical approach:	history and physical examination	nation of PNS	
- diagnostic tools: N	ICS		
Practical Sessions			
	Brachial	ILOS	7
Anatomy	plexus and	To identify and recognize	
labs (2)	Nerves of the	individual structures.	
	upper limb.	Compare & contrast between student's	
	Lumbo-sacral	understanding and the real thing seen	
	plexus and	in the lab	
	nerves of the	in the fab.	
	lower limb.		
Physiology	Visual acuity	to perform Visual acuity test Color	
lah (1)	test Snellen	vision test experiments	
(1)	Charte	domonstrating and interpret the	
		demonstrating and interpret the	
	Color vision	results	
	test using	to perform:	
	Ischihara	Auditory tests, including Rennin's,	
	charts.	Webber's, and caloric test tests	
		and interpret the results	
	Confrontation	and interpret are results	
	ai Perimetry		
	Auditory		
	tests,		
	including		
	Rennin's and		
	Webber's		
	tosts		
	Audiometry		
	caloric test		
Microbiology	CSF test	identify CNS pathogens using CSF	
lab (1)		analysis.	
		identify the method of specimen	
		collection; indications and	
		contection. indications and	
		contraindications, equipment,	
		process of lumbar puncture,	
		transportation of specimen,	
		storage and complications of LP.	
		identify media used for cultures	
1	1	identity media used for cultures,	

			Identify the pathogenic organisms	
	Pathology labs (2)	pathological lesions of the various CNS disorders	identify, describe and diagnose the common and the important pathological lesions of the various CNS disorders	

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 <u>should not miss more than 15%</u> 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	Deadline
	Weighting	Assessment
Exam 1	40%	TBD
Exam 2 (practical)	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).

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
А		3.75
A-		3.50
B+	Very Good	3.25
В		3.00
В-		2.75
C+	Good	2.50
С		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
	Incomplete	-

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

Will be announced **1** *week before starting the course /module.*