



Course Specifications

Course Title:	Neuroscience Block
Course Code:	NEU241
Program:	Bachelor of Medicine, Bachelor of Surgery (MBBS)
Department:	NA
College:	College of Medicine
Institution:	Alfaisal University

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A. Course Identification

1. Credit hours: 6 (4+2+2)
2. Course type
a. University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: Sem 4, Year 2
4. Pre-requisites for this course (if any): Sem 1 and 2
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	80	57%
2	PBL, TBLs	40	29%
3	Labs	20	14%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	80
2	Laboratory/Studio	20
3	Tutorial	40
4	Others (specify)	
	Total	140

B. Course Objectives and Learning Outcomes

1. Course Description

This block is fully integrated – covering normal structure and function as well as integrating disease processes and pharmacotherapy of the diseases related to neurology and psychiatry. In addition, a clinical skills program runs concurrently, teaching the students the skills required for examination and diagnostic approach to different clinical presentations in neurologic and psychiatric disorders.

2. Course Main Objective

The main objective of the Neuroscience course is to relate normal structure and function of the Central Nervous System with signs and symptoms, epidemiology, risk factors, pathophysiology, and drugs used in the treatment of common neurological and psychiatric disorders.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	

CLOs		Aligned PLOs
1.1	Relate the normal structure of the central nervous system including spinal cord, brain stem, cerebellum, basal ganglia and cerebrum with sensory, motor and higher mental functions	PLO1
1.2	Relate the normal structure and embryological development of the central nervous system including spinal cord, brain stem, cerebellum, basal ganglia and cerebrum with lesions of sensory and motor pathways and diseases of nervous system.	PLO1,2
1.3	Describe the risk factors, epidemiology, signs and symptoms and pathophysiology of common neurological diseases including peripheral neuropathies, cerebrovascular disease, epilepsy, CNS tumors, degenerative diseases, and demyelinating diseases.	PLO4,7,9,11
1.4	Describe the mode of action, pharmacokinetics, pharmacodynamics and side effects of the drugs used in common neurological/psychiatric disorders including analgesics, anesthetics, antiepileptics, antipsychotic, antidepressants, sedative & anxiolytics and drugs used in degenerative disorders and migraine.	PLO6
1.5	Describe the risk factors, epidemiology, signs and symptoms and pathophysiology of common psychiatric diseases including mood disorders, anxiety disorders, schizophrenia, eating disorders, sleep disorders, personality disorders, substance abuse and other forms of psychosis.	PLO3,11
1.6	Describe the risk factors, epidemiology, signs and symptoms and pathophysiology of common types and CNS infections	PLO4,7,12, 30
1.7	Relate the normal structure of neurons and glial cells with cellular neurophysiology and disease process	PLO1,9
2	Skills :	
2.1	Demonstrate how to record the conduction velocity of a peripheral nerve.	PLO5
2.2	Demonstrate how to record an electromyogram (EMG) from an antagonistic pair of muscles.	PLO5
2.3	Demonstrate how to record basic fronto-occipital brain waves.	PLO5
2.4	Demonstration/Identification of gross structural organization of components of the brain and spinal cord using cadaveric dissections, models, plastinated specimens, and images e.g. X-rays, CT-Scan, etc.	PLO5
2.5	Identify and describe the microscopic appearance of important pathogens causing meningitis.	PLO5
2.6	Interpret CSF analysis report for acute and chronic meningitis.	PLO5
2.7	Identify and describe the microscopic appearance of parts of central nervous systems.	PLO5
2.8	Perform hypothetical deductive reasoning using PBL cases to diagnose common neurological and psychiatric diseases	PLO11,12,16, 17,18,30
2.9	Perform hypothetical deductive reasoning using PBL cases to interpret clinical data and develop appropriate first line management	PLO12,16,17, 18,30
3	Values:	
3.1	Adhere to the attendance policy.	
3.2	Maintain professional conduct with colleagues, faculty, and staff.	

C. Course Content

No	List of Topics	Contact Hours
1	<p>Anatomy</p> <ol style="list-style-type: none"> 1. Neuron, synapse and glial cells 2. Organization of the nervous system 3. Meninges and ventricular system 4. Spinal cord structure 5. Ascending and descending tracts of the spinal cord 6. Brainstem structure 7. Cranial cavity and Dural venous sinuses 8. Cerebral cortex and functional areas 9. Blood supply of cerebrum 10. Basal Ganglia 11. Cerebellum 12. Limbic system 13. Diencephalon 14. Development of the Nervous system 	30
2	<p>Physiology</p> <ol style="list-style-type: none"> 1. Electrical properties of excitable cells 2. Synaptic Neurotransmission 3. Reflexes, Muscle Tone 4. Sensory receptors 5. Cerebrospinal fluid 6. Pain mechanisms 7. Normal Brain Waves and Physiology of Sleep 8. Memory and learning 9. Emotions 	18
3	<p>Pathology</p> <ol style="list-style-type: none"> 1. Response of CNS cells to injury 2. Demyelinating diseases 3. Peripheral neuropathies 4. Pathology of CNS infections 5. Lesions of the spinal cord and disc herniation 6. Intracranial space occupying lesions (ICSOL) I 7. Intracranial space occupying lesions (ICSOL) II 8. Stroke and intracranial hemorrhage 9. Degenerative brain diseases 	20

4	Pharmacology <ol style="list-style-type: none"> 1. Anesthetics 2. Drugs for meningitis 3. Drugs for migraine 4. Opioid Analgesics 5. Drugs for Epilepsy 6. Drugs used in Parkinson's and Dementia 7. Sedatives / Hypnotics 8. Anti-depressants 9. Anti-psychotics 10. CNS stimulants/Hallucinogens 	20
5	Clinical and Radiology <ol style="list-style-type: none"> 1. Overview of the peripheral neuropathies 2. Approach to a patient with fever and neck stiffness 3. Approach to a patient with headache" 4. Neuroimaging - normal anatomy 5. Spinal cord injuries and syndromes 6. Radiological investigations in a patient with a space occupying lesion 7. The unconscious patient – general principles 8. Epilepsy 9. Approach to a patient with stroke 10. Radiological investigations in the stroke patient 11. Parkinson's disease (and other basal ganglia motor disorders) 12. Imaging modalities in degenerative CNS disease 13. Alzheimer's disease and other dementias 	26
6	Psychiatry <ol style="list-style-type: none"> 1. The Psychiatric interview 2. Mood disorders 3. Anxiety disorders 4. Schizophrenia and psychosis 5. Eating disorders 6. Sleep disorders 7. Personality disorders 8. Childhood disorders 9. Substance Abuse 	18
7	Others <ol style="list-style-type: none"> 1. Infections of the peripheral nervous system 2. Meningitis 	8

	3. Encephalitis and Prion diseases	
	4. Diagnosis of CNS infections	
Total		140

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Relate the normal structure of the central nervous system including spinal cord, brain stem, cerebellum, basal ganglia and cerebrum with sensory, motor and higher mental functions	Lectures, PBLs, and TBLs	Continuous and summative assessment
1.2	Relate the normal structure and embryological development of the central nervous system including spinal cord, brain stem, cerebellum, basal ganglia and cerebrum with lesions of sensory and motor pathways and diseases of nervous system.	Lectures, PBLs, and TBLs	Continuous and summative assessment
1.3	Describe the risk factors, epidemiology, signs and symptoms and pathophysiology of common neurological diseases including peripheral neuropathies, cerebrovascular disease, epilepsy, CNS tumors, degenerative diseases, and demyelinating diseases.	Lectures, PBLs, and TBLs	Continuous and summative assessment
1.4	Describe the mode of action, pharmacokinetics, pharmacodynamics and side effects of the drugs used in common neurological/psychiatric disorders including analgesics, anesthetics, antiepileptics, antipsychotic, antidepressants, sedative & anxiolytics and drugs used in degenerative disorders and migraine.	Lectures, PBLs, and TBLs	Continuous and summative assessment
1.5	Describe the risk factors, epidemiology, signs and symptoms and pathophysiology of common psychiatric diseases including mood disorders, anxiety disorders, schizophrenia, eating disorders, sleep disorders, personality disorders, substance abuse and other forms of psychosis.	Lectures, PBLs, and TBLs	Continuous and summative assessment

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.6	Describe the risk factors, epidemiology, signs and symptoms and pathophysiology of common types and CNS infections	Lectures, PBLs, and TBLs	Continuous and summative assessment
1.7	Relate the normal structure of neurons and glial cells with cellular neurophysiology and disease process	Lectures, PBLs, and TBLs	Continuous and summative assessment
2.0	Skills		
2.1	Demonstrate how to record the conduction velocity of a peripheral nerve.	Labs	Summative assessment
2.2	Demonstrate how to record an electromyogram (EMG) from an antagonistic pair of muscles.	Labs	Summative assessment
2.3	Demonstrate how to record basic fronto-occipital brain waves.	Labs	Summative assessment
2.4	Demonstration/Identification of gross structural organization of components of the brain and spinal cord using cadaveric dissections, models, plastinated specimens, and images e.g. X-rays, CT-Scan, etc.	Labs	Summative assessment
2.5	Identify and describe the microscopic appearance of important pathogens causing meningitis.	Labs	Summative assessment
2.6	Interpret CSF analysis report for acute and chronic meningitis.	Labs	Summative assessment
2.7	Identify and describe the microscopic appearance of parts of central nervous systems.	Labs	Summative assessment
3.0	Values		
3.1	Perform hypothetical deductive reasoning using PBL cases to diagnose common neurological and psychiatric diseases.	PBL	Continuous and summative assessment
3.2	Perform hypothetical deductive reasoning using PBL cases to interpret clinical data and develop appropriate first line management.	PBL	Continuous and summative assessment
3.3	Adhere to the attendance policy.		Continuous assessment
3.4	Maintain professional conduct with colleagues, faculty, and staff.		Continuous assessment

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	PBL	Weekly	5%
2	TBL-1	5	3.33%
3	Mid-term	6	15%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
4	TBL-2	7	3.33%
5	TBL-3	9	3.33%
6	Final Exam	11	70%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

The CoM program established its own mentorship program that employs all full-time faculty as mentors. Through this program, every medical student in the program is assigned a mentor at the beginning of their first semester of studies. The program has a broad scope covering academic advising and counseling. The mentors handle all aspects related to academic advising, including academic planning, academic performance review, advice on course drop or withdrawal, study skills, and time management.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> • Clinical Neuroanatomy by Richard S. Snell, 7th edition • Textbook of Physiology by Guyton and Hall, 12th edition • Neuroscience by Dale Purves et al 5th edition • Robbins Basic Pathology 9th edition • Basic & Clinical Pharmacology (Bertram Katzung) • MIMS Medical Microbiology 4th Ed. By Richard Goering et. al.
Essential References Materials	Human anatomy-videos (Ackland's DVD atlas), facilities at the anatomy resource center.
Electronic Materials	PowerPoint presentations uploaded on Alfaisal E-learning Portal Integrated medical curriculum: http://imc.meded.com Online resources identified by faculty from time to time
Other Learning Materials	The Alfaisal Library provides a wide array of electronic databases of reference books and journals through multiple databases include ScienceDirect(TM).

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms, Dissection Lab, Physiology Lab
Technology Resources (AV, data show, Smart Board, software, etc.)	AV (Audio-Visual), Smartboard, Moodle (E-learning Management)
Other Resources	

Item	Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course and Faculty Evaluation Survey	Students	Survey

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	