

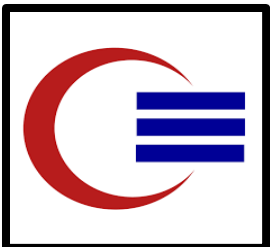
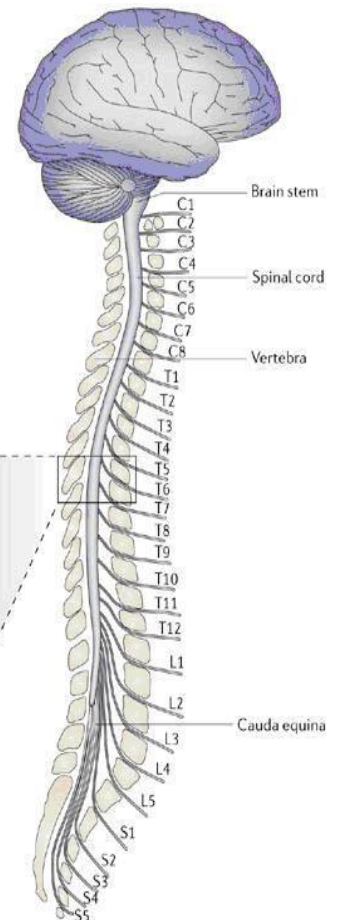
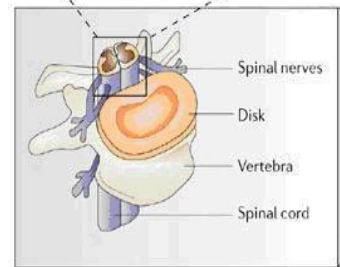
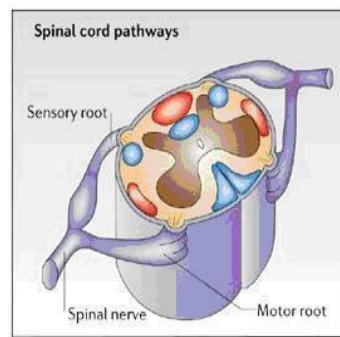
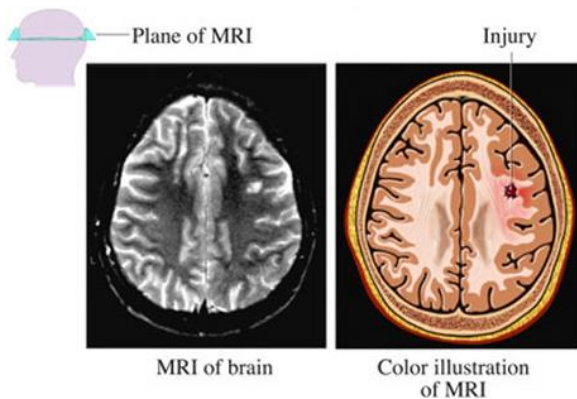
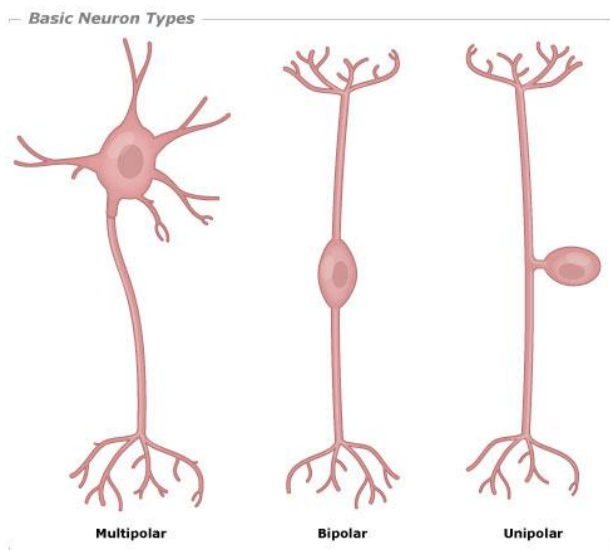


STUDY GUIDE

NEUROSCIENCES MODULE

SECOND YEAR MBBS SEMESTER 3

14th Jan – 26th Feb 2019
Duration: 6 weeks



**LIAQUAT NATIONAL HOSPITAL
& MEDICAL COLLEGE**



STUDY GUIDE FOR NEUROSCIENCES MODULE

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Module name: **Neurosciences**

Semester: **Three**

Year: **Two**

Duration: **6 weeks (Jan – Feb 2019)**

Timetable hours: **Interactive Lectures, Case-Based Learning (CBL), Self-Study, Practical, Skills, Demonstrations, Visit to Wards & Laboratory**

Credit hours: **6 credit hours in theory and 3 credit hours in practical**

MODULE INTEGRATED COMMITTEE

MODULE COORDINATOR:	<ul style="list-style-type: none"> • Dr. Ahsan Ashfaq (Physiology)
CO-COORDINATORS:	<ul style="list-style-type: none"> • Professor Nighat Huda • Dr. Fizzah Ali (Pharmacology)

DEPARTMENTS' & RESOURCE PERSONS' FACILITATING LEARNING

BASIC HEALTH SCIENCES	CLINICAL AND ANCILLARY DEPARTMENTS
ANATOMY <ul style="list-style-type: none"> • Professor Zia-ul-Islam • Professor Masood Ahmed 	ANESTHESIA <ul style="list-style-type: none"> • Dr. Nighat Abbas • Dr. Ali Asghar
BIOCHEMISTRY <ul style="list-style-type: none"> • Professor Naheed Qadir 	MEDICINE <ul style="list-style-type: none"> • Professor Karim Ullah Makki
COMMUNITY MEDICINE <ul style="list-style-type: none"> • Professor Rafiq Soomro 	NEUROMEDICINE <ul style="list-style-type: none"> • Dr Naveeduddin Ahmed
PATHOLOGY <ul style="list-style-type: none"> • Professor Naveen Faridi 	NEUROSUGERY <ul style="list-style-type: none"> • Dr. Salman Yousuf Sharif
PHARMACOLOGY <ul style="list-style-type: none"> • Professor Nazir Ahmad Solangi 	RADIOLOGY <ul style="list-style-type: none"> • Dr. Roomi Mahmud
PHYSIOLOGY <ul style="list-style-type: none"> • Professor Syed Hafeezul Hassan 	RESEARCH & SKILLS DEVELOPMENT CENTER <ul style="list-style-type: none"> • Dr Kahkashan Tahir
DEPARTMENT OF HEALTHCARE EDUCATION	
<ul style="list-style-type: none"> • Professor Nighat Huda • Dr. Afifa Tabassum • Dr. Sobia Ali • Dr. M. Suleman Sadiq • Dr. Mehnaz Umair 	
LNH&MC MANAGEMENT	
<ul style="list-style-type: none"> • Professor KU Makki, Principal LNH&MC • Dr. Shaheena Akbani, Director A.A & R.T LNH&MC 	
STUDY GUIDE COMPILED BY: Department of Health Care Education	<ul style="list-style-type: none"> • Dr. Muhammad Suleman Sadiq

INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

- Inform students how student learning program of the semester-wise module has been organized
- Help students organize and manage their studies throughout the module
- Guide students on assessment methods, rules and regulations

THE STUDY GUIDE:

- Communicates information on organization and management of the module.
This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provides a list of learning resources such as books, computer assisted learning programs, web- links, journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous and semester examinations on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives.
- Focuses on information pertaining to examination policy, rules and regulations.

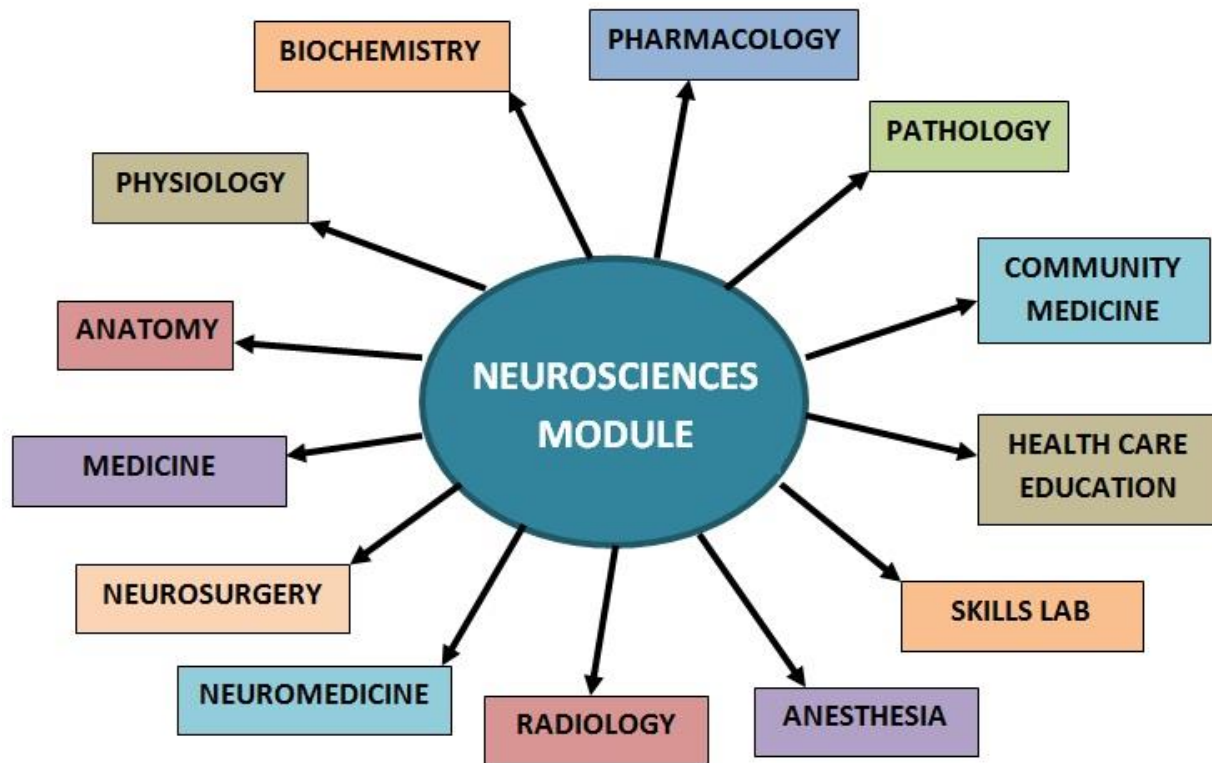
CURRICULUM FRAMEWORK

Students will experience *integrated curriculum* similar to previous modules of the 1st & 2nd semesters.

INTEGRATED CURRICULUM comprises of system-based modules such as Head and Neck, Neurosciences and Endocrinology which links basic science knowledge to clinical problems. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples.

Case-based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab are characteristics of integrated teaching program.

INTEGRATING DISCIPLINES OF NEUROSCIENCES MODULE



LEARNING METHODOLOGIES

The following teaching / learning methods are used to promote better understanding:

- Interactive Lectures
- Hospital / Clinic visits
- Small Group Discussion
- Case- Based Learning
- Practicals
- Skills session
- Self Study

INTERACTIVE LECTURES

In large group, the lecturer introduces a topic or common clinical conditions and explains the underlying phenomena through questions, pictures, videos of patients' interviews, exercises, etc. Students are actively involved in the learning process.

HOSPITAL VISITS: In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.

SMALL GROUP DISCUSSION (SMALL GROUP DISCUSSIONS): This format helps students to clarify concepts acquire skills or attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics. Students exchange opinions and apply knowledge gained from lectures, tutorials and self study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

CASE- BASED LEARNING: A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students' discuss and answer the questions applying relevant knowledge gained in clinical and basic health sciences during the module.

PRACTICAL: Basic science practicals related to anatomy, biochemistry, pathology, pharmacology and physiology are scheduled for student learning.

SKILLS SESSION: Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Department of Physiotherapy.

SELF STUDY: Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Center, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

SEMESTER 3 MODULE 2 : NEUROSCIENCES**INTRODUCTION**

Neuroscience is the study of the nervous system. It is a cross-disciplinary field that engages in investigating how the nervous system develops and functions on a cellular level as well as the mechanisms that underlie neurological disease. This module combines breadth of exposure to the field as a whole with the opportunity for depth of experience in one of three central domains of neuroscience: Cellular and Systems, Functional and Integration and Clinical Neurosciences.

When someone in the neighborhood develops stroke and the family wants to know what more can be done to improve the patient's lifestyle, or what are the chances his /her children will have stroke, it is our primary responsibility as future doctors to know not just the treatment but also preventive strategies for a healthy living.

Through this module you will develop an integrated, scientific knowledge that you can put into practice in a clinical setting, plus creative and problem-solving skills. These key skills will prepare you for a career helping to progress scientific discovery into clinical and medical practice, ultimately to improve human health.

Common Neurological Diseases & Disorders
Epilepsy
Alzheimer and other dementias
Parkinson's disease
Multiple sclerosis
Migraine
Cerebrovascular disease
Poliomyelitis
Tetanus
Meningitis
Japanese encephalitis
Nutritional deficiencies and neuropathies
Neurological injuries

WHO 2006

COURSE OBJECTIVES AND STRATEGIES

At the end of the module the students will be able to:

ANATOMY

OBJECTIVES	STRATEGY
<ul style="list-style-type: none"> Describe the development of forebrain, mid brain and hind brain and the spinal cord Enumerate the congenital anomalies of brain and spinal cord 	Interactive Lecture
<ul style="list-style-type: none"> Correlate the development of ventricles and meninges with associated congenital anomalies Discuss the development of peripheral and autonomic nerves 	
<ul style="list-style-type: none"> Describe the bony features of adult and fetal skull and cranial cavity 	Small Group Discussion
<ul style="list-style-type: none"> Discuss the general organization of nervous system Explain structure and functions of different types of neurons and neuroglial cells 	Interactive Lecture
<ul style="list-style-type: none"> Describe the microscopic features of nervous tissue, sensory receptors, ganglion, myelin sheath and blood brain barrier Explain cross sectional appearance of a nerve 	Practicals / Skills session
<ul style="list-style-type: none"> Describe the Gross and microscopic features of meninges of the brain and spinal cord Discuss dural venous sinuses along with their clinical importance 	Small Group Discussion
<ul style="list-style-type: none"> Discuss the gross anatomy and cross sections of spinal cords at different levels with its neurovascular supply 	Interactive Lecture
<ul style="list-style-type: none"> Discuss clinical importance of the ascending and descending tracts Describe the formation of spinal nerves and nerve plexuses 	Small Group Discussion
<ul style="list-style-type: none"> Discuss the clinical importance of brain stem (medulla, pons and midbrain) in relation to their structure and vascular supply Discuss the clinical conditions associated with medulla oblongata 	
<ul style="list-style-type: none"> Discuss the organization of Autonomic Nervous system (ANS) 	Interactive Lecture
<ul style="list-style-type: none"> Discuss the external and internal structures of cerebellum and associated fibers 	

<ul style="list-style-type: none"> Describe the gross features of diencephalon (thalamus, hypothalamus and epithalamus including pineal gland and their respective nuclei) Discuss the lesions of subthalamus, hypothalamus & epithalamus Discuss the clinical conditions associated with thalamus 	Case-Based Disussion
<ul style="list-style-type: none"> Describe the cerebral hemisphere with surfaces, lobes, sulci and gyri Explain the different cortical areas of brain with their functions and lesions 	Interactive Lecture
<ul style="list-style-type: none"> Describe the histological features of the cerebral and cerebellar cortex with different nerve cell types in cortex Discuss the clinical conditions associated with cerebellar dysfunction 	Practicals / Skills session
<ul style="list-style-type: none"> Describe the white matter of cerebral hemisphere (commissural, association and projection fibers) Describe the internal capsule including its fibers in different parts and blood supply 	Small Group Discussion
<ul style="list-style-type: none"> Describe the basal nuclei of brain Explain the major components of the limbic system Discuss the microscopic features of substantia nigra Discuss the disorders of limbic system Discuss the lesions of basal ganglia & its nuclei 	Interactive Lecture
<ul style="list-style-type: none"> Discuss the ventricular system of brain Explain the circulation of cerebrospinal fluid (CSF) Discuss the applied anatomy of ventricles and CSF flow Discuss the clinical conditions associated with lateral ventricles 	
<ul style="list-style-type: none"> Correlate the blood supply of the brain and spinal cord with their clinical significance in relation to ischemia or hemorrhage Describe the arterial circle of Willis with its clinical importance 	Team-Based Learning
<ul style="list-style-type: none"> Describe the autonomic nervous system Discuss the division of ANS into sympathetic & parasympathetic nervous system Discuss the components of sympathetic part of nervous system (thoracolumbar outflow: lateral gray horn, paravertebral sympathetic chain, prevertebral ganglia and plexuses) 	Interactive Lecture

<ul style="list-style-type: none"> • Describe the different fate (destination) of white and gray rami (preganglionic and post ganglionic fibers) • Discuss the components of parasympathetic part of nervous system (craniosacral outflow: parasympathetic cranial nerve nuclei and sacral spinal segments) • List the parasympathetic ganglia • Describe the pathways of pre and post ganglionic parasympathetic fibers 	
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BIOCHEMISTRY

OBJECTIVES	STRATEGY
<ul style="list-style-type: none"> • Describe chemical composition and function of blood brain barrier • Explain biochemical properties of brain lipids (Glycolipids) 	Interactive Lecture/Small Group Discussion
<ul style="list-style-type: none"> • Classify neurotransmitters based on their structure and mode of action 	
<ul style="list-style-type: none"> • Correlate different neurological disorders with abnormal levels of common neurotransmitters: <ul style="list-style-type: none"> • Acetyl choline along with Dementia and Alzheimers disease • Dopamine along with Parkinsons / Schizophrenia • Catecholamines along with Parkinsons / Schizophrenia 	
<ul style="list-style-type: none"> • Discuss the role of the following neurotransmitters: <ul style="list-style-type: none"> ▪ GABA ▪ Serotonin (Pain/ Sleep/ Mood disorders) 	
<ul style="list-style-type: none"> • Explain the serotonin metabolism with associated disorders 	
<ul style="list-style-type: none"> • Discuss the role vitamins B1 and B6 in neurological disorders 	
<ul style="list-style-type: none"> • Explain the role of free Radicals in neurodegenerative process 	
<ul style="list-style-type: none"> • Differentiate between normal and abnormal CSF based on its composition 	
<ul style="list-style-type: none"> • Estimate glucose, proteins and chloride in CSF 	

CLINICAL SCIENCES

OBJECTIVES	STRATEGY
<ul style="list-style-type: none"> Describe the importance of blockage of vessels supplying the brain 	Interactive Lecture
<ul style="list-style-type: none"> Discuss the clinical presentation of Cerebro-vascular accident (CVA) 	
<ul style="list-style-type: none"> Define stroke Classify its types Discuss the clinical features & risk factors of stroke List the investigations related to stroke 	
<ul style="list-style-type: none"> Discuss etiology and clinical features of epilepsy Discuss space occupying lesions of brain 	
<ul style="list-style-type: none"> Identify the normal radiological features of common brain and spinal cord on CT scan and MRI 	
<ul style="list-style-type: none"> Discuss the pain management 	
<ul style="list-style-type: none"> Discuss the head injuries and their prevention 	Interactive Lecture

COMMUNITY MEDICINE

OBJECTIVES	STRATEGY
<ul style="list-style-type: none"> Discuss endemic diseases of CNS Discuss epidemiology and preventive measures of common diseases like Poliomyelitis, Tetanus, Leprosy, Diphtheria, Stroke, and Rabies 	Interactive Lectures

PATHOLOGY

OBJECTIVES	STRATEGY
<ul style="list-style-type: none"> Describe the pattern of nerve injury and their regeneration 	Small Group Discussion
<ul style="list-style-type: none"> Explain etiology and pathogenesis of cerebral edema, hydrocephalus, raised intracranial pressure and types of brain herniation 	Interactive Lectures
<ul style="list-style-type: none"> Define and classify cerebrovascular diseases Describe types, etiopathogenesis, localization, morphology and clinical course of Hypoxia and Ischemia including Global cerebral ischemia, focal cerebral ischemia, thrombotic occlusion Discuss inflammatory processes as a cause of cerebral infarct Classify and explain non hemorrhagic Infarction, hemorrhagic infarction and spinal cord infarction 	
<ul style="list-style-type: none"> Discuss effects of hypertension on CNS including lacunar infarcts, Slit hemorrhages and hypertensive encephalopathy Explain etiology, pathogenesis and clinical course of hypertensive intraparenchymal hemorrhage Discuss etiology, pathogenesis, morphology and clinical course of cerebral amyloid angiopathy, Subarachnoid Hemorrhage and Ruptured Saccular Aneurysms, and Vascular malformations 	
<ul style="list-style-type: none"> Describe infections of CNS including meningitis and Encephalitis, their types, routes of infections, common pathogens, morphology and clinical presentation 	
<ul style="list-style-type: none"> Define traumatic vascular injury Explain patterns of vascular injury in the CNS including Epidural hematoma, and subdural hematoma Discuss sequelae of brain trauma and spinal cord injury 	
<ul style="list-style-type: none"> Interpretation of CSF specially with reference to Brain & Meningeal infection 	Practical

PHARMACOLOGY

OBJECTIVES	STRATEGY
<ul style="list-style-type: none"> • Describe the organization of ANS and systemic effects of stimulation of sympathetic and parasympathetic nervous system • List the major neurotransmitters in ANS and the steps in synthesis, storage and release of neurotransmitters • Explain how drugs can affect different steps of neurotransmission • Describe the major autonomic receptors in ANS, their location and their signal transduction mechanisms • Discuss the effect of activation of the various autonomic receptors 	Interactive Lecture
<ul style="list-style-type: none"> • Explain the types and location of cholinergic receptors, their signal transduction mechanisms and effect of activation of these receptors • Classify and list the cholinergic agonist drugs • Discuss the pharmacodynamics and pharmacokinetics of directly acting cholinomimetic drugs • Explain the mechanism of action of indirectly acting cholinomimetic drugs • Discuss the signs and symptoms, and treatment of organophosphate poisoning 	Case-Based Discussion
<ul style="list-style-type: none"> • List the muscarinic blocking drugs • Discuss the indications of muscarinic antagonists • Explain the adverse effects and contraindications for the use of muscarinic antagonists • Describe the systemic effects of atropine • Describe the signs and symptoms and treatment of atropine overdose 	Interactive Lecture
<ul style="list-style-type: none"> • Describe the nicotinic receptors, their location and signal transduction mechanism • Classify the neuromuscular blocking drugs and describe their mechanism of action • Compare the depolarizing and competitive neuromuscular blockers • Discuss the pharmacodynamic and pharmacokinetic properties of neuromuscular blocking drugs 	Case-Based Discussion

<ul style="list-style-type: none"> • Describe the adrenergic receptors, their location, signal transduction receptor subtypes β and α, mechanism and effect of activation • Classify the sympathomimetic drugs on basis of their receptor affinity and chemical structure • Compare catecholamines and noncatecholamines • Explain basic pharmacology of epinephrine, norepinephrine and isoproterenol and compare the cardiovascular effects of these drugs • Discuss other adrenergic agonists including, dopamine, phenylephrine, methoxamine, clonidine, amphetamine, ephedrine, MAO inhibitors etc 	Interactive Lecture
<ul style="list-style-type: none"> • Classify β and α blocking drugs and describe their mechanism of action • Describe the systemic effects, uses and adverse effects of β and α blockers • Explain the contraindications of blockers β and α • Explain the rationale for clinical use of blockers β and α 	Interactive Lecture
<ul style="list-style-type: none"> • Identify the components of a power lab and describe their functions 	Practicals
<ul style="list-style-type: none"> • List the composition of Tyrode's solution and functions of the components • Perform an experiment to show the effect of cholinergic agonist on rabbit ileum and interpret the results • Demonstrate the effect of atropine on rabbit ileum and interpret the results 	
<ul style="list-style-type: none"> • Perform an experiment to demonstrate the effect of cholinergic agonist on frog rectus muscle and interpret the results • Demonstrate the effect of a neuromuscular blocker on frog rectus muscle and interpret the results 	

PHYSIOLOGY

OBJECTIVES	STRATEGY
<ul style="list-style-type: none"> Define neuronal membrane potential and explain generation and propagation of nerve impulse 	Interactive Lecture
<ul style="list-style-type: none"> Define synapse and enlist properties of synapses 	
<ul style="list-style-type: none"> Classify sensory receptors and explain their functions including pacinian corpuscle 	
<ul style="list-style-type: none"> Describe muscle spindle proprioceptors along with their functions 	
<ul style="list-style-type: none"> Describe somatosensory pathways which include dorsal lemniscal and antero-lateral 	Interactive Lecture
<ul style="list-style-type: none"> Describe somatosensory cortex 	
<ul style="list-style-type: none"> Explain touch, pressure and temperature sensation Demonstrate body temperature recording from recommended sites Describe the mechanism of thermal receptors and their excitation 	Small Group Discussion
<ul style="list-style-type: none"> Explain the physiology of pain I 	Interactive Lectures
<ul style="list-style-type: none"> Explain the physiology of pain II 	
<ul style="list-style-type: none"> Describe functions of spinal cord and reflexes (superficial and deep) Discuss spinal cord transaction and spinal shock (Brown Sequard Syndrome) 	Practicals
<ul style="list-style-type: none"> Explain motor, vital and non-vital functions of brain stem in respiratory system, CVS, vasomotor centers, coughing, sneezing and vomiting reflexes 	Small Group Discussion
<ul style="list-style-type: none"> Enumerate physiologic correlation of various parts of cerebellum and its functions 	Interactive Lecture/Small Group Discussion
<ul style="list-style-type: none"> Describe the basic neuronal circuit of cerebellum along with cerebellar disorders 	
<ul style="list-style-type: none"> Explain pyramidal tracts along with Upper Motor Neuron (UMN) /Lower Motor Neuron (LMN) 	
<ul style="list-style-type: none"> Describe the functions of Diencephalon which includes Thalamus, Sub- Thalamus and Epithalamus 	
<ul style="list-style-type: none"> Explain Extra pyramidal tracts of the motor cortex 	

<ul style="list-style-type: none"> Describe functions and integration of Autonomic Nervous System I 	Interactive Lecture/Small Group Discussion
<ul style="list-style-type: none"> Explain functions of Autonomic Nervous System II 	
<ul style="list-style-type: none"> Describe structures included in the basal ganglia and their disorders Explain the functions of caudate and putamen pathways 	
<ul style="list-style-type: none"> Describe CSF formation and explain circulation and function 	
<ul style="list-style-type: none"> Describe Reticular Activation system, sleep and its disorders including electroencephalography 	
<ul style="list-style-type: none"> Explain functional description of limbic System Discuss the role of hypothalamus in limbic system Discuss the effects of Kluver-Bucy Syndrome 	
<ul style="list-style-type: none"> Describe mechanism of learning and memory 	
<ul style="list-style-type: none"> Explain speech and its related disorders 	
<ul style="list-style-type: none"> Discuss the role of utricle & saccule in static equilibrium Discuss the role of semicircular Ducts in Angular Acceleration 	
<ul style="list-style-type: none"> Perform superficial reflexes and its significance in different neurological disorders Corneal reflexes Abdominal reflexes Plantar reflexes 	
<ul style="list-style-type: none"> Perform superficial deep reflexes and its significance 	
<ul style="list-style-type: none"> Perform cerebellar function tests and to identify associated disorders 	
<ul style="list-style-type: none"> Examine brain waves with the help of power lab 	

RESEARCH AND SKILLS LAB

OBJECTIVES	STRATEGY
<ul style="list-style-type: none"> Assess vital signs of a patient 	Simulation-Based Learning
<ul style="list-style-type: none"> Demonstrate the protocols for lumbar puncture technique 	

LEARNING RESOURCES

SUBJECT	RESOURCES
ANATOMY	<p>A. <u>GROSS ANATOMY</u></p> <ol style="list-style-type: none"> 1. K.L. Moore, Clinically Oriented Anatomy 2. Neuro Anatomy by Richard Snell <p>B. <u>HISTOLOGY</u></p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather's Functional Histology <p>C. <u>EMBRYOLOGY</u></p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 2. Langman's Medical Embryology
BIOCHEMISTRY	<p>A. <u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Harper's Illustrated Biochemistry 2. Lehninger Principle of Biochemistry 3. Biochemistry by Devlin
COMMUNITY MEDICINE	<p>A. <u>TEXT BOOKS</u></p> <ol style="list-style-type: none"> 1. Community Medicine by Parikh 2. Community Medicine by M Illyas 3. Basic <i>Statistics</i> for the Health Sciences by Jan W Kuzma
PATHOLOGY/MICROBIOLOGY	<p>A. <u>TEXT BOOKS</u></p> <ol style="list-style-type: none"> 1. Robbins & Cotran, Pathologic Basis of Disease, 9th edition. 2. Rapid Review Pathology, 4th edition by Edward F. Goljan MD <ol style="list-style-type: none"> 1. http://library.med.utah.edu/WebPath/webpath.html 2. http://www.pathologyatlas.ro/
PHARMACOLOGY	<p>A. <u>TEXT BOOKS</u></p> <ol style="list-style-type: none"> 1. Lippincot Illustrated Pharmacology 2. Basic and Clinical Pharmacology by Katzung
PHYSIOLOGY	<p>A. <u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong ' S Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne & Levy Physiology 5. Best & Taylor Physiological Basis of Medical Practice <p>B. <u>REFERENCE BOOKS</u></p> <ol style="list-style-type: none"> 1. Guyton & Hall Physiological Review 2. Essentials Of Medical Physiology by Jaypee 3. Textbook Of Medical Physiology by InduKhurana 4. Short Textbook Of Physiology by Mrthur 5. NMS Physiology

OTHER LEARNING RESOURCES

<u>Weblink</u>	http://www.who.int/mental_health/neurology/neurological_disorders_report_web.pdf
<u>Hands-on Activities/ Practical</u>	Students will be involved in Practical sessions and hands-on activities that link with the neurosciences module to enhance the learning.
<u>Labs</u>	<ul style="list-style-type: none"> Utilize the lab to relate the knowledge to the specimens and models available.
<u>Skill Labs</u>	<ul style="list-style-type: none"> A skills lab provides the simulators to learn the basic skills and procedures. This helps build the confidence to approach the patients.
<u>Videos</u>	Video familiarize the student with the procedures and protocols to assist patients.
<u>Computer Lab/CDs/DVDs/Internet Resources:</u>	To increase the knowledge students should utilize the available internet resources and CDs/DVDs. This will be an additional advantage to increase learning.
<u>Self Study</u>	Self Study which generally means studying without direct supervision. During this session one learns by himself/herself to search for information to solve cases, read through different resources and discuss among the peers and with the faculty to clarify the concepts.

ASSESSMENT METHODS:**Theory:**

- **Best Choice Questions (BCQs)** also known as MCQs (Multiple Choice Questions) are used to assess objectives covered in each module.
 - A BCQ has a statement or clinical scenario followed by four options (likely answer).
 - Students after reading the statement/scenario select ONE, the most appropriate response from the given list of options.
 - **Correct answer carries one mark, and incorrect 'zero mark'. There is no negative marking.**
 - Students mark their responses on specified computer-based/OMR sheet designed for LNHMC.

OSPE/OSCE: Objective Structured Practical/Clinical Examination:

- Each student will be assessed on the same content and have same time to complete the task.
- Comprise of 12-25 stations.
- Each station may assess a variety of clinical tasks, these tasks may include history taking, physical examination, skills and application of skills and knowledge
- Stations are observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Unobserved will be static stations in which there may be an X-ray, Labs reports, pictures, clinical scenarios with related questions for students to answer.
- Rest station is a station where there is no task given and in this time student can organize his/her thoughts.

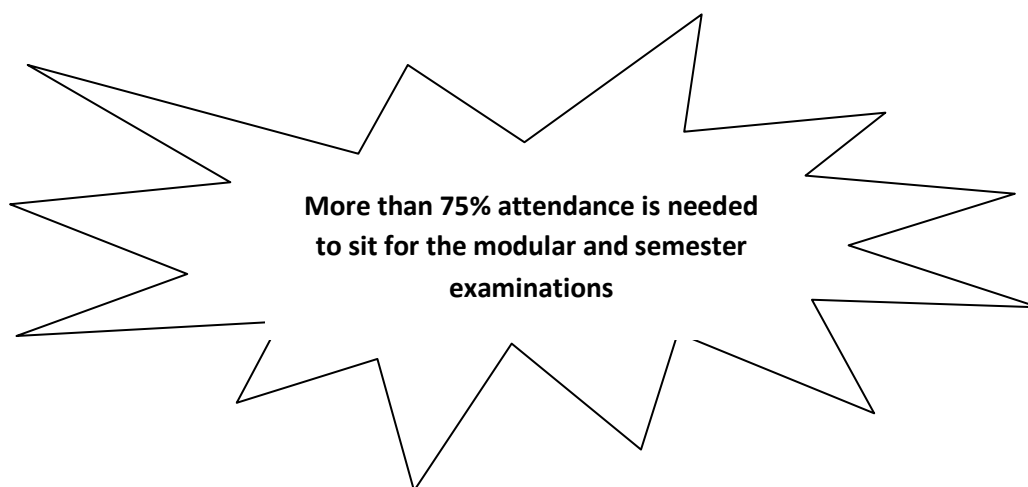
Internal Evaluation

- Students will be assessed to determine achievement of module objectives through the following:
 - **Module Examination:** will be scheduled on completion of each module. The method of examination comprises theory exam which includes BCQs and OSPE (Objective Structured Practical Examination).
 - **Graded Assessment of students by Individual Department:** Quiz, viva, practical, assignment, small group activities such as CBL, TBL, TOL, online assessment, ward activities, examination, and log book.
- Marks of both modular examination and graded assessment will constitute 20% weightage.
- As per JSMU policy, this 20% will be added by JSMU to Semester Examination.

Example : Number of Marks allocated for Semester Theory and Internal Evaluation			
Semester	Semester Examination Theory Marks	Internal Evaluation (Class test + Assignments + Modular Exam)	Total (Theory)
		80%	20%

Formative Assessment

- Individual department may hold quiz or short answer questions to help students assess their own learning. The marks obtained are not included in the internal evaluation



MODULAR EXAMINATION RULES & REGULATIONS (LNH&MC)

- Student must report to examination hall/venue, 30 minutes before the exam.
- **Exam will begin sharp at the given time.**
- No student will be allowed to enter the examination hall after 15 minutes of scheduled examination time.
- Students must sit according to their roll numbers mentioned on the seats.
- **Cell phones are strictly not allowed in examination hall.**
- If any student is found with cell phone in any mode (silent, switched off or on) he/she will be not be allowed to continue their exam.
- No students will be allowed to sit in exam without University Admit Card, LNMC College ID Card and Lab Coat
- Student must bring the following stationary items for the exam: Pen, Pencil, Eraser, and Sharpener.
- Indiscipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students.

JSMU Grading System

- It will be based on GPA – 4 system

Marks obtained in Percentage range	Numerical Grade	Alphabetical Grade
80-100	4.0	A+
75-79	4.0	A
70-74	3.7	A-
67-69	3.3	B+
63-66	3.0	B
60-62	2.7	B-
56-59	2.3	C+
50-55	2.0	C
<50 Un-grade-able	0	U

- A candidate obtaining GPA less than 2.00 (50%) is declared un-graded (fail).
- Cumulative transcript is issued at the end of clearance of **all** modules.

SCHEDULE:

WEEKS	2nd YEAR SEMESTER 3	DATES
WEEK 1	HEAD & NECK MODULE	
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		10th Jan 2019
	MODULAR EXAM	11 th Jan & 12 th Dec 2019
WEEK 1	NEUROSCIENCES MODULE	14 th Jan 2019
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		24th Feb 2019*
	MODULAR EXAM	26 th & 27 th Feb 2019*
WEEK 1	ENDOCRINOLOGY MODULE	March 2019*
WEEK 2		
WEEK 3		
WEEK 4		April 2019*
	MODULAR EXAM	April 2019*
PREPARATORY LEAVE		
	SEMESTER EXAM*	

* Final dates will be announced later.