INSTITUTE	**FACULTY OF PHYSIOTHERAPY**
PROGRAM	**MASTER OF PHYSIOTHERAPY**
SEMESTER	**2**
COURSE TITLE	**PHYSIOTHERAPY IN NEUROLOGICAL SCIENCES-I**
COURSE CODE	**17MP0208**
COURSE CREDITS	**6**

Objective:

1 To have a deep knowledge of structures and function of nervous system
2 To learn the advance skills for physiotherapy assessment and management of various neurological conditions
3 To learn to build interpersonal and inter professional communication skills

Course Outcomes: After completion of this course, student will be able to:

1 Have a comprehensive understanding of the structure and function of the nervous system, including the brain, spinal cord, and peripheral nerves.
2 Have proficiency in assessing functional limitations related to mobility, gait, balance, posture, and activities of daily living in patients with neurological impairments.
3 Enable to assess the functional aspect of assessment using various tools and advanced methods of assessment.
4 Identify and adhere to professional and ethical standards, including patient confidentiality, informed consent, and respect for patients' autonomy in decision-making.
5 Enable to assess and identify the level of disability among the patients with neurological conditions.

Pre-requisite of course: Students should have a thorough knowledge of various neurological conditions and its Physiotherapy management

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	2	50	30	20	50	50

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Contents : Unit	Topics	Contact Hours
1	**Neuroanatomy** 1. Embryological development, growth & maturation of nervous system. 2. Normal Sequential behavior and physiological changes throughout the developmental arc. 3. Introduction and organization of nervous system, normal development of brain and spinal cord. 4. Neuro biology of neurons and Neuroglia 5. Coverings of the nervous system 4. Nerve fibres 5. Dermatomes and myotomes 6. Cerebrum and cerebral hemispheres, Cerebral cortex 7. Cerebellum and its connections 8. Brain stem, Midbrain, Pons, Medulla 9. Thalamus, hypothalamus and their connections 10. Limbic system, reticular formation 11. Internal capsule, corpus straitum 12. Basal ganglia and its connections 13. Ventricular system and CSF 14. Blood brain barrier 15. Spinal cord, tracts ascending & descending 16. Blood supply of CNS and peripheral nervous system, venous drainage of CNS 17. Peripheral nervous system 18. Autonomic nervous system 19. Cranial nerves and their nuclei	15
2	**Neurophysiology** Functions of all the organs including: 1. Nerve fibers & Coverings of the nervous system 2. Dermatomes and myotomes 3. Cerebrum and cerebral hemispheres, Cerebral cortex 4. Cerebellum and its connections 5. Brain stem, Midbrain, Pons & medulla 6. Thalamus, hypothalamus, connections, Limbic system, reticular formation 8. Special senses 9. Internal capsule, corpus striatum 10. Basal ganglia and its connections 11. Ventricular system and CSF 12. Blood brain barrier 13. Spinal cord tracts, ascending & descending 14. Peripheral nervous system 15. Autonomic nervous system 16. Neurophysiology of balance, co-ordination & locomotion 17. cranial nerves and their nuclei 18. Motor control 19. Neural development of posture and gait 20. Physiology of pain 21. Physiology of reflexes – normal and abnormal 22. Physiological basis of motor learning and recovery of functional motor control	15

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3	**Pathomechanics: Neurological Conditions – Assessment and Evaluation** Measures of cognitive impairment and disability; a. Glasgow coma scales b. Children's coma scales c. Edinburgh – 2 coma scale d. Blessed dementia rating scales; information concentration – memory test; dementia scale, Measure of motor impairment; a. Motor club assessment b. Rivermead motor assessment c. Motricity index d. Trunk control test e. Motor assessment scale f. Modified ashworth scale for spasticity g. Isometric muscle strength h. Motor neuron disease/ amyotrophic lateral sclerosis i. Dynamometer, Measures of focal disability; a. Standing balance b. Functional ambulation categories c. Hauser ambulation index d. Timed walking test e. Rivermead mobility index f. Nine hole peg test g. Action research arm test h. Franchay arm test, Activities of daily living and extended ADL tests; a. Barthel ADL index b. Katz ADL index c. Nottingham ten point ADL index d. Rivermaid ADL scale e. Northwick park index of independence in ADL f. Kenny self care evaluation g. Nottingham extended ADL index h. Frenchay activity index, Global measures of disability; a. OPCS disability scale: severity categories b. functional independence measure c. PULSES profile, Measures of handicap and quality of life; a. WHO handicap scale b. Rankin scale c. Glasgow outcome scale d. Quality of life : a measure e. Environmental assessment – non standard, Multiple sclerosis; a. Kurtzke multiple sclerosis rating scale b. An illness severity for multiple sclerosis, Stroke scales; a. Mathew stroke scale b. National institute of health stroke scale c. Canadian neurological scale d. Orgogozo score e. hemispheric stroke scale f. clinical classification of scale g. Clinical classification of stroke (Bamford) h. Allen score for prognosis of stroke i. Guy's hospital score for haemorrhage, Head injury; a. Galveston orientation and amnesia test b. Rappaport disability rating scale, Parkinson's disease; a. Parkinson's disease impairment index, disability index b. Hoehn and Yahr grades c. Unified Parkinson's diseases rating scale version 3, Spinal cord injury; a. Frankel's scale b. Motor index and sensory indices c. American spinal cord injury association assessment chart d. Pain assessment and evaluation, Basic elements of Neuro Diagnostic Tests; a. CT scan b. MRI c. Carotid Angiography d. Myelography e. X- ray f. Nuclear imaging g. Electroencephalogram h. Electromyography i. Nerve Conduction Velocity j. Evoked potential tests k. Muscle and Nerve Biopsy l. CSF examination, Assessment of posture, gait, coordination, voluntary control	50
Total Hours		**80**

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Practical/OPD/Case Presentation** Case presentation	80
Total Hours		**80**

Textbook :

1 Physical Rehabilitation, Susan B. O'Sullivan, F.A. Davis Company, 2014
2 Clinical Neurophysiology: Nerve Conduction, Electromyography, Evoked Potentials, Misra, J Kalita, Elsevier Health Sciences, 2014
3 Illingworth's The Development of the Infant and Young Child Normal and Abnormal, Ronald S Illingworth, Elsevier, 2012
4 Cash Text book of Neurology for Physiotherapists 4th edition, John . E . Cash, Wolfe, 1992
5 Physiotherapy in Neuro-Conditions, Glady Samuel Raj, Jaypee Brothers, 2006

References:

1 Pediatric Physical Therapy , Pediatric Physical Therapy , Jan S. Tecklin , Wolters Kluwers, 2021
2 Motor Control , Motor Control , Anne Shumway-Cook , Wolters Kulwer, 2010
3 Treatment of Cerebral Palsy and Motor Delay , Treatment of Cerebral Palsy and Motor Delay , Sophie Levitt , Willey Blackwell, 2019
4 Mobilization of Nervous Sydtem, Mobilization of Nervous Sydtem, David S Butler, Churchill Livingstone, 1994
5 Neurology and Neurosurgery Illustrated, Neurology and Neurosurgery Illustrated, Kenneth W Lindsay, IAN Bone,Gerriaint Fuller, Elsevier, 2010
6 Neurological Rehabilitation, Neurological Rehabilitation, Darcy . A .Umphered, Rolando . T . Nazaro, Elsevier, 2013

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
0.00	0.00	35.00	35.00	30.00	0.00

Instructional Method:

1 Theory + Practical

Supplementary Resources:

1 NA

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