GANPAT UNIVERSITY										
FACULTY OF HEALTH AND ALLIED SCIENCES										
Program	**Bachelor of Physiotherapy (BPT)**					**Branch**				
Year	**4**					**Version**	1.0.0.0			
Effective from the Academic year		2025-26		**Effective for the batches admitted from**						2022-23
Course Code	BPT401	**Course Name**		**Physiotherapy in Neurological Conditions**						
Teaching Scheme Per Year				**Examination Scheme**						
	Th	**Pr**	**Total**	**Marks**	**Internal**	**External**	**Total**	**Duration**	**Internal**	**External**
Hours	114	19	133	Theory	20	80	100	Theory	3 hr.	3 hr.
Credit	6.5			Practical	20	80	100	Practical	3 hr.	3 hr.
Prerequisite	Nil									

COURSE OBJECTIVES

1	To integrate foundational concepts of neuroanatomy and neurophysiology to interpret clinical signs and symptoms in adult neurological conditions relevant to physiotherapy practice.
2	To evaluate and apply neurophysiotherapy approaches such as NDT, PNF, Brunnstrom, Vojta, Rood's technique, sensory integration, and task-oriented therapy in clinical decision-making.
3	To design and implement comprehensive physiotherapeutic intervention plans for adults with neurological disorders based on clinical assessment and functional goals.
4	To formulate and justify evidence-based physiotherapy strategies for pediatric neurological conditions using neurodevelopmental and neurophysiological frameworks.
5	To analyze and interpret findings from electro-diagnostic tools (EMG, NCS, SD curves) to differentiate between UMN and LMN lesions and to guide physiotherapeutic management.

THEORY AND PRACTICAL SYLLABUS

Unit	Content	Hrs. (Th +Pr)
1	**Review of basic neuroanatomy and physiology**	**02**
2	**Theories of motor control & motor learning**	**02**
3	**Neurophysiotherapeutic techniques:** 3.1 Concepts, Principles, Techniques and Effects of NDT 3.2 Concepts, Principles, Techniques and Effects of PNF 3.3 Concepts, Principles, Techniques and Effects of Brunnstrom Movement Therapy 3.4 Concepts, Principles, Techniques and Effects of Vojta therapy 3.5 Concepts, Principles, Techniques and Effects of Rood's sensory motor approach 3.6 Concepts, Principles, Techniques and Effects of Contemporary task-oriented approach 3.7 Concepts, Principles, Techniques and Effects of Sensory integration therapy.	**10** (8+2)
4	**Application of skills:** 4.1 PNF 4.2 Co-ordination 4.3 Functional Re- education 4.4 Balancing exercise by using techniques based on neuro physiological principles.	**10** (8+2)
5	**Tools used for neuro rehabilitation:** like vestibular balls, tilt board etc.	**05** (4+1)
6	**Application of transfer, functional re-education exercises & gait training.**	**05** (4+1)
7	**Bladder training**	**02**
8	**Developing a philosophy for caring**	**01**
9	**Prescription of appropriate orthotic devices & fabrication of temporary splints**	**02** (1+1)
10	**Lifting techniques, wheel chair modifications, adaptive devices**	**05** (4+1)
11	**Ergonomic advice for prevention/rehabilitation to the patients / parents /caregivers**	**05** (4+1)

12	**Education about handling of a patient**	**01**
13	**Pediatric Neuro-physiotherapy:** 13.1 Use of various Neurophysiological approaches & modalities in high risk babies. 13.2 Use of various Neurophysiological approaches & modalities in Minimum brain damage. 13.3 Use of various Neurophysiological approaches & modalities in developmental disorders. 13.4 Use of various Neurophysiological approaches & modalities in Cerebral palsy. 13.5 Use of various Neurophysiological approaches & modalities in Down's syndrome. 13.6 Use of various Neurophysiological approaches & modalities in Hydrocephalus. 13.7 Use of various Neurophysiological approaches & modalities in Spina bifida.	**15** (13+2)
14	**Assessment & management of brain Disorders:** 14.1 Stroke 14.2 Meningitis 14.3 Encephalitis 14.4 Head Injury 14.5 Parkinson's disease & parkinsonism syndromes 14.6 Multiple sclerosis 14.7 Brain tumors 14.8 traumatic brain injury	**15** (13+2)
15	**Assessment & management of spinal cord lesions and bladder dysfunction** 15.1 Multiple sclerosis 15.2 Transverse myelitis 15.3 Poliomyelitis/PPRP 15.4 Spinal Cord Injury and sub-acute combined degeneration of spinal cord 15.5 Motor neuron disease (ALS, SMA and other types) 15.6 Spinal tumors.	**15** (13+2)
16	**Assessment & Management of Co-ordination Disorders:** 16.1 Ataxia 16.2 Friedreich's ataxia 16.3 Cerebellar ataxia 16.4 Sensory ataxia	**15** (13+2)
17	**Assessment & Management of Muscle Disorders:** 17.1 Muscular dystrophy (DMD) 17.2 Other Myopathies	**05**
18	**Assessment & Management of disorders of neuromuscular junction:** 18.1 Myasthenia Gravis	**02**
19	**Assessment & management of neuropathies and nerve injuries:** 19.1 Emphasis on 5th, 7th and 8th cranial nerves. 19.2 Peripheral nerves. 19.3 Polyneuropathy – Classification of Polyneuropathies.	**05**
20	**Pre- and post-surgical assessment & management in neuro surgery:** 20.1 Hydrocephalus 20.2 Myelomeningocele 20.3 C.V. junction anomalies 20.4 Syringomyelia	**03**
21	**Physiotherapy evaluation and interpretation of a neurological patient, Electro diagnostic procedures and prognosis in neurological disorders** 21.1 SD curves 21.2 EMG 21.3 NCS	**08** (6+2)
	Total	**133**

COURSE OUTCOMES	
CO1	To gain an understanding of key concepts in neuroanatomy, neurophysiology, and motor control theories relevant to neuro-physiotherapy.
CO2	To develop the ability to apply appropriate neurophysiotherapy techniques like NDT, PNF, Brunnstrom, Rood's, Vojta, and task-oriented approaches based on patient needs.
CO3	To be able to assess and manage neurological disorders using evidence-based evaluation, rehabilitation tools, and electrodiagnostic methods.
CO4	To develop individualized physiotherapy care plans incorporating coordination training, gait and bladder training, ergonomics, orthotics, and caregiver education.
CO5	To be able to integrate neurophysiological approaches and therapeutic modalities for managing pediatric neurological and developmental disorders.

COURSE ARTICULATION MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	2	-	2	-	-	-	-	-
CO 2	-	1	1	-	-	1	-	-
CO 3	1	1	1	-	-	1	-	-
CO 4	-	1	1	2	-	1	-	1
CO 5	2	1	2	-	-	1	-	1

"-" No correlation "1" Low "2" Moderate "3" High

STRUCTURE OF QUESTION PAPER- Theory

Duration: 3 Hours (Passing Marks-40)

Section – I (40 marks)	Que. 1 Multiple Choice Question	6 x 01 = 06	All Mandatory
	Que. 2 Very Short Answer	2 x 02 = 04	(Any 2 out of 3)
	Que. 3 Short Answer	4 x 05 = 20	(Any 4 out of 5)
	Que. 4 Long Answer	1 x 10 = 10	(Any 1 out of 2)
Section – II (40 marks)	Que. 1 Multiple Choice Question	6 x 01 = 06	All Mandatory
	Que. 2 Very Short Answer	2 x 02 = 04	(Any 2 out of 3)
	Que. 3 Short Answer	4 x 05 = 20	(Any 4 out of 5)
	Que. 4 Long Answer	1 x 10 = 10	(Any 1 out of 2)

BOOKS RECOMMENDED

Textbooks

1	Cash's Text book of Neurology for Physiotherapists by Patricia A Downie - 4th Edition
2	Practical Physical therapy by Margaret Hollis-4th Edition, Blackwell Science Publication
3	Therapeutic Exercise by Carolyn Kisner & Colby-6th Edition, Jaypee Publication
4	Physical Rehabilitation by Susan. B. O` Sullivan-8th Edition, Jaypee Publication
5	Tidy's Physiotherapy by Stuart Porter-15th Edition, Elsevier Publication
6	Neurological Rehabilitation by Darcy Umphred, -7th Edition Elsevier Publication
7	Tecklin's Pediatric Physical Therapy by Elena McKeogh Spearing-6th Edition

Reference books

1	Therapeutic exercise by Basmajiian-5th edition
2	Handbook of Physical Medicine and Rehabilitation -6th Edition