COURSE SCHEME& SYLLABUS

MASTER OF NEUROLOGICAL PHYSIOTHERAPY-2024

PG051

Discipline of Physiotherapy

Department of Life Sciences & Allied Health Sciences

University Institute of Sciences

(UIS)

MASTER OF PHYSIOTHERAY (MPT) –

Overview:

The Master of Physiotherapy (MPT) is a specialized postgraduate program designed to develop advanced skills in the diagnosis, treatment, and rehabilitation of individuals with physical impairments and disabilities. This course provides in-depth knowledge and training in various branches of physiotherapy, allowing practitioners to enhance their clinical expertise and prepare for leadership roles in the field.

Vision:

The vision of the Master of Physiotherapy (MPT) program is to foster the development of highly skilled, compassionate, and knowledgeable physiotherapists who lead clinical practice, research, and education, advancing the rehabilitation and wellbeing of individuals with physical impairments and disabilities.

Mission:

The mission of the Master of Physiotherapy (MPT) program is to empower students to become highly competent, compassionate, and ethical physiotherapists who specialize in various areas of rehabilitation, including neurological disorders, musculoskeletal conditions, cardiopulmonary disorders, sports conditions, pediatric conditions, geriatric conditions, and health.

The program focuses on providing high-quality education, fostering advanced clinical skills, research abilities, and leadership qualities.

Through practical training, interdisciplinary collaborations, and ongoing professional development, the MPT program aims to produce physiotherapists who can improve patient outcomes and contributing to the advancement of physiotherapy practice worldwide.

Programs Offered:

Programme	**Duration of Course**	**Eligibility**	**Percentage Required**
MPT- Physiotherapy Neurology Programme.	2 Years	Bachelor's Degree in Physiotherapy (BPT) from a recognized university. A compulsory internship of 6 months.	50% marks in BPT.

PROGRAMME OUTCOMES (PO):

PO1: Advanced Clinical Knowledge and Application: Students will demonstrate an advanced understanding of neurological conditions, including their pathophysiology, clinical presentation, and treatment options.

PO2: Diagnosis and Clinical Decision Making: Students will develop the ability to conduct comprehensive neurological assessments and make informed clinical decisions based on patient evaluation.

PO3: Evidence Based Practice and Research: Graduates will be skilled in applying evidence-based practices to guide clinical decision making and improve patient outcomes in neurological rehabilitation.

PO4: Patient Centered Rehabilitation: Students will show competency in designing and delivering patient centered interventions for neurological rehabilitation.

PO5: Leadership and Communication Skills: Graduates will develop leadership abilities to guide and mentor junior physiotherapists, patients, and caregivers.

PO6: Ethical and Professional Behavior: Students will demonstrate professionalism, ethics, and adherence to legal regulatory guidelines in treating patients with neurological disorders.

PO7: Interdisciplinary Collaborations: Graduates will effectively collaborate with various healthcare professionals (e.g., neurologists, nurses, occupational therapists, speech therapists) to provide holistic and effective care to neurological patients.

PO8: Lifelong Learning and Continuing Education: Graduates will demonstrate a commitment to continuous professional development, staying updated with the latest advancements in the field of neurological physiotherapy and rehabilitation.

PROGRAM SPECEFIC OUTCOMES (PSO's):

PSO1: Neurological Assessment Proficiency: Graduates will be able to perform advanced neurological assessments, including clinical tests and measurements, to evaluate the sensory, motor, and cognitive functions of patients with neurological disorders.

PSO2: Treatment and Rehabilitation Techniques: Graduates will be proficient in using advanced therapeutic modalities, including neuroplasticity-based therapies, functional movement training, and task specific rehabilitation for neurological patients.

PSO3: Gait and Balance Training: Students will develop specialized skills in gait training and balance rehabilitation for neurological patients, particularly in conditions like Parkinson's disease, stroke recovery, and multiple sclerosis.

PSO4: Assistive Devices and Technology: Graduates will be trained in selecting, prescribing, and using assistive devices, including orthosis, walkers, and other mobility aids, to improve the independence and quality of life for individuals with neurological impairments.

PSO5: Neurological Patient Impairment: Students will develop the ability to manage chronic neurological conditions, including stroke recovery, multiple sclerosis, Parkinson's disease, and spinal cord injuries, using a variety of therapeutic approaches.

PSO6: Interdisciplinary Approaches to Neurological Rehabilitation: Graduates will be able to work effectively with multidisciplinary teams to deliver comprehensive care for neurological patients, focusing on collaborative treatment planning and implementation.

PSO7: Specialized Rehabilitation Programs: Students will be skilled in creating individualized rehabilitation programs tailored to the neurological needs of the patient, focusing on motor, cognitive, and functional recovery.

PROGRAM EDUCATIONAL OUTCOMES (PEO's)

PEO1: Clinical Competence and Expertise in Neurological Physiotherapy: Graduates will possess advanced clinical knowledge and expertise in treating patients with neurological conditions. They will applyevidence-based interventions to address physical, cognitive, and emotional impairments resulting from neurological conditions,

PEO2: Research and Innovation in Neurological Rehabilitation: Graduates will engage in clinical research, contributing to the development of innovative treatments, techniques, and tools for neurological rehabilitation. They will apply current scientific research to enhance patient care and improve rehabilitation outcomes.

PEO3: Leadership in Neurological Healthcare Settings: Graduates will assume leadership roles in clinical and academic settings, providing mentorship to junior professionals and contributing to the development of clinical practice and protocols for neurological rehabilitation.

PEO4: Commitment to Professionalism and Ethical Practice: Graduates will practice physiotherapy with high standards of professionalism, ethics, and legal responsibility. They will advocate patient care and ensure the safety, dignity, and autonomy of individuals with neurological conditions.

PEO5: Interdisciplinary Collaboration and Patient Advocacy: Graduates will collaborate effectively with healthcare teams, including neurologists, occupational therapists, speech therapists, and nurses, to provide comprehensive rehabilitation for neurological patients.

PEO6: Lifelong Learning and Professional Development: Graduates will develop a commitment to lifelong learning, pursuing advanced certifications, engaging in continuous

education, and staying updated on the latest research and technological advancements in neurological physiotherapy.

PEO7: Global Competence in Neurological Physiotherapy: Graduates will be prepared to practice neurological physiotherapy in diverse healthcare settings worldwide, adhering to global best practices while considering cultural and contextual differences in healthcare delivery.

INDEX

S.No.	Subject Code	Subject	Semester	
1.	PTY501	Applied Basic Medical Sciences	I	**2-3**
2.	PTY503	Biomechanics & Kinesiology	I	**4-6**
3.	PTY505	Research Methodology	I	**7-8**
4.	PTY507	Assessment and Evaluation in Neurological Physiotherapy	I	**9-11**
8.	PTY-509	Skill acquisition and refinement-I	I	**12-13**
	PTY-502	Ethics in physiotherapy	II	**16-17**
9.	PTY504	Role of Electrotherapy in Neuro Physiotherapy	II	**18-19**
10.	PTY506	Biostatistics	II	**20**
11.	PTY508	Pediatric Physiotherapy	II	**21-22**
12.	PTY510	Skill Acquisition & Refinement-II	II	**23-24**
13.	PTY512	Seminar on Clinical Issues (Non-University Examination)	II	**25-26**
14.	PTY514	Teaching Pedagogy & Clinical Case journal Presentations	II	**27-28**
15.	PTY601	Exercise therapy in Neurophysiotherapy	III	**30-31**
16.	PTY603	Basics of Exercise Physiology & Nutrition	III	**32-33**
17.	PTY605	Physiotherapy & Rehabilitation in Neurological	III	**34-36**

		Disorders		
18.	PTY607	Bioengineering&Rehabilitation Principles	III	**37-38**
19.	PTY609	Current Concept in Neurophysiotherapy	III	**39-40**
20.	PTY611	Elective course (any one of the following) PTY611 A. Evidence Based practice in allied health sciences. PTY611 B. Women health & exercise	III	
21.	PTY613	Dissertation-I (Clinical & Research Oriented Work)	III	**41-42**
22.	PTY602	Skill Enhancing Practical (Neurological Physiotherapy)	IV	**45-46**
22.	PTY604	Dissertation work (Including research-orientedwork in previous semester)	IV	**47-48**
23.	PTY606	Community camps, Participation in workshops & Conferences	IV	**49-50**

SEMESTER-I

Theory Subjects

Sr.No	Subject Code	Subject Name	Contact Hours (L: T:P)	Credits Hours (L: T:P)	Total Contact Hours	Total Credits Hours
1	PTY501	Applied Basic Medical Sciences	5:0:0	5:0:0	5	5
2	PTY503	Biomechanics & Kinesiology	5:0:0	5:0:0	5	5
3	PTY505	Research Methodology	5:0:0	5:0:0	5	5
4	PTY507	Assessment and Evaluation in	5:0:0	5:0:0	5	5

		Neurological Physiotherapy				

Practical Subjects

1	PTY509	Skill Acquisition& Refinement-I	0:0:10	5	10	5

Total contact hours-30
Total Credit hours-25

SEMESTER-II

Theory Subjects

Sr.No	Subject Code	Subject Name	Contact Hours (L: T:P)	Credits Hours (L: T:P)	Total Contact Hours	Total Credits Hours
1	PTY502	Ethics in Physiotherapy	3:0:0	3:0:0	3	3
2	PTY504	Role of Electrotherapy in NeuroPhysiotherapy	3:0:0	3:0:0	3	3
3	PTY506	Biostatistics	3:0:0	3:0:0	3	3

4	PTY508	Pediatric Physiotherapy	3:0:0	3:0:0	3	3

Practical Subjects

1	PTY510	Skill Acquisition & Refinement-II	0:0:12	0:0:6	12	6
2	PTY512	Seminar on Clinical Issues (Non-University Examination)	0:0:4	0:0:2	4	2
3	PTY514	Teaching Pedagogy & Clinical Case journal Presentations	0:0:6	0:0:3	6	3

Total contact hours-34

Total credit hours-23

SEMESTER-III

Theory Subjects

Sr. No	Subject Code	Subject Name	Contact Hours (L: T:P)	Credits Hours (L: T:P)	Total Contact Hours	Total Credits Hours
1	PTY601	Exercise therapy inNeurophysiotherapy	2:0:0	2:0:0	2	2
2	PTY603	Basics of Exercise Physiology & Nutrition	2:0:0	2:0:0	2	2
3	PTY605	Physiotherapy & Rehabilitation in Neurological Disorders	2:0:0	2:0:0	2	2
4	PTY607	Bioengineering&Rehab	2:0:0	2:0:0	2	2

		ilitation Principles				
5	PTY609	Current Concept in Neurophysiotherapy	2:0:0	2:0:0	2	2
6	PTY611	Elective course (any one of the following) PTY611 A. Evidence Based practice in allied health sciences. PTY611 B. Women health & exercise	2:0:0	2:0:0	2	2

Practical Subjects

1	PTY613	Dissertation-I (Clinical & ResearchOriented Work)	0:0:24	0:0:12	24	12

Total contact hours-36

Total credit hours-24

SEMESTER-IV

Practical Subjects

01	PTY602	Skill Enhancing Practical (Neurological Physiotherapy)	0:0:100	0:0:50	100	50
02	PTY604	Dissertation work(Including research oriented work in previous semester)	0:0:200	0:0:100	200	100
03	PTY606	Community camps, Participation in	0:0:60	Non-	60	NC

		workshops & Conferences		Credits		

Total contact hours-360

Total credit hours- 150

COURSE SCHEME SUMMARY

Sem	L	T	P	Contact hrs/wk.	Credits hrs/wk.
1	30	0	25	30	25
2	34	0	23	34	23
3	36	0	24	36	24
4		0	360	360	150

Total Contact hrs. for I-IV semesters: 460

Total Credit Hours for I-IV semester:222

First Semester

APPLIED BASIC MEDICAL SCIENCES

Course code	**PTY501**
Type of course	**Applied Basic Medical Sciences**
LTP	50 0
Credits	5
Course prerequisite	M.P. T
Course objective (CO)	Our Applied Basic Medical Sciences programme aims to maintain and promote the physical, mental and social wellbeing and to adapt the workplace and work environment to the needs of the workers i.e.application of ergonomics Principles

UNIT-I

Human anatomy

Basic general anatomy

Applied anatomy including blood & nerve supply of upper & lower limbs &joints of the shoulder, hip & knee.

Gross anatomy: Blood supply & lymphatic drainage, tongue, thyroid, mammary gland, stomach, liver, prostate, gonads & uterus.

Applied anatomy of diaphragm, perineum, inguinal region, Kidney, urinary bladder, uterine tube, vas deference.

Central & Peripheral Autonomic Nervous System

UNIT-II

Neurophysiology: Organization and function of nervous system, Basic neurophysiology concerned to motor unit potentials, nerve conduction, neuromuscular junction & reflexes. Somatosensory function, Higher intellectual function, Reflex maturation, Control of equilibrium, posture & muscle tone. Descending pathways, functions of cerebellum, basal ganglia, Physiology of sleep & consciousness, Neurotransmitters&their clinical co-relation

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Pathology: Inflammation & repair, Disturbances of growth & cancer, Pathogenesis & Histopathology of rheumatic & ischemic heart disease & diabetes mellitus.

Microbiology: Humeral & Cell mediated immunity, Diseases caused by and laboratory diagnosis of meningococcus, salmonella, herpes, dengue, polio, HIV/AIDS, Malaria &Candida.

UNIT-III

Pharmacology: Review of pharmacological management of the disorders ofMusculoskeletal system, Nervous system, Cardiovascular system &Respiratory system.

Clinical Radiology: Basics of radiology including ultrasonography, CT & MRI scanning,Imagingofthe head and neck, Imaging of spine &Thorax**,** Imaging of upper & lower limb.

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Gray's Anatomy	Williams & Warwick	Churchill Livingstone
2	Grants Methods of Anatomy	Basmajian & Sloncker	Williams & Wilkins
3	Clinical Anatomy for Medical Students	- Guyton	Mosby.
4	Clinical Anatomy for Medical Students	Snells	Lippincott
5	Pathologic Basis of Diseases	Robbins, Kotran and Kumar	Churchill Livingstone
6	Textbook of Radiology	Sutton D	Churchill Livingstone
6	The Pharmacological basis of Therapeutics	Goodman and Gilman	MacMillan
7	Pharmacology and Pharmacotherapeutics	Satoskar & Bhandarkar	Popular Publications Bombay

BIOMECHANICS & KINESIOLOGY

Course code	**PTY503**
Type of course	**Biomechanics& Kinesiology**
LTP	50 0
Credits	5
Course prerequisite	M.P.T
Course objective (CO)	Our Biomechanics & Kinesiology programme aims to gain a better understanding of the cause-effect mechanisms ofvarious motions produced by the body and also demonstrate thorough understanding of mechanical factors that influence human movement

UNIT-I

Concepts of Biomechanics& Kinesiology: Introduction to Kinesiology & Biomechanics, Principles of Biomechanics**,** Nature and importance of Biomechanics in Physiotherapy, Advanced Biomechanics and kinesiology, Introduction to biomechanical analysis of human motion

UNIT-II

Analytical tools and techniques: Isokinetic Dynamometer, Kinesiological EMG,Electronic Goniometer, Force Platform, Videography, Ergonomic approach to lifting and handling, workspace and environment, Patient positioning, body mechanics and Transfer techniques

UNIT-III

Applied Biomechanics

Upper Extremity: Shoulder girdle, Elbow joint, Wrist joint and Hand

Lower Extremity: Spine, Pelvic Girdle, Hip joint , Knee joint, Ankle & Foot

UNIT-IV

Mechanical Basis: Framework and joints of the body, muscles role &types of muscles contractions.

Mechanical principles: Motion, Angular motion, force system, COG, co-relations andsupport system.

Posture Analysis.

GaitAnalysis: Kinetic & Kinematic Analysis.

Pathological Gait: Kinetic &Kinematic Analysis.

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	James G. Hay	The Biomechanics of Sports Techniques	Prentice Hall
2	Brunnstrom	Clinical Kinesiology	F.A.
3	Rasch and Burk	Kinesiology and Applied Anatomy	Lee and Fabiger
4	White and Punjabi	Biomechanics of Spine	Lippincott
5	Norkin & Levangie	Joint Structure and Function- A Comprehensive Analysis	F.A. Davis.
6	Physiology of Joints Vol. I, II & III	Kapandji	W.B. Saunders
7	Muscle alive	Basmajian	Williams & Wilkins
8	Analysis of Sports Motion: Anatomic and Biomechanics perspectives	Northrip et al	W.C. Brown Co., IOWA

9	Basic Biomechanics of Muscular Skeletal Systm	Nordin & Frankel	Williams & Wilkins.
10	Introduction to Sports biomechanics	Bartlet	F & FN Spon Madras

RESEARCH METHODOLOGY

Course code	**PTY505**
Type of course	**Research Methodology**
LTP	5 0 0
Credits	5
Course prerequisite	M.P.T
Course objective (CO)	To study Research methodology by various methods and techniques

UNIT-I

Research: Introduction, Importance of research in clinical practice,Scientific approach, Characteristic, types, Purposes and limitations, Clinical trials, Ethical issues in research, Research methods, Census and survey methods of investigation. Hypothesis, its advantages and types.

UNIT-II

Research Design: Meaning, need, features and variousconcepts relationg to research design, Types of research design, Research approaches: Quantitative, Qualitative assumptions & problems.

Methods of data collection: Schedule, Questionnaire, Interview & Observation method & survey research scope (types & implementation): its introduction, types, procedures, reliability & limitations.

Experimental design: Basic principles, single system, group or multiple factor design (problems, characteristics & limitations)

Qualitative research designs & methods

UNIT-III

Sampling fundamentals: Basic concepts &Need of sampling.

Sample design: Steps in sample design, characteristics of good sample, types of sampling, sample size determination (According to study design), Non-sampling errors, Theory of estimation &Central limit theorem.

UNIT-IV

Research Process : To develop the skills of planning to conduct research.
To develop the skill needed to read publish research critically.
To become familiar with the types & criteria of research in Physiotherapy.
Presentation of a research paper, criteria of good research & problems encountered by researchers.

Text and Reference Books

S. No	Name	Author(S)	Publisher
1.	Methods of Social Survey and Research	Bajpai S.R.	Kitab Ghar, Kanpur
2	Research methods in Behavioral Sciences	Mohsin S.M	Orient publications, New Delhi
3	Research Methodolgy (Methods & techniques)	C.R Kothari	New age international Publishers
4	Research for Physiotherapists	Hicks	Churchill Living Stone
5	First course in Methodology of Research	Meenakshi	Kalia Prakashan, Patiala
6	Research Methodology	Kumar R	Pearson Education, Australia

ASSESSMENT & EVALUATION IN NEUROLOGICAL PHYSIOTHERAPY

Course code	**PTY507**
Type of course	**Assessment & Evaluation in Neurological Physiotherapy**
LTP	5 0 0
Credits	5
Course prerequisite	M.P.T
Course objective (CO)	Our Neurological Physiotherapy programme aims to give the student an understanding of the role of the physiotherapist in neuro-rehabilitation. The student will gain experience and knowledge in relation to the Assessment, treatment and Management of patients with neurological deficit.

UNIT-I

Neurological assessment: Evaluation and correlation of findings with neurological dysfunction

History taking

Higher cerebral function examination: Cognitive and perceptual assessment,Cranial nerves examination

Sensory system assessment

Motor System Assessment: Tone, Assessment of voluntary & involuntary movement.

Assessment of reflex integrity

Assessment of gait (kinetic & kinematic)

UNIT-II

Balance, equillibrium and Co-ordination: Assessment, evaluation of following and correlation of findings with neurological dysfunction.

Assessment of Autonomic nervous system

Assessment of unconscious patient

Clinical decision making: Basic components-steps in patient/client management, patient participation and planning,evidence based practice, various factors &documentation.

UNIT-III

Neurological Assessment scales and measurement tools

Functional Assessment scales.

Functional balance and coordination scales.

Rehabilitation Outcome measure scales.

UNIT-IV

Advanced Neurological Assessment Procedures

Disease Specific Measurements scales and tools.

- Clinical Stroke scales.
- Scales used in spinal cord injury.
- Scales for the assessment of movement disorders.
- Scales for assessment of Brain injury & Cognitive scales.

Laboratory Examination related to Neurological Disorders&Neurodynamictests.

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Neurological Physiotherapy	A problem solving approach	Susan Edwards - - Churchill Livingstone.
2	Neurological Rehabilitation	Umpherd	Mosby
3	Motor Assessment of Developing Infant	Piper & Darrah	W.E. Saunders
4	Paediatric Physical Therapy	Teckling	Lippioncott
5	Guided to clinical Neurology	Mohn & Gaectier	Churchill Livingstone
6	Principles and practices of therapeutic massage	Sinha	Jaypee brothers Delhi
7	Clinical Evaluation of Muscle Function	Lacote	Churchill Living Stone
8	Hutchinson's Clinical Methods	Swash	Bailliere Tindall

9	Examination in Neurology examination	Dejong	Wolters Kluwer
10	Neurological Assessment	Blicker staff	Steven Mandel
11	Clinical Evaluation of Muscle Function	Lacote	Churchill Living Stone
12	Hutchinson's Clinical Methods	Swash	Bailliere Tindall

Skill Acquisition & Refinement-I

Course code	**PTY509**
Type of course	Skill Acquisition & Refinement-I
LTP	0: 0: 10
Credits	5
Course prerequisite	M.P.T
Course objective (CO)	1. It is an independently integrate science & clinical judgement with practice & evaluate the effectiveness of interventions 2. To treat patients & their families presenting with a wide variety of psychological problems 3. Independently select and implement multiple methods to evaluate & assess children, adolescents or adults 4. Provide ethically sound, culturally sensitive & evidence based interventions with fidelity to adapt where appropriate

LIST OF EXPERIMENTS:

Includes Clinical hours on patient examination and Physiotherapy intervention under supervision on the various Conditions Includes Bedside case presentations, case discussions and more emphasizing on differential diagnosis and clinical reasoning.

Unit I – Clinical Evaluation & Case History Taking

- Detailed patient history taking (medical, surgical, family, psychosocial).
- Functional assessment tools & outcome measures.
- Differential diagnosis and red flag identification.
- Documentation of findings (SOAP notes, ICF model).

Unit II – Clinical Reasoning & Bedside Case Presentations

- Frameworks for clinical reasoning (hypothetico-deductive, pattern recognition).
- Differential diagnosis through case-based learning.

- Supervised bedside case presentations and discussions.
- Peer discussion and feedback sessions.

Unit III – Physiotherapy Interventions under Supervision

- Designing individualized treatment programs.
- Evidence-based practice in physiotherapy.
- Hands-on clinical skill practice across various conditions:
    - Neurological conditions (e.g., stroke, CP, SCI, TBI).
    - Musculoskeletal conditions (e.g., low back pain, arthritis, sports injuries).
    - Cardiopulmonary rehabilitation (ICU, post-op, pulmonary rehab).
    - Paediatric and geriatric physiotherapy.

Unit IV – Clinical Skill Refinement

- Advanced manual therapy techniques.
- Electrotherapy and exercise prescription refinement.
- Patient & family education, counselling, and home program planning.

SecondSemester

ETHICS IN PHYSIOTHERAPY

Course code	**PTY502**
Type of course	**Ethics inPhysiotherapy**
LTP	30 0
Credits	3
Course prerequisite	M.P. T
Course objective (CO)	Our Educational Principles in Physiotherapy Programmeaims to develop, maintain and restore the maximum degree of functional capacity in people with somatic, psychosomatic and organic disorders, or in those whose health or quality of life has been negatively affected. The overall objective of the course is to train professional physiotherapists for creating the acquisition of skills and attitudes that serve in the practical application of physiotherapeutic treatments

UNIT-I

Concept of Morality, Ethics and Legality: Aim, Philosophy,Ethicalissues inphysiotherapy practice, Professionalism**,** Informed consent, Confidentiality, Sexual and Physical Abuse, Social characteristics and Personal relationships, Professional issues, Client interest and satisfaction, Confidence and communication, Malpractice,Negligence, Rights of patients&Status of physiotherapist in health care

Communication skills: Process of Communication, Barriers to Communication, Types of Communication,Written vs Oral Communication&Elements of good communication

UNIT-II

Management:principles & applicationsofManagement, Administration to Physio Therapy practice: Planning, organizing, staffing, finance, marketing, controlling, directing &Setting of a physiotherapy service unit

Education: Definition, Aims and objectives of education, Agencies of education, Formal and informal education, Briefintroduction to the Philosophies of education, Taxonomy of educational objectives&Essentials of physiotherapy education

UNIT-III

Teaching & Learning: Definitions,Nature of learning, type and stages of learning, Factors affecting learning, Laws of learning,Learning style, teaching learning process. Principles and methods of teaching with respect to physiotherapy students and clients, Strategies and planning of teaching, curriculum development, formation of courseObjective, time management, Classroom Setting,Clinical teaching methods,Role of teacher in teaching learning process, role of Audio- visual aids &method of knowledge

UNIT-IV

Curriculum: Meaning and Concept of curriculum, Factors affecting curriculum,Types of curriculum, Basic principles of curriculum construction&Steps of curriculum development

Assessment and Evaluation: Meaning and Concepts of assessment, Measurement, Evaluation and examination,Purpose of Evaluation,Types of evaluation,Principles of evaluation Techniques, Methods and tools used in testing of knowledge skill, clinical performance and attitude

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Principles of Medical Education	IAP Tejinder Singh	Jaypee
2	Hospital Management	Savita Sharma, K.	Cherry Commonwealth
3	Medical Ethics Principles, Persons, and Problems	John M	Frame P & R
4	Management in Physiotherapy	Bertrand Piccard	Radcliffe Publishing
5	Contexts of Physiotherapy Practice	Joy Higgs, Megan Smith, Gillian Webb	Churchill Livingstone

ROLE OF ELECTROTHERAPY IN NEUROPHYSIOTHERAPY

Course code	**PTY504**
Type of course	**Role of Electrotherapy in Neurophysiotherapy**
LTP	3 0 0
Credits	3
Course prerequisite	M.P.T
Course objective (CO)	Our Electrotherapy in Neurophysiotherapyprogramme aims to acquire a knowledge of the methods, procedures, models, techniques or actions required in the application of physical therapeutic principles to heal people suffering from physical deterioration, functional limitations, disabilities or changes in physical functions as a result of injury, diseases or other causes

UNIT-I

Review of Principles, underlying the application of following modalities with reference to their Production, Biophysical and therapeutic effects, indications and contraindications and the specific uses of Physiotherapy: Low Frequency Current, Diadynamic Current, Iontophoresis, High Voltage, Pulsed Galvanic Stimulation , TENS, IFT, Russian Currents, LASER, Superficial heating modalities, Deep heating modalities, Ultrasound &Cryotherapy

UNIT-II

Electro diagnosis: Introduction to methods of electro diagnosis, SD Curve, Electro myography technique of EMG, interpretation of normal and abnormal responses&Biofeedback.

UNIT-III

Nerve conduction studies: MNCV, SNCV, variables affecting nerve conduction, measurement of NCV of nerves for upper &lower limb, interpretations of normal and abnormal responses& Evoked potentials.

UNIT-IV

Advanced Electro Therapeutics in Tissue healing, in various disorderslike Wound care, Management of Scars&keloids,

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Therapeutic Modalities in Sports Medicine	William E. Prentice	Mosby
2	Rehabilitation Techniques	William E. Prentice	Mosby
3	Physical Rehabilitation – Assessment and Treatment	O' Sullivan, Schmitz	- F.A. Davis.
4	Claytons Electrotherapy	Sarah & Bazin	W.B. Saunders
5	Clinical Electrotherapy	Nelson and Currier	Prentice Hall
6	Therapeutic Heat and Cold	Lehmann	Williams & Wilkins

Biostatistics

Course Code	**PTY506**
Course Title	**Biostatistics**
Type of course	Theory
L T P	3 0 0
Credits	3
Course prerequisite	M.P.T
Course Objective (CO)	Students will learn about graphical methods, measures of central tendency, dispersion, probability , time series

UNIT 1

Biostatistics: Introduction, origin, development, scope, function, limitations & application in Physiotherapy.

Statistical reasoning, processing & analysis: Definition, types, presentation, collection methods, various types of graphs &obtaining graphs using statistical software

UNIT II

Data Condensation and Graphical Methods: Collection of Data, Types of Data Attributes and variables, Construction of Frequency, Cumulative and relative Frequency distributions, Graphical representation of Frequency distribution: Histogram, Frequency Polygon, Frequency Curve and Cumulative Frequency curves (Ogive curves)

UNIT III

Measures of Central Tendency: Concept of central tendency, Arithmetic Mean, Median, Mode, its Merits and Demerits

Measures of Dispersion: Concept of Dispersion

Range: Definition, Formulae and Computation for ungrouped and grouped data

Standard Deviation: Definition, Formulae and Computation for ungrouped and grouped data

Variance: Definition, Formulae and Computation for ungrouped and grouped data

Coefficient of variance: Definition, Formulae and Computation for ungrouped and grouped data

Correlation: Definition, Types of Correlation, Karl Pearson's coefficient of correlations for ungrouped data and problems

Regression: Definition,Regression equations and problems.

Analysis of Time Series: Definition and components of time series, Measures of trends, Moving average method and least square method or problems.

UNIT-IV

Probability: Permutation and combination, Sample space, Events and Types of events. Classical definition of probability and axioms of probability &Theorems on Probability.

Parametric & Non-Parametric test

Various types of test used for analysis of Grouped& Ungrouped data: Chi square test, Paired & unpaired t test, Friedman test, Mann-Whitney U test, Wilcoon Signed test, Kruskal-Wallis test &Anova test etc.

PAEDIATRIC PHYSIOTHERAPY

Course code	**PTY508**
Type of course	**Paediatric Physiotherapy**
LTP	3 0 0
Credits	3
Course prerequisite	M.P.T
Course objective (CO)	Our Physiotherapy in Paediatric Neurology aims to obtain pediatric neurology history, including gestational, delivery,developmental milestones and presenting neurological problems and also develop attitudes and behaviours that are consistent with the team approach to medical care of children with neurological disorders, including interactions with othermedical and nursing personnel involved in the management of the patient.

UNIT-I

Pre & post-natal Development: Sequence of normal child, Developmental milestones, Neonatal reflexes, various periods of growth &General assessment of child.

UNIT-II

Nutrition and Immunization: Normal nutritional requirements of a child, Prevention of some nutritional disorders, Nutritional deficiency diseases, Immunization, High risk infants, risk factors, neonatal assessment, developmental intervention, ICU, NICU & IMC Care.

UNIT-III

Physiotherapy in Neurological affection of childhood: Poliomyelitis, spina bifida, hydrocephalus, meningitis, encephalitis, inflammatory disorders of brain and spinal cord, birth injuries of brachial plexus &Cerebral Palsy.

Physiotherapy in Muscular Disorders: Myopathies of childhood &types of muscular dystrophies.

Role of Physiotherapy in Genetic Disorders: Down syndrome, Fragile X Syndrome, Rett's Syndrome &Spinal Muscular Atrophy.

UNIT-IV

Advanced Neurological techniques: NDT approach, Roods approach, Vojta techniques, Brunnstrom technique & sensory integration therapy.

Developmental Screening Tests

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Cash's textbook of neurology for physiotherapists	Downi - J.P.Brothers	CBS Publishers, Delhi Edwards -
2	Neurological Physiotherapy - A problem solving approach	- Susan Edwards	Churchill Livingstone.
3	Neurological Rehabilitation	Umpherd	Mosby
4	Motor Assessment of Developing Infant	Piper & Darrah	W.E. Saunders
5	Paediatric Physical Therapy	Teckling	Lippmcott
6	Physiotherapy in Paediatrics	Shephered	Butterworth Heinrnann
7	Treatment of Cerebral Palsy and Motor Delay	Sophie Levitt	A Guide to Goniometry - F.A. Davis.
8	Assessment in Neurology	Dejong	George Allenand Unwin
9	Davidson's principles and Practices of Medicine	Davidson	Edward Churchill Livingstone
10	Hutchinson's Clinical Methods	Swash	Bailliere Tindall

Skill Acquisition & Refinement-II

Course code	**PTY510**
Type of course	**Skill Acquisition & Refinement-II**
LTP	0 0 12
Credits	6
Course prerequisite	M.P. T
Course objective (CO)	1. It is an independently integrated science & clinical judgement with practice &evaluating the effectiveness of interventions 2. To treat patients & their families to present them with a wide variety of psychological problems 3. Independently select and implement multiple methods to evaluate & assess children, adolescents & adults 4. Provide ethically sound, culturally sensitive &evidence-basedinterventions with fidelity to adapt where appropriate

LIST OF EXPERIMENTS:

Includes Clinical hours on patient examination and Physiotherapy intervention under supervision on the various Conditions Includes Bedside case presentations, case discussions and more emphasizing on differential diagnosis and clinical reasoning skills

UNIT I – Advanced Clinical Examination & Assessment (Paediatric, Adult & Geriatric)

- Advanced history taking and documentation.
- Functional, developmental, and neurological assessments.
- Standardized assessment tools (GMFM,FIM, Berg Balance Scale, Mini-Mental State Exam, etc.).
- Case formulation: identifying impairments, activity limitations, participation restrictions.
- Differential diagnosis and problem list preparation.

UNIT II – Clinical Reasoning & Decision Making

- Models of clinical reasoning (hypothetico-deductive, pattern recognition, narrative reasoning).
- Problem-solving and prioritization of patient needs.
- Goal setting (short-term and long-term goals) with SMART framework.
- Planning physiotherapy intervention strategies.
- Evidence-based practice in clinical reasoning.

UNIT III – Physiotherapy Interventions

- Musculoskeletal conditions: assessment & intervention strategies.
- Neurological conditions: neurorehabilitation techniques, motor learning approaches.
- Paediatric rehabilitation: developmental facilitation, family-centred therapy.
- Cardiorespiratory conditions: pulmonary rehabilitation, ICU care.
- Community-based rehabilitation strategies.

UNIT IV – Ethical, Psychological & Cultural Aspects in Patient Care

- Principles of ethical practice in clinical decision-making.
- Communication skills in multidisciplinary and multicultural settings.
- Patient and family counselling strategies.
- Psychosocial support in chronic illness and disability.
- Legal issues in physiotherapy practice.

Seminar on clinical issues

Course code	**PTY512**
Type of course	**Seminar on clinical issues**
LTP	0 0 4
Credits	2
Course prerequisite	M.P.T
Course objective (CO)	1.Critically analyze and present current clinical issues and advances in physiotherapy practice. 2. Demonstrate skills in reviewing, synthesizing, and communicating scientific literature effectively. 3. Apply clinical reasoning to evaluate case studies and propose evidence-based interventions. 4. Engage in reflective discussion on ethical, cultural, and psychosocial aspects of physiotherapy practice.

LIST OF EXPERIMENTS:

UNIT I – Foundations of Clinical Seminars

- Purpose and scope of clinical seminars in physiotherapy.
- Identifying key clinical issues across physiotherapy domains (musculoskeletal, neurological, cardiopulmonary, pediatric, geriatric, sports).
- Guidelines for seminar preparation, presentation, and discussion.
- Evidence-based practice: searching, appraising, and integrating research.

UNIT II – Case-Based Clinical Discussions

- Structured case presentation methods (SOAP, ICF framework).
- Case discussions in musculoskeletal and sports physiotherapy.

- Case discussions in neurology and pediatrics.
- Emphasis on differential diagnosis and clinical reasoning.
- Peer feedback and reflective analysis of seminar cases.

UNIT III – Emerging & Contemporary Clinical Issues

- Advances in physiotherapy techniques and technologies (robotics, VR, telerehab, regenerative medicine).
- Interdisciplinary and multidisciplinary approaches in patient management.
- Patient safety, quality of care, and clinical governance.
- Research-to-practice gap and strategies to overcome it.

UNIT IV – Professionalism, Ethics & Communication in Clinical Issues

- Ethical dilemmas in clinical decision-making.
- Culturally sensitive and patient-centered care.
- Communicating effectively with patients, caregivers, and multidisciplinary teams.
- Seminar presentation skills: academic writing, oral presentation, audiovisual tools.
- Reflective practice and self-evaluation.

Teaching Pedagogy & Clinical Case Journal Presentations

Course code	**PTY514**
Type of course	**Teaching Pedagogy & Clinical Case Journal Presentations**
LTP	0 0 6
Credits	3
Course prerequisite	M.P.T
Course objective (CO)	1.Demonstrate understanding of teaching–learning principles, pedagogy, and adult learning styles relevant to physiotherapy education. 2. Design and deliver effective classroom teaching, seminars, and clinical demonstrations using modern teaching aids. 3. Critically analyze and present clinical case reports and research journal articles with evidence-based reasoning. 4. Apply reflective practice and feedback to improve communication, teaching skills, and presentation competency.

LIST OF EXPERIMENTS:

UNIT I – Principles of Teaching Pedagogy in Physiotherapy

- Concepts of teaching, learning, and pedagogy.
- Adult learning principles (Andragogy) and learning styles.
- Curriculum development and instructional design.
- Role of physiotherapists as educators in academics and clinical practice.

UNIT II – Teaching & Presentation Skills

- Classroom teaching: lecture method, demonstration, group discussion, problem-based learning.
- Use of modern teaching aids (PowerPoint, models, simulation tools, digital platforms).
- Communication skills in teaching (verbal, non-verbal, audiovisual).

- Assessment methods for learners (formative, summative, OSCE/OSPE).

UNIT III – Clinical Case Presentations

- Case history taking, physical examination, and diagnosis framework.
- Writing structured case reports (SOAP, ICF framework).
- Presenting pediatric, neurological, musculoskeletal, and cardiopulmonary cases.
- Critical appraisal and discussion of treatment strategies.
- Peer discussion and faculty feedback for case refinement.

UNIT IV – Journal Club & Evidence-Based Discussions

- Structure of journal article (abstract, methodology, results, discussion, conclusion).
- Critical appraisal of research papers (validity, reliability, applicability).
- Evidence-based clinical decision making.
- Journal club presentations: preparation, delivery, and defence.
- Reflective practice and self-assessment.

Third Semester

EXERCISETHERAPY IN NEUROPHYSIOTHERPY

Course code	**PTY601**
Type of course	**Exercise therapy in Neurophysiotherapy**
LTP	2 0 0
Credits	2
Course prerequisite	M.P.T
Course objective (CO)	OurExercise therapy in Neurophysiotherapyprogramme aims to acquire knowledge of the methods, procedures, models, techniques and actions required in the application of physical therapeutic principles to heal people suffering from physical deterioration, functional limitations, disabilities or changes in physical functions as a result of injury, diseases or other causes

UNIT-I

Biophysics: Contractile and non contractile tissues, Response to mechanical loading.

Factors affecting the joint range of motion, prevention of stiffness & methods of joint mobilization.

UNIT-II

Definition, Principles, details of effects and uses of following therapeutic exercises

- Dynamic Exercises
- Plyometric Exercises
- Isokinetic Exercises
- Kinetic chain exercises
- Agility training
- Balance & coordination exercises
- Relaxation exercises.
- Aquatic exercises.
- Endurance Training
- Stretching & Strengthening Exercises.

UNIT-III

Clinical reasoning and differential clinical diagnosis based on various approaches such

Maitland, Kaltenborne, Cyriax, Mulligan & Meckenzie etc.

Principles & application of neuromuscular facilitation techniques.

Principles & application of soft tissue mobilizations .

UNIT-IV

Yoga: Introduction, Historical background and Origin of Yoga, Meaning and Concept of Yoga and its relationship with Physical Education and Sports. Yoga in Global Scenario**,** Yoga as a Science and recent advances in Yoga& Types of Asanas.

Massage: Historical development, definition, classification, physiological, Therapeutic effects & contraindications of massage

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	The Principles of Exercise Therapy	Gardiner M. Dena	CBS Publishers, Delhi Edwards -
2	Therapeutic Exercises	Kisner and Colby	Foundations and Techniques, F.A. Davis.
3	Therapeutic Exercise	Basmajian John V	Williams & Wilkins
4	Tidy's Physiotherapy	Thomson et al	Butterworth Heinmann
5	Muscle Testing - Techniques of Manual Examination	Kendall	W.B. Saunders.

BASICS OF EXERCISE PHYSIOLOGY &NUTRITION

Course code	**PTY603**
Type of course	**Basics of Exercise Physiology &Nutrition**
LTP	2 0 0
Credits	2
Course prerequisite	M.P.T
Course objective (CO)	Our Basics of Exercise Physiology & Nutritionprogramme aims to Explain the metabolic processes responsible for generation of ATP and the relationship among the anaerobic and aerobic system and also describe the understanding of the neuromuscular responses and adapations to training or describe the impact of the neuromuscular system on human performance

UNIT-I

Bioenergetics of exercise: High energy phosphates, Anaerobic and aerobic ATP synthesis, Bioenergetics Control, exercise intensity & substrate utilization, protecting CHO stores, muscle adaptation to endurance training, Processes that potentially limit the rate of fat oxidation, regulation of substrate utilization: training induced increase in FFA oxidization
Basal metabolic and resting metabolic rates and factors affecting them, Classification of Physical Activities by energy expenditure, Concept of MET, measurement of energy cost of exercise

UNIT-II

Nutrition: metabolism of Carbohydrate, fats and proteins, vitamins, minerals and water

Nutrition in exercise:optimum nutrition for exercise, nutrition for physical performance, pre game meal carbohydrate loading, food for various athletic events, fluid and energy replacement in prolonged exercise

Energy Transfer for Physical Activity: Energy transfer in body during exercise,Energy expenditure during various activities, Fatigue, Biochemical responses to endurance training

UNIT-III

Skeletal System: Growth and Exercise, Repair and adaptation during exercise, Training for Muscular Strength and Endurance

Gastrointestinal Tract and Endocrine System: Effect of Sports on GIT and Liver, Hormone regulation of fluid and electrolytes during exercise, effect of Exercise on menstrual Cycle,Role ofStress Hormones in exercise, Effects of exercise on various Hormones in the body, opiods &Runners High

UNIT-IV

Respiratory responses to exercise: Ventilation at Rest and during Exercise, Ventilation and the Anaerobic Threshold, static and dynamic lung volume, Gas diffusion, Oxygen and carbon dioxide transpor, second wind, stich by side, control of pulmonary ventilation during exercise, adaptive changes in the respiratory systems due to regular physical activities

Cardiovascular responses to exercise: acute vascular effects of exercise, Circulatory responses to various types of exercise,regulation of cardiovascular system during exercise, Pattern of redistribution of blood flow during exercise, adaptive responses of cardiovascular system to aerobic and anaerobic training &Athlete heart

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Essentials of Exercise Physiology	McArdle, WD, Katch, FI, and Katch, VL	Lippincott Williams and Wilkins
2	Exercise Physiology	Powers, SK and Howley ET.	Mc Graw Hill
3	Fundamentals of Exercise Physiology: For Fitness Performance and Health	Robergs RA, and Roberts, S.O.	McGraw Hill
4	Nutrition for sport and exercise	Berning and Steen	W.E. Saunders
5	Textbook of Medical Physiology	Guyton, A.C	Philadelphia: Saunders
6	Physiology of Sport and Exercise	Willmore, JH & Costill, DL	Human Kinetics.

PHYSIOTHERAPY &REHABILITATION IN NEUROLOGICAL DISORDERS

Course code	**PTY605**
Type of course	**Physiotherapy &Rehabiliation in Neurological Disorders**
LTP	2 0 0
Credits	2
Course prerequisite	M.P.T
Course objective (CO)	OurPhysiotherapy & Rehabiliation in Neurological Disorders programme aims to give the student an understanding of the role of the physiotherapist in neuro-rehabilitation. The student will gain experience and knowledge in relation to the assessment, treatment and management of patients with neurological deficit

UNIT-I

Traumatic Brain Injury.

Stupor and Coma: The Neural basis of consciousness, Lesions responsible for Stupor and Coma, The assessment, Diagnosis & Management of the unconscious patient. **Cerebrovascular diseases:** Extradural haemorrhage, spontaneous subdural haemorrhage, Intracerebral haemorrhage, Subarachnoid haemorrhage, AV malformations & Intracranial aneurysm

Disorders ofthe Cerebral Circulation- Stroke:Epidemiology of the stroke and TIA, Causes, types and pathophysiology,Clinical features & investigation, Treatment of different types of stroke**,**Rehabilitation & its prevention

UNIT-II

Degenerative Diseases of the Spinal cord and Cauda Equina: Ataxia: definition & its types**,** Motor Neuron Disease, Spino-cerebellar degeneration, Transverse Myelitis &Spinal Muscular Atrophy.

Acute traumatic injuries, spinal disorders, surgical management, pre & post rehabilitation of the spinal cord & cauda equina lesion. Neoplastic Lesion:

Intracranial tumors: Tumors from related structures: Cerebral Hemisphere, Meninges, Cranial nerves & cerebellar.

UNIT-III

Neuropathies: Peripheral neuropathies, peripheral nerve lesions, clinical diagnosis, types & brachial plexus lesions, investigations & various surgeries, its pre & post Physiotherapy strategies.

Myopathies: Definition**,** etiology, signs & symptoms, investigations & its rehabilitation.

Infections: Meningitis,Encephalitis,Brain abscess,Neuro Syphilis (Tabes dorsalis),Chronic fatigue syndrome, AIDS,Herpes Simplex,Chorea&Tuberculosis

UNIT-IV

Disorders of Autonomic nervous system: Bladder and Bowel dysfuntion, Autonomic dysreflexia, Autonomic Neuropathy&Orthostatic hypotension

Movement disorders: Akinetic-rigiditySyndromes, Extra Pyramidal Syndromes& Dyskinetic disorders.

Demyelinating Diseases of the Nervous system.

Vitamins & Nutritional Disorders

Nervous system aging effects and Geriatric neurological disorders

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Cash's textbook of neurology for physiotherapists	Downi - J.P.Brothers	CBS Publishers, Delhi Edwards -
2	Neurological Physiotherapy - A problem solving approach	- Susan Edwards	Churchill Livingstone.
3	Neurological Rehabilitation	Umpherd	Mosby
4	Motor Assessment of Developing Infant	Piper & Darrah	W.E. Saunders

5	Paediatric Physical Therapy	Teckling	Lippmcott
6	Physiotherapy in Paediatrics	Shephered	Butterworth Heinrnann
7	Treatment of Cerebral Palsy and Motor Delay	Sophie Levitt	A Guide to Goniometry - F.A. Davis.
8	Assessment in Neurology	Dejong	George Allenand Unwin
9	Davidson's principles and Practices of Medicine	Davidson	Edward Churchill Livingstone
10	Hutchinson's Clinical Methods	Swash	Bailliere Tindall

BIOENGINEERING &REHABILITATION PRINCIPLES

Course code	**PTY607**
Type of course	**Bioengineering &Rehabilitation Principles**
LTP	2 0 0
Credits	2
Course prerequisite	M.P.T
Course objective (CO)	Our Bioengineering & Rehabilitation Principles programme aims to develop technological solutions and devices to assist individuals with disabilties or recovery of physical and cognitive functions which was lost by disease or injury. The Rehabilation engineers design and build devices and systems to meet a wide range of needs that can assist individuals with mobilty, communication, hearing, vision and cognition.

UNIT-I

Conceptual framework of rehabilitation: Definitions and role models of rehabilitation, International classification of functioning, Epidemiology of disability with emphasis on locomotor disability, impact of disability on individual, family, and society, Preventive aspects of disability and organizational skills to run disability services.

UNIT-II

Model of service delivery: Feature, merits and demerits of institutional based rehabilitation, out reach programmes & Community based rehabilitation.

Legal Aspect in Disabilities: PWD act, National trust act, RCI act, Statutory provisions, Schemes of assistance to persons with disabilities. Govt and NGO participation in disability&RCI.

UNIT-III

Principles of Orthotics: types, indications, contra indications & assessment (check out), uses and fittin: region wise. Orthotics for the Upper Limb, Orthotics for the Lower Limb,Orthotics for the Spine.

UNIT-IV

Principles of prostheses: types, indications, contra indications & assessment (check out), uses and fitting: region wise

An outline of principles and methods of rehabilitation of speech and hearing disability

An outline of principles and methods of vocational and social rehabilitation

An outline of principles and methods of rehabilitation of mentally handicapped

An outline of principles, methods and scope of occupational therapy

Architectural Barriers: Describe architectural barriers and possible modifications with reference to Rheumatoid Arthritis, CVA, Spinal Cord Injury and other disabling conditions.

An outline of the principles and process of disability evaluation.

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Textbook of Rehabilitation	Sunder	Jaypee Brothers
2	Physical Rehabilitation	Susan B.O Sullivan and Thomas J.Schmitz	F.A. Davis

CURRENT CONCEPTS IN NEUROPHYSIOTHERAPY

Course code	**PTY609**
Type of course	**Current Concepts inNeuro Physiotherapy**
LTP	2 0 0
Credits	2
Course prerequisite	M.P.T
Course objective (CO)	Our Current Concepts in Neuro Physiotherapy programme aims to assessing and treating individuals by using current advancement in neurological field for enhance or maximise their functional ability

UNIT-I

Treatment planning process:

Classification of treatment techniques based on current concepts & approaches. Clinical Decision Making and Clinical Reasoning.

Evidence based practice.

Treatment techniques with emphasis on recording & documentation.

UNIT-II

Neuromuscular & Proprioception Training: Methods For Optimizing neuromuscular &Postural Control (Proprioception& Kinesthetic Training), Sensory Integration therapy.

UNIT-III

Advancedtherapeutic techniques in neurophysiotherapy:

Muscle Energy Techniques (MET)&Cranio-sacral therapy.

Motor learning Theories: Definition, Concept, Therapeutic& Positional. Myofacial release techniques.

Butler concept&Management of pain and Spasticity in neurological conditions.

UNIT-IV

Various Neurological Approaches and Their Concept: Modified CIMT, Motor relearning programme & PNF Approach.

Text and Reference Books

S.No	Name	Author (S)	Publisher
1	Cash's textbook of neurology for physiotherapists	Downi - J.P.Brothers	CBS Publishers, Delhi Edwards -
2	Neurological Physiotherapy - A problem solving approach	- Susan Edwards	Churchill Livingstone.
3	Neurological Rehabilitation	Umpherd	Mosby
4	Motor Assessment of Developing Infant	Piper & Darrah	W.E. Saunders
5	Paediatric Physical Therapy	Teckling	Lippmcott
6	Physiotherapy in Paediatrics	Shephered	Butterworth Heinrnann
7	Treatment of Cerebral Palsy and Motor Delay	Sophie Levitt	A Guide to Goniometry - F.A. Davis.
8	Assessment in Neurology	Dejong	George Allenand Unwin
9	Davidson's principles and Practices of Medicine	Davidson	Edward Churchill Livingstone

10	Hutchinson's Clinical Methods	Swash	Bailliere Tindall

Dissertation-I (Clinical &Research Oriented Work)

Course code	**PTY613**
Type of course	**Dissertation-I (Clinical & Research Oriented Work)**
LTP	0 0 24
Credits	12
Course prerequisite	M.P.T
Course objective (CO)	1. Pursuing a collaborative role in a research-intensive environment, bring forth expertise in clinical trials and data analysis. 2. A clinical researcher requires a very specific set of skills & extended research experience.

LIST OF EXPERIMENTS:

UNIT I – Research Problem Identification & Literature Review

- Selection of research topic based on clinical relevance.
- Formulation of research objectives, hypotheses, and research questions.
- Systematic review of literature (search strategies, databases, inclusion/exclusion criteria).
- Gap identification and justification of study.
- Preparation of research proposal draft.

UNIT II – Research Design & Methodology Development

- Types of study designs in clinical research (RCT, cohort, case-control, cross-sectional, qualitative).
- Sampling methods and sample size estimation.
- Research tools: outcome measures, questionnaires, scales.

- Ethical considerations in human research; obtaining IEC/IRB clearance.
- Proposal defence and modifications as per feedback.

UNIT III – Data Collection & Clinical Work

- Pilot study / feasibility testing.
- Recruitment of participants and informed consent process.
- Clinical data collection under supervision.
- Maintenance of research records, logbooks, and case files.
- Quality assurance and adherence to protocol.

UNIT IV – Data Management, Analysis & Presentation

- Data entry and organization (Excel/SPSS/other software).
- Descriptive and inferential statistical analysis (basic application).
- Interpretation of preliminary results.
- Progress presentation and mid-term evaluation.
- Documentation of partial dissertation (Chapters I–III: Introduction, Review of Literature, Methodology).

Fourth Semester

Skill Enhancing Practical (Neurological Physiotherapy)

Course code	**PTY602**
Type of course	**Skill Enhancing Practical (Neurological Physiotherapy)**
LTP	0 0 100
Credits	50
Course prerequisite	M.P.T
Course objective (CO)	1.Demonstrate advanced skills in neurological assessment, including higher mental functions, cranial nerves, motor, sensory, and coordination testing. 2.Apply evidence-based Neurophysiotherapy techniques for rehabilitation of adults and children with neurological conditions. 3.Plan, execute, and modify individualized treatment programs based on clinical reasoning and patient needs. 4.Exhibit professional competencies in case documentation, bedside presentations, interdisciplinary teamwork, and patient/family counseling.

LIST OF EXPERIMENTS:

UNIT I – Advanced Neurological Assessment

- History taking and clinical examination in neurological conditions.
- Higher mental function, cranial nerve, motor, sensory, reflex, coordination, and balance assessment.
- Gait assessment and movement analysis.

- Functional assessment tools (FIM, Barthel Index, Berg Balance Scale, Rivermead Mobility Index, MMSE, etc.).
- Case sheet preparation and bedside case presentation.

UNIT II – Adult Neurorehabilitation Skills

- Stroke rehabilitation (CVA): motor relearning, constraint-induced movement therapy, task-oriented training.
- Traumatic brain injury: neurofacilitation and rehabilitation strategies.
- Spinal cord injury: assessment and rehabilitation, locomotor training, bladder/bowel management.
- Neurodegenerative disorders: Parkinson's disease, multiple sclerosis, ALS – rehabilitation approaches.
- Vestibular rehabilitation techniques.

UNIT III – Paediatric Neurorehabilitation Skills

- Developmental assessment and intervention.
- Cerebral palsy management (Bobath, Vojta, Dynamic Neuromuscular Stabilization, task-specific training).
- Neurodevelopmental therapy and sensory integration.
- Management of paediatric neuromuscular disorders.
- Family-centred care and parent training.

UNIT IV – Clinical Reasoning, Documentation & Professional Practice

- Differential diagnosis in neurological physiotherapy.
- Designing and modifying individualized treatment plans.
- Multidisciplinary team approach in neurorehabilitation (OT, speech therapy, psychology, orthotics).
- Case discussions, seminars, and reflective practice.
- Clinical documentation, report writing, and outcome measure evaluation.

Dissertation Work(Including Research Oriented work in Previous semester

Course code	**PTY604**
Type of course	**Dissertation Work(Including Research Oriented work in Previous semester)**
LTP	0 0 200
Credits	100
Course prerequisite	M.P. T
Course objective (CO)	1.Complete data collection in accordance with approved research methodology and ethical standards. 2. Perform statistical analysis and interpret results with clinical and research relevance. 3. Write a comprehensive dissertation including introduction, methodology, results, discussion, and conclusions. 4. Defend research findings effectively in seminars, conferences, and viva-voce, demonstrating critical thinking and scientific reasoning.

LIST OF EXPERIMENTS:

UNIT I – Data Collection & Clinical Work

- Completion of subject recruitment and ethical compliance.
- Full data collection using standardized tools and techniques.
- Maintenance of case records, logbooks, and data entry sheets.
- Ensuring quality control and reliability of data.

UNIT II – Data Analysis & Interpretation

- Data organization and cleaning.
- Descriptive and inferential statistical analysis using appropriate software (SPSS, R, etc.).
- Presentation of results in tabular, graphical, and narrative form.
- Preliminary discussion and comparison with existing literature.

UNIT III – Dissertation Writing

- Structuring dissertation as per university guidelines:
    - Introduction & Review of Literature
    - Methodology
    - Results
    - Discussion
    - Conclusion, Limitations & Future Scope
    - References & Appendices
- Academic writing skills, plagiarism check, and referencing styles (Vancouver/APA).
- Draft preparation and submission for supervisor feedback.

UNIT IV – Presentation, Publication &Defence

- Preparation of research seminar presentations.
- Poster/paper presentation in conferences.
- Manuscript preparation for peer-reviewed journals.
- Final submission of dissertation.
- Defense of dissertation in viva-voce.

Community Camps, Participation in Workshops & Conferences

Course code	**PTY606**
Type of course	**Community Camps, Participation in Workshops & Conferences**
LTP	0 0 60
Credits	NC
Course prerequisite	M.P.T
Course objective (CO)	1.Organize and participate in community health camps with an understanding of preventive, promotive, and rehabilitative physiotherapy roles. 2.Demonstrate skills in health screening, awareness creation, and basic rehabilitation service delivery at the community level. 3.Actively engage in workshops and conferences to update professional knowledge, network, and present academic/clinical work. 4.Apply reflective practice by documenting and critically analyzing experiences from camps, workshops, and conferences.

LIST OF EXPERIMENTS:

UNIT I – Community Physiotherapy & Outreach

- Concept of community-based rehabilitation (CBR) and primary health care.

- Role of physiotherapy in health promotion, prevention, and rehabilitation at community level.
- Planning and organizing community physiotherapy camps.
- Screening, awareness programs, and preventive physiotherapy strategies.

UNIT II – Participation in Community Camps

- Hands-on involvement in rural/urban health camps.
- Patient assessment, counseling, and referral services in camps.
- Designing IEC (Information, Education & Communication) materials for community awareness.
- Reflection on case profiles and outcomes from community exposure.

UNIT III – Workshops & Professional Development

- Participation in skill-based workshops (manual therapy, neurological rehab, cardiopulmonary rehab, etc.).
- Enhancing practical competencies through expert-led training.
- Professional networking and inter-disciplinary collaboration.
- Reflective learning from workshops attended.

UNIT IV – Conferences, Seminars & Knowledge Dissemination

- Attending national/international physiotherapy or rehabilitation conferences.
- Exposure to recent advances and research trends.
- Preparing and presenting scientific papers, posters, or case reports.
- Reflective documentation of learning experiences from conferences/seminars.