



GALGOTIAS UNIVERSITY

Syllabus of Master of Physiotherapy (Neurology)

Name of School: School of Medical and Allied Science

Department: Paramedical and Allied Health Sciences
(Division of Physiotherapy)

Year: 2021-2023

Vision: To be known globally for Physiotherapy education, interdisciplinary research and innovative therapeutic techniques in Rehabilitation.

Mission:

M1: To establish state-of-art facilities for physiotherapy education

M2: To collaborate with health care sector for curriculum development to inculcate clinical competencies and entrepreneurship skills

M3. To provide evidence based best practices in physical and rehabilitation therapy through research and innovation

Program Educational Objectives:

Post-Post-graduates Shall

PEO 1: Engage in Physiotherapy oriented screening and examination for complex and specific conditions, taking international frameworks and evidence-based practice into account.

PEO 2: Problem solving and effective rehabilitation through professional multidisciplinary interaction.

PEO 3: Gain specialized domain specific knowledge Physiotherapy skills.

Program Outcomes:

1. Physiotherapy Knowledge: Coursework entitles independent physiotherapy assessment and treatment in any healthcare delivery centers in India by the Post-graduates
2. Problem analysis: Evaluate patients for impairments and functional limitations and able to execute all routine physiotherapeutic procedures as per the evaluation.
3. Design/development of solutions: The Post-graduate will utilize critical inquiry and evidence-based practice to make clinical decisions essential for autonomous practice
4. Leadership skills: the post-graduate will demonstrate the leadership skills in performing societal and professional upliftment.
5. Professional Identity: Post-graduates can find employment opportunities in hospitals/nursing homes/sports teams/fitness centers/Community Rehabilitation /Health planning boards/health promotions services in both private and public sectors as well as in independent physiotherapy clinics.
6. Physiotherapy and society: The Post-graduate will function as an active member of professional and community organizations. The Post-graduate will be a service-oriented advocate dedicated to the promotion and improvement of community health.
7. Basic medical Knowledge: The Post-graduates will execute their basic medical knowledge in prevention, evaluation, treatment and rehabilitation of patient.
8. Ethics: The Post-Post-graduate will be a competent and reflective physiotherapy practitioner who can function safely and

effectively while adhering to legal, ethical and professional standards of practice in a multitude of physiotherapy settings for patients and clients across the lifespan and along the continuum of care from wellness and prevention to rehabilitation of dysfunction

9. Individual or team work: The coursework is designed to train students to work as independent physiotherapists or in conjunction with a multidisciplinary team to diagnose and treat disorders as per the standard healthcare guidelines.

10. Communication: Communicates and educates the individual's family, community, and other professionals about positive health, prevention, wellness, and rehabilitation.

11. Physiotherapy Patient evaluation & management: Coursework will skill the post-graduate for physical/functional diagnosis, treatment planning, management, administration of physiotherapy treatment and for patient support

12. Life-long Learning: The Post-graduate will demonstrate lifelong commitment to learning and professional development.

Curriculum

Semester I									
S.No	Course Code	Name of the Course					Assessment Pattern		
			L	T	P	C	IA	CAT	ETE
1	MPTN5001	Professional Practice and Hospital Administration	4	0	0	4	10	20	70
2	MPTN5002	Research Methodology and Biostatistics	4	0	0	4	10	20	70
3	MPTN5003	Biomechanics and Clinical Kinesiology	4	0	0	4	10	20	70
4	MPTN5004	Biomechanics and Clinical Kinesiology Lab	0	0	2	1	30	-	70
5	MPTN5005	Clinical Posting-I	0	0	20	10	30	-	70
6		TOTAL	12	0	22	23			
Semester II									
S.No	Course Code	Name of the Course					Assessment Pattern		
			L	T	P	C	IA	CAT	ETE
1	MPTN5006	Therapeutic Techniques	4	0	0	4	10	20	70
2	MPTN5007	Physiotherapy Diagnosis and Clinical Decision Making	4	0	0	4	10	20	70
3	MPTN5008	Pedagogy	3	0	0	3	10	20	70
4	MPTN5009	Therapeutic Techniques Practical	0	0	2	1	30	-	70
5	MPTN5010	Physiotherapy Diagnosis and Clinical Decision Making Lab	0	0	2	1	30	-	70
6	MPTN5011	Clinical Posting-II	0	0	20	10	30	-	70
		TOTAL CORE	11	0	24	23			
		ELECTIVE							
7	MPTN5012	Medical Record Keeping	2	0	0	2	10	20	70
8	MPTN5013	Emergency Care	2	0	0	2	10	20	70
		TOTAL	15	0	24	27			
Semester III									
S.No	Course Code	Name of the Course					Assessment Pattern		

			L	T	P	C	IA	CAT	ETE
1	MPTN6001	Neurological Disorders- I	4	0	0	4	10	20	70
2	MPTN6002	Physiotherapeutics in Neurological Disorders- I	4	0	0	4	10	20	70
3	MPTN6003	Physiotherapeutics in Neurological Disorders Lab- I	0	0	4	2	30	-	70
4	MPTN6004	Clinical Posting -III	0	0	24	12	30	-	70
		TOTAL CORE	8	0	28	22			
		ELECTIVE							
5	MPTN6005	Diagnostic Imaging	2	0	0	2	10	20	70
6	MPTN6006	Evaluation Methods and Outcome Measures	2	0	0	2	10	20	70
		TOTAL	12	0	28	26			
Semester IV									
S.No	Course Code	Name of the Course					Assessment Pattern		
			L	T	P	C	IA	CAT	ETE
1	MPTN6007	Advance Neurological Physiotherapy Techniques	4	0	0	4	10	20	70
2	MPTN6008	Physiotherapeutics in Neurological Disorders- II	4	0	0	4	10	20	70
3	MPTN6009	Physiotherapeutics in Neurological Disorders Practical- II	0	0	4	2	30	-	70
4	MPTN6010	Clinical Posting-IV	0	0	24	12	30	-	70
5	MPTN6011	Dissertation	0	0	4	2	30	-	70
		TOTAL	8	0	32	24			
		GRAND TOTAL	47	0	106	100			

Detailed Syllabus
Of
MPT(Neurology)

School of Medical and Allied Sciences

Name of The Course	Professional Practice and Hospital Administration			
Course Code	MPTN5001			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	4	0	0	4

Course Objectives

To Study

1. Principles of Management in field of Physiotherapy
2. The working environment of Hospital
3. Gain professional knowledge with respect to ethics & limitations of his/ her profession.

Course Outcomes

CO1	Apply physiotherapy ethics into the practice
CO2	Relate and apply professional and legal aspects into the practice
CO3	Apply management skills into the practice
CO4	Apply marketing skills into the practice
CO5	Understand the hospital management skill and apply it into the practice
CO6	Understand new healthcare trends

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

UNIT I:

P.T Values and Ethics

- Development of Physiotherapy Profession
- Concept of Morality, Ethics and Legality.
- Rules of Professional conduct and Moral Implications.
- Communication skills, Client interest and Satisfaction.
- Inter Disciplinary Relation, Co-partnership, Mutual Respect, Confidence and communication, Responsibilities of the Physiotherapists, Status of Physiotherapist in Health Care.
- Role of Professional in Socio-Personal and Socio-Economic conditions.

Ethics of various organizations

- Need of Council Act for regulation of Professional Practice, Self-Regulatory role of Professional Association.
- Constitution and Functions of IAP.
- World Confederation of Physical therapists (WCPT)

Unit II: Legal Concerns

P.T. Law and Legal Concepts

- Medico legal aspects of physical therapy, liability, informed consent negligence, malpractice, licensure, consumer protection act.
- Law of disability & discrimination, Confidentiality of the Patient's status.

Physiotherapy profession and staff roles

- Documentation of rehabilitation assessment and management using International Classification of Functioning Disability and Health (ICF).
- Future challenges in Physiotherapy.
- Roles of Physiotherapy Director, Physiotherapy Supervisor, Physiotherapy Assistant, Physiotherapy, Occupational therapist, Home Health Aide and Volunteer.
- Standardized tests and scales used in various types of cases for assessment and interpretation in Physiotherapy practice

Unit III: Management

Introduction

- Introduction, Evolution of management, Functions of management.
- Management process – planning, organization, direction, controlling, Decision-making.
- Quantitative methods of management: relevance of statistical and/ or techniques in management.

Personal Management

- Staff Recruitment selection.

<ul style="list-style-type: none"> Performance analysis and appraisal, Collective bargaining. Job satisfaction Discipline.
Unit IV: Marketing
Marketing <ul style="list-style-type: none"> Market segmentation, Channels of distribution. Promotion, Consumer behavior, marketing research production, planning. Total Quality Management <ul style="list-style-type: none"> Quality assurance program in hospitals.
Unit V: Hospital Management
<ul style="list-style-type: none"> Introduction: Planning hospital administration as part of a balanced health care program. Principles of hospital administration and its applications to physiotherapy. Planning and organization: Planning cycle, Principles of organizational charts, Resource and quality management, Planning change –innovation. Hospital administration: Organization, Staffing, Information, Communication, Coordination, Cost of services, Monitoring and evaluation. Organization of physiotherapy department: Planning, Space, Manpower, Other basic resources. Hospital acquired infection.
Unit VI: Healthcare Trends
1. Consumerism—One of The Biggest Disruptors in Healthcare 2. Financial Performance Indicates the Ability of Healthcare Organizations to Survive 3. Social Issues. As the business of providing healthcare becomes more complex

Suggested Reading

- Hickik Robert J, Physical Therapy Administration & Management 2nd edition, Williams & Wilkins, ISBN: 9780683039764
- G. D. Kunders, S. Gopinath, Asoka Katakam, Hospital: planning, design & management, Tata McGraw-Hill Publishing Company, ISBN: 9780074622117
- Larry J. Nosse, Deborah Friberg, Management Principles for physiotherapists, Lippincott Williams and Wilkins, ISBN-13: 978-0683065763

Name of The Course	Research methodology And biostatistics			
Course Code	MPTN5002			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	4	0	0	4

Course Objectives

To study the basic principles and application of

- Research writing and reviewing 2. Biostatistics in Research
- Apply basic biostatistics in research

Course Outcomes

On completion of the course the student should be able to:

CO1	Enumerate the steps of research process
CO2	Design the different research methods
CO3	Acquire skills to review literature, formulate problems, research writing and publishing
CO4	Apply basic biostatistics in research
CO5	Apply analytical statistical tests to analyze the result of research
CO6	To Analyse Recent Advances in Research Methodology and Biostatistics

Continuous Assessment Pattern

Internal Assessment (IA)	Continuou s Assessment t Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I: <u>Research in physiotherapy</u>
<ul style="list-style-type: none"> • Introduction • Research – Definition, concept, purpose, approaches • Research for Physiotherapist: Why? How? And When? • Research Ethics: Main ethical issues in human subjects' research • Define measurement & Scales of measurement • Pilot Study, Types of variables • Measurement: Properties of measurement: reliability, validity, responsiveness, MCID.
Unit II: Research Design
<ul style="list-style-type: none"> • Management, Evaluation and Rehabilitation of: • Spinal Cord Injury • Disorders of muscles • Design, instrumentation & analysis for quasi-experimental research • Design models utilized in Physiotherapy
Unit III: Research Proposal
<ul style="list-style-type: none"> • Writing a Research Proposal, Critiquing a research article • Evaluating published research: looking at the evidence • Formulating a question, Operational Definition • Inclusion & Exclusion criteria • Data collection & analysis • Results, Interpretation, conclusion, discussion • Informed Consent • Limitations • Research Fundamentals
Unit IV: <u>Biostatistics</u>
<p>Introduction to Biostatistics</p> <ul style="list-style-type: none"> • Definition • Types & Application in Physiotherapy <p>Data</p> <ul style="list-style-type: none"> • Definition, Types, Presentation & Collection methods <p>Measures of central value</p> <ul style="list-style-type: none"> • Arithmetic mean, median, mode. Relationship between them

<ul style="list-style-type: none"> • Partitioned values- Quartiles, Deciles, Percentiles • Graphical determination <p>Measures of Dispersion</p> <ul style="list-style-type: none"> • Range • Mean Deviation • Standard Deviation <p>Normal Distribution Curve</p> <ul style="list-style-type: none"> • Properties of normal distribution • Standard normal distribution • Transformation of normal random variables. • Inverse transformation • Normal approximation of Bioaxial distribution. <p>Correlation analysis</p> <ul style="list-style-type: none"> • Bivariate distribution: • Scatter Diagram • Coefficient of correlation • Calculation & interpretation of correlational coefficient • T-test, Z-test, P-value <p>Regression analysis</p> <ul style="list-style-type: none"> • Lines of regression • Calculation of Regression coefficient -
Unit V: Sampling
<p>Sampling</p> <ul style="list-style-type: none"> • Methods of Sampling • Sampling distribution • Standard error • Types I & II error <p>Probability (in Brief)</p> <p>Hypothesis Testing</p> <ul style="list-style-type: none"> • Null Hypothesis • Alternative hypothesis • Acceptance & rejection of null Hypothesis • Level of significance <p>Parametric & non parametric tests</p> <ul style="list-style-type: none"> • Chi square test • Mann-Whitney U test • Wilcoxon Signed test • Kruskal-Wallis test • Friednam test • T-test/student T test • Analysis of variance

Unit VI: Recent Advances in Research Methodology And Biostatistics

- Quantile Regression Methods
- Longitudinal data analysis.
- Survival analysis.
- High dimensional data analysis and big data analysis.

Suggested Reading

- Elizabeth Domholdt: Rehabilitation Research: Principles and Applications (Elsevier Science Health Science Div, 2004)
- Carolyn M. Hicks: Practical Research Methods for Physiotherapists, Churchill Livingstone, 1988, ISBN: 978-0443037573

Name of The Course	Biomechanics and Clinical kinesiology				
Course Code	MPTN5003				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	4	0	0	0	4

Course Objectives

To Study

1. Muscle, Joint structure and function
2. Joint complexes of upper and lower limb.
3. Physiology of exercise & its effect on various systems of body.

Course Outcomes

CO1	To apply the knowledge of neuromuscular biomechanical principles for assessing the physiotherapeutic requirement of the patient.
CO2	To apply the knowledge of upper limb joints biomechanics in evaluation and treatment of patients
CO3	To apply the knowledge of lower limb joints biomechanics in evaluation and treatment of patients
CO4	To apply the knowledge of tissue mechanics in evaluation and treatment of patients
CO5	To analyze the gait & Posture
CO6	To Analyse Mechanical Analysis Of Human Motion

Continuous Assessment Pattern

Internal Assessment (IA)	Continuou s Assessmen t Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

UNIT I: Introduction to Neuro - muscular consideration of movement

- Forces, Equilibrium, Levers: laws & mechanical advantage.
- Torque, Power,
- Strength & Endurance
- Reflex & Volitional movement, Reciprocal innervation & Inhibition.
- Clinical kinesiology of Posture

UNIT II: Joint Biomechanics - UL

<ul style="list-style-type: none"> Types of Joints Upper extremity
UNIT III: Joint Biomechanics – LL and Spine
<ul style="list-style-type: none"> Lower extremity Spine and thoracic cage
UNIT IV: Tissue Mechanics
<ul style="list-style-type: none"> Material properties, viscoelasticity, creep and stress relaxation, rate dependent properties, stress and strain curves. <ul style="list-style-type: none"> ➤ Bones ➤ Muscle ➤ Ligaments and tendons Biomechanics of Tissues and structures of the musculoskeletal system and clinical application
UNIT V: Gait
<ul style="list-style-type: none"> Kinetics and kinematic analysis of normal gait. Pathological posture & Pathological gait. Running Ergonomic Approach to lifting and handling, workspace and environment Patient Positioning, Body Mechanics and Transfer Techniques
UNIT VI: Mechanical Analysis Of Human Motion_
<ul style="list-style-type: none"> Force Velocity Momentum Leverage

Suggested Reading

- Margareta Nordin and Victor H. Frankle, Basic biomechanics of the musculoskeletal system 2nd edition, Lea and Febiger.
- Cynthia C Norkin, Pamela K Levangie, Joint Structure & Function: A comprehensive analysis, Jaypee Brothers, 2006

- Mc Ardle, Katch & Katch, Exercise Physiology ,Lippincott Williams and Wilkins, 2000.
- Kapandji & Matthew J Kendel, The Physiology of the Joints, Churchill Livingstone, 2008.
- Robert A. Roberts and Scott O Roberts William C Brown, Exercise Physiology: Exercise, Performance, and Clinical Applications, 1997.
- Scott O. Roberts, Peter Hanson, Clinical Exercise Testing and Prescription Theory and Applications, C RC Press, 1997.

Name of The Course	Biomechanics and clinical kinesiology Lab				
Course Code	MPTN5004				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	0	0	2	1	

Course Objectives

To study:

- And understand the basic principles of Biomechanics.
- And understand the basic principles of Exercise Physiology.

Course Outcomes

CO1	To demonstrate neuromuscular biomechanical principles for assessing the physiotherapeutic requirement of the patient.
CO2	To demonstrate upper and lower limb joints biomechanics in evaluation and treatment of patients

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test	End Term Exam (ETE)	Total Marks
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Course Content:

❖ Demonstration of normal angles of various joints of body, carrying angle, Q-angle, etc.
❖ Demonstration of Thoracic expansion.
❖ Demonstration of measurement of Gait parameters
❖ Postural Assessment.

Suggested Reading

1. Margareta Nordin and Victor H. Frankle: Basic biomechanics of the musculoskeletal system, 2nd edition (Lea and Febiger)
2. Cynthia C Norkin, Pamela K Levangie: Joint Structure & Function: A comprehensive analysis (Jaypee Brothers, 2006)
3. Kapandji & Matthew J Kendel: The Physiology of the Joints (Churchill Livingstone, 2008)

Name of The Course	Clinical posting- I				
Course Code	MPTN5005				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	0	0	20	10	

Course Objectives

1. To sensitize potential learners with essential knowledge, this will lay a sound foundation for their learning across the post-Post-graduate program and across their career

2. To ensure the attention of a student and make them more receptive such as group activities, interactive sessions, role plays, and clinical bed-side demonstrations.

Course Outcomes

CO1	Understanding of community and health care Workers
CO2	Understanding the bedside assessment of a patient and its management
CO3	Understanding of different departments in a Hospital
CO4	Understanding basic knowledge of modality and its implementation
CO5	Understanding basic knowledge of neuro-rehabilitation and its implementation
CO6	Understanding the recent advance techniques in neuro-rehabilitation and its application

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
30	-	70	100

Course Content:

Unit I: OPD visit
OPD, hospital and clinical visit or posting of the students to learn & upgrade their knowledge in the approach, assessment, diagnosis, and Physiotherapy management of patients visiting the department.
Unit II: Application of Modalities
Hours
Application of various modalities and therapeutic techniques in neurological conditions
Unit III: Collection Of Data
Approach to patient, collection of demographic data, art of history taking, bed-sides; OPD manners in relation to

patient, general assessment of patient from therapeutic point of view, ability to find provisional diagnosis logically, and application of therapeutic skill learned.

Unit IV: Rehabilitation Planning

Short term and long term goal planning in neurorehabilitation

Unit V: Medical Records

Record keeping and exercise prescription in physiotherapy

UNIT VI: Recent Advance Techniques

- Hands on practice in neuro-rehabilitation approach
- Bobath/NDT
- MRP
- Voijta
- Biofeedback
- Vestibular Rehabilitation
- Topic presentation
- Case presentation of any case from their clinical visit

Name of The Course	Therapeutic techniques			
Course Code	MPTN5006			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	4	0	0	4

Course Objectives

To study:

1. Various methods of assessment of the physical parameters like joint ROM, muscle strength etc.
2. The principles of exercise therapy e.g. relaxation, co-ordination, re-education, stretching, strengthening, active and passive movements, mobilization, goniometry.
3. The construction and principle of working of various electrotherapeutic modalities.

Course Outcomes

CO1	Apply the principles of basic exercise therapy.
CO2	Apply manual therapeutic techniques in patient treatment
CO3	Apply therapeutic currents in patient treatment
CO4	Apply thermal and electromagnetic modalities in patient treatment
CO5	Apply advanced electrotherapy in patient treatment
CO6	To Analyse Recent Advances in Therapeutic Techniques

Suggested Reading

1. Kenneth W. Lindsay, Ian Bone, Geraint Fuller, Neurology & Neurosurgery Illustrated 5th edition, Churchill Livingstone, 2010, ISBN: 978-0443069574
2. Susan B.O'Sullivan, Thomas J. Schmitz, Physical Rehabilitation 5th edition, F.A. Davis Company, 2006, ISBN: 978-0803612471
3. Anne Shumway-Cook, Marjorie H. Woollacott, Motor Control: theory & practical Application 2nd edition, Lippincott Williams & Wilkins, 2001, ISBN: 9780683306439
4. Darcy A. Umphred, Neurological Rehabilitation 5th edition, Mosby, 2006, ISBN: 978-0323033060

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I: Therapeutic Techniques - I
Review of the following techniques. <ul style="list-style-type: none"> Stretching and mobilization. Balance and co-ordination exercises. Introduction to Bronchial Hygiene Therapy. Soft tissue manipulation PNF- Principles Under water Training
Unit II: Therapeutic Techniques - II
<ul style="list-style-type: none"> Manual therapy –different schools of thought Principles of Neurological approaches. Facilitation and inhibition techniques General Guidelines to be followed in Cardiac Rehabilitation, Pulmonary Rehabilitation, Burns Rehabilitation and Cancer Rehabilitation Physiotherapy in common conditions of skin
Unit III: Therapeutics Currents
<ul style="list-style-type: none"> General Review of low frequency currents : Faradic, galvanic, Electro diagnosis, TENS, General Review of medium frequency currents: Interferential Therapy, Di-dynamic and Russian currents Pain Gate Mechanism and its applications EMG and NCV and Biofeedback Pain (neurobiology, various theories ,modulation and management of pain)
Unit IV: Thermal Energy
<ul style="list-style-type: none"> Heating Modalities Cryotherapy Ultrasound. SWD Electromagnetic Radiations LASER,

- MWD,
- UVR and IRR

Unit V: Advanced Electrotherapy

- Shock Wave,
- LWD,
- Combination Therapy for diagnosis

UNIT VI: Recent Advances in Therapeutic Techniques

- Percutaneous electrical neural stimulation (PENS)
- Micro current therapy
- Extracorporeal shockwave therapy
- low intensity pulsed ultrasound (LIPUS)

Suggested Reading

- Carolyn Kisner, Lynn Allen Colby, Therapeutic Exercise: Foundations and Techniques 6th edition, F.A. Davis Company, 2012, ISBN: 978-0803625747
- M. Dena Gardiner, Principles of Exercise Therapy 4th edition, CBS Publishers & Distributors PvtLtd, 2005, ISBN: 978-8123908939
- Robertson, Alex Ward, John Low, Ann Reed, Electro therapy explained: Principles & practice 4th edition, Val, Butterworth-Heinemann publishers, 2006, ISBN: 978-0750688437
- De Lisa, Manual of nerve condition velocity techniques – Raven press, New York, 1982

Name of The Course	Physiotherapy diagnosis and clinical decision Making			
Course Code	MPTN5007			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	4	0	0	4

Course Objectives

1. About assessment & evaluation techniques in various disorders.
2. About the Interpretation of various clinical tests.

Course Outcomes

CO1	Apply the various physiotherapeutic procedures for clinical examination
CO2	Apply various electrodiagnostic tools and interpret its result for patient evaluation
CO3	Interpret the result of various radiodiagnostic tools for patient evaluation
CO4	Evaluate functional disability and plan restoration of movement functions
CO5	Perform and interpret exercise stress testing, anthropometric test, PFT etc.
CO6	To Analyse Recent Advances in Physiotherapy Diagnosis

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I: <u>Clinical Examinations</u>
<ul style="list-style-type: none"> • Clinical examination in general and detection of movement dysfunction. • Evaluation Methods, Special tests and Scales used in Musculoskeletal, Neurological and Cardiopulmonary disorders. • Developmental screening, motor learning – motor control assessment.
Unit II: <u>Electrodiagnosis</u>
<ul style="list-style-type: none"> • Biophysical measurements, physiotherapy modalities, techniques and approaches. • EMG • NCV

- Biofeedback

Unit III: Radiodiagnosis

Principles of imaging techniques related to neuromuscular, skeletal and cardiopulmonary disorders with interpretation.

Unit IV: Disability Evaluation

Aids and appliances, adaptive functional devices to improve movement dysfunction.
Physical disability evaluation and disability diagnosis.
Evaluation of aging. Gait analysis and diagnosis.

Unit V: Other tests

Exercise ECG testing and monitoring.
Anthropometric measurements.
Pulmonary function test
Physical fitness assessment by Range of motion, Muscle strength, endurance and skills, Body composition, Fitness test for sports.

Unit VI: Recent Advances in Physiotherapy Diagnosis

- Recent advances in magnetic resonance imaging for stroke diagnosis
- Biomarkers in Parkinson's disease

Suggested Reading

1. Susan B. O'Sullivan, Thomas B. Schmitz, Physical Rehabilitation 5th Edition, F a Davis Company, 2007, ISBN: 9780803612471
2. Robert A. Donatelli, Michael J. Wooden, Orthopaedic Physical Therapy 4th edition, Churchill Livingstone; 2009, ISBN: 978- 0443069420
3. Karim Khan, Brukner & Khan's Clinical Sports Medicine 4th edition, Peter Brukner, McGraw-Hill Medical, 2012, ISBN: 978-0070998131

Name of The Course	Pedagogy
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Course Code	MPTN5008			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	3	0	0	3

Course Objectives

1. Describe the various methods involved in teaching
2. Apply these teaching principles in the imparting physiotherapy knowledge to students.

Course Outcomes

CO1	Apply concept of teaching and learning
CO2	Design curriculum
CO3	Apply principles and methods of teaching
CO4	Apply measurement and evaluation methods of teaching
CO5	Execute awareness program
CO6	Discuss latest TLP

Continuous Assessment Pattern

Internal Assessment (IA)	Mid Term Exam (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I: Concept of Teaching and Learning	
<ul style="list-style-type: none"> • Meaning and scope of Educational Psychology. • Psychology of education • Meaning and Relationship between teaching and learning. • Learning Theories. • Dynamics of behavior. 	
Unit II: Curriculum	7Hours
<ul style="list-style-type: none"> • Basis of curriculum formulation. • Framing objectives for curriculum. • Process of curriculum development and factors involved. 	

- Evaluation of curriculum differences.
- Curriculum planning – Integrated teaching, Problem based learning, Evidence based medicine.
- Skill development- Clinical skills, Communication skills, counseling skills.

Unit III: Principles and Methods of Teaching

- Bloom's taxonomy of instructional objectives.
- Writing instructional objectives in behavioral terms.
- Planning of teaching: Unit planning, Lesson planning.
- Lecture, Demonstration Discussion, Seminar, Assignment.
- Types of teaching aids.

Unit IV: Measurement and Evaluation

- Nature of educational measurement: meaning, process, types of tests.
- Construction of an achievement test and its analysis.
- Standardized & Non-standardized test.
- Introduction of some standardized tools important tests of intelligence.
- Aptitude and personality.
- Continuous and comprehensive evaluation.
- Project evaluation, Classroom teaching, Written test.

Unit V: Guidance, counseling and Awareness Programme

- Meaning & concepts of guidance and counseling.
- Principles of guidance and counseling.
- Awareness and guidance to the common people about health and diseases.
- Philosophy, principles and concepts, guidance and counseling services of students and faculty.
- Faculty development and development of personnel for PT services.

Unit VI: Latest trends in Pedagogy

1. Competency-Based Learning
2. Underground Education

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
30	-	70	100

Suggested Reading

1. John Loughran, Routledge: Developing a Pedagogy of Teacher education: Understanding teaching and learning about teaching 1st edition, , ISBN-13: 978-0415367271
2. Mary Herring, Punya Mishra, Matthew Koehler: Handbook of Technological pedagogical content knowledge (TPCK) for educators 1st edition, , Published by The AACTE Committee on Innovation and Technology (Editor), ISBN-13: 978-0805863550

Course Content:

1. To study Basic exercise therapy
2. To study Manual therapy technique
3. To study Therapeutic currents
4. To study Electrical modalities
5. To study Advance electrotherapy

Suggested Reading

1. Carolyn Kisner, Lynn Allen Colby, Therapeutic Exercise: Foundations and Techniques 6th edition, F.A. Davis Company, 2012, ISBN: 978-0803625747
2. M. Dena Gardiner, Principles of Exercise Therapy 4th edition, CBS Publishers & Distributors Pvt Ltd, 2005, ISBN: 978-8123908939
3. Robertson, Alex Ward, John Low, Ann Reed, Electro therapy explained: Principles & practice 4th edition, Val, Butterworth-Heinemann publishers, 2006, ISBN: 978-0750688437
4. De Lisa, Manual of nerve condition velocity techniques – Raven press, New York, 1982
5. Kimura J, Electrodiagnosis in diseases of nerve and muscle, F.A Davis, Philadelphia

Name of The Course	Therapeutic techniques Lab				
Course Code	MPTN5009				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	0	0	2	2	

Course Objectives

1. Various methods of assessment of the physical parameters like joint ROM, muscle strength etc.
2. The principles of exercise therapy e.g. relaxation, co-ordination, re-education, stretching, strengthening, active and passive movements, mobilization, goniometry.
3. The construction and principle of working of various electrotherapeutic modalities.

Course Outcomes

CO1	Apply the principles of basic exercise therapy.
CO2	Apply manual therapeutic techniques in patient treatment
CO3	Apply therapeutic currents in patient treatment

Name of The Course	Physiotherapy diagnosis and clinical decision Making lab				
Course Code	MPTN5010				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	0	0	2	2	

Course Objectives

1. About assessment & evaluation techniques in various disorders.
2. About the Interpretation of various clinical tests.

Course Outcomes

CO1	Apply the various physiotherapeutic procedures for clinical examination
CO2	Apply various electrodiagnostic tools and interpret its result for patient evaluation
CO3	Interpret the result of various radiodiagnostic tools for patient evaluation

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
30	-	70	100

Course Content:

<ol style="list-style-type: none"> 1. To study Clinical Examinations 2. To study Electrodiagnosis 3. To study Radiodiagnosis 4. To study Disability Evaluation 5. To study other tests: ECG Exercise testing, PFT, anthropometry, etc
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Suggested Reading

1. Susan B. O'Sullivan, Thomas B. Schmitz, Physical Rehabilitation 5th Edition, F a Davis Company, 2007, ISBN: 9780803612471
2. Robert A. Donatelli, Michael J. Wooden, Orthopaedic Physical Therapy 4th edition, Churchill Livingstone; 2009, ISBN: 978- 0443069420
3. Karim Khan, Brukner & Khan's Clinical Sports Medicine 4th edition, Peter Brukner, McGraw-Hill Medical, 2012, ISBN: 978-0070998131

Name of The Course	Clinical posting- II			
Course Code	MPTN5011			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	0	0	20	10

Course Objectives

1. To sensitize potential learners with essential knowledge, this will lay a sound foundation for their learning across the post-Post-graduate program and across their career
2. To ensure the attention of a student and make them more receptive such as group activities, interactive sessions, role plays, and clinical bed-side demonstrations.

Course Outcomes

CO1	Understanding of community and health care workers
CO2	Understanding the bedside assessment of a patient and its management
CO3	Understanding of different departments in a Hospital
CO4	Understanding basic knowledge of modality and its implementation
CO5	Understanding basic knowledge of neuro-rehabilitation and its implementation

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test	End Term Exam (ETE)	Total Marks

Course Content:

List of Points to be discussed during visit:

1. OPD visit
2. Application of Modalities
3. Collection of Data
4. Rehabilitation Planning
5. Medical Records
6. Recent Advance Techniques

- Kenneth W. Lindsay, Ian Bone, Geraint Fuller, Neurology & Neurosurgery Illustrated 5th edition, Churchill Livingstone, 2010, ISBN: 978-0443069574
2. Susan B.O'Sullivan, Thomas J. Schmitz, Physical Rehabilitation 5th edition, F.A. Davis Company, 2006, ISBN: 978-0803612471
3. Anne Shumway-Cook, Marjorie H. Woollacott, Motor Control: theory & practical Application 2nd edition, Lippincott Williams & Wilkins, 2001, ISBN: 9780683306439
4. Darcy A. Umphred, Neurological Rehabilitation 5th edition, Mosby, 2006, ISBN: 978-0323033060

Name of The Course	Medical record keeping				
Course Code	MPTN5012				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	1	0	0	1	

Course Objectives

1. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the nervous system, and endocrine system.
2. Apply suffixes, prefixes, and combining roots in physiotherapy profession.
3. Interpret the medical records on health record system.

Course Outcomes

CO1	To identify terminology related to the health care and physiotherapy profession.
CO2	To apply suffixes, prefixes, and combining roots in physiotherapy profession
CO3	Interpret basic medical abbreviations/symbols in physiotherapy profession and healthcare system.
CO4	Utilize diagnostic, surgical, and procedural terms and abbreviations related to the nervous system, and endocrine system.

Suggested Reading

CO5	Interpret medical records/report on electronic health record system.
CO6	To Analyse Recent Advances in Medical Record Keeping.

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I: Basic medical terms in health care and physiotherapy
Derivation of medical terms: Define word roots, prefixes, and suffixes. Conventions for combined morphemes and the formation of plurals. Basic medical terms in health care and physiotherapy.
Unit II: Interpret basic medical abbreviations
Form medical terms utilizing roots, suffixes, prefixes, and combining roots. Interpret basic medical abbreviations/symbols.
Unit III: Procedural terms and abbreviations to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system
Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system,
Unit IV: Procedural terms and abbreviations to the Nervous and endocrine system
Utilize diagnostic, surgical, and procedural terms and abbreviations related to the nervous system, and endocrine system.

Unit V: Interpret medical records/reports
Interpret medical records/reports. Data entry and management on electronic health record system
Unit VI: Recent Advances In Medical Record Keeping
<ul style="list-style-type: none"> • Patient Flow Software • Real-time Locating Systems

Suggested Reading

Betsy J. Shiland. Medical Terminology for Mastering Healthcare Terminology Textbook. 6/e, 2018, Elsevier.

Davi-Ellen Chabner, Medical Terminology: A Short Course, 8th Edition, 2018, Elsevier. ISBN Number 9780323444927

Name of The Course	Emergency care				
Course Code	MPTN5013				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	2	0	0	2	

Course Objectives

1. To understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.
2. To help prevent harm to workers, property, the environment and the general public.
3. To provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes

Course Outcomes

CO1	Illustrate the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.
CO2	Relate provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes.
CO3	To interpret knowledge on the principles of on-site disaster management

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I: Concepts of Quality of Care and guidelines of NABH
Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Quality Improvement Tools, Introduction to NABH guidelines
Unit II: Emergency care and BLS
<ul style="list-style-type: none"> Vital signs and primary assessment Basic emergency care – first aid and triage Ventilations including use of bag-valve-masks (BVMs) Choking, rescue breathing methods One- and Two-rescuer CPR Using an AED (Automated external defibrillator).

- Managing an emergency including moving a patient

Unit III: Bio medical waste management and environment safety/disaster management

- Definition of Biomedical Waste
- Waste minimization
- BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
- Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
- BMW Management & methods of disinfection
- Modern technology for handling BMW
- Use of Personal protective equipment (PPE)
- Monitoring & controlling of cross infection (Protective devices)
- Fundamentals of emergency management
- Psychological impact management
- Resource management
- Preparedness and risk reduction,
- Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.

Suggested Reading

- CM Francis, Mario C De Souza. Hospital Administration, 3/e, 2004, Jappe Brothers, ISBN 9788171797219
- Aspi F Golwalla, Sharukh A Golwalla. A Handbook of Emergencies, 8/e, 2015, Jappe Brothers, ISBN 9789351524724
- Singh Anantpreet, Kaur Sukhjit, **Biomedical Waste Disposal** .1/e, 2008, Jappe Brothers, ISBN 9789350255544

Name of The Course	Neurological Disorders-I			
Course Code	MPTN6001			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	4	0	0	4

Course Objectives

1. The clinical examination of a neurological patient.
2. The various circulatory, inflammatory, metabolic, degenerative, traumatic, autonomic disorders of the nervous system.
3. The etio-pathogenesis, the clinical features, management of various adult and child Psychiatric disorders and mental deficiencies.

Course Outcomes

CO1	To evaluate the various neurological dysfunctions clinically and utilize the clinical knowledge in diagnosis and management of disorders of cerebral circulation.
CO2	To utilize the clinical knowledge in diagnosis and management of inflammatory, demyelinating and extra pyramidal syndromes.
CO3	Illustrate and demonstrate the cause, pathology, signs-symptoms, differential diagnosis and management of spinal cord disorders and various degenerative disorders
CO4	To demonstrate the cause, pathology, signs-symptoms, differential diagnosis and management of peripheral nerve disorders and muscle and neuro-muscular joint disorders.
CO5	To relate various psychological dysfunctions with neurological conditions.
CO6	Analyze mental Disorders

Continuous Assessment Pattern

Internal Assessment (IA)	Mid Term Exam (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I: Clinical examination of a neurological patient

Disorders of cerebral circulation

- General manifestations
- Principles of diagnosis & management
- Headache, migraine, raised intra-cranial pressure (Brief description)
- Cranial Nerves and special senses.
- Ischaemia,
- Haemorrhages (CVA)
- HT Encephalopathy

Unit II: Inflammatory conditions, Demyelinating diseases, Extra pyramidal syndromes, Convulsive disorders

- Meningitis (bacterial), viral encephalitis
- Acute disseminated encephalomyelitis, multiple sclerosis, GB syndrome, AIDP
- Parkinson's disease, MSA, PSP
- Chorea, Athetosis, Dystonia, Hemi-ballismus (in brief)
- Epilepsy (GM, PM, Psychomotor), tetany

Unit III: Disorders of Spinal cord and Cauda Equina, Autonomic nervous system, Development and degenerative syndromes

- Spinal cord injury
- Spina-bifida, transverse myelitis
- Neurogenic bladder and bowel.
- Clinical features of autonomic disorders, autonomic dysreflexia and pain
- Cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Spinal muscular atrophy, benign congenital hypotonia.

Unit IV: Peripheral nerve disorders, Muscle and Neuromuscular joint disorder

- Traumatic/ compression or entrapment neuropathy, polyneuritis, diabetic polyneuropathy and spinal radiculopathies
- Special emphasis on brachial and lumbo-sacral plexus and their major branches – radial, ulnar, median, femoral and sciatic nerve
- Myasthenia gravis, floppy infant syndrome

Unit V: Introduction to Psychiatry, Psychosomatic reactions:

12 Hours
<ul style="list-style-type: none"> Principles of psychiatric examination Modalities of Psychiatric treatment Stress and Depression Schizophrenia Alzheimer disease Hallucination, Delusion
Unit VI: Mental Disorders
<ul style="list-style-type: none"> Paediatric mental health: child mental health assessment, anxiety and depression in child, conduct disorder, Attention deficit/hyperactivity disorder(ADHD), Tourette syndrome. Mood disorders: Bipolar disorder, cyclothymic disorders, Disruptive mood dysregulation disorder, Premenstrual dysphoric disorder Eating disorders: Anorexia nervosa, Bulimia nervosa, Binge eating disorder, PICA, Rumination disorder, avoidant food intake disorder. Personality disorders: OCD, Paranoid personality disorder, antisocial personality disorder

Name of The Course	Physiotherapeutics in Neurological disorders- I			
Course Code	MPTN6002			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	4	0	0	4

Course Objectives

1. Evaluation and examination of a patient with neurological pathology
2. General outline of electro diagnostic procedures
3. Interpretations and prognosis in different neurological conditions
4. Principles of Physiotherapy at various stages of Rehabilitation, establishing the goals of rehabilitation and ADL training.

Course Outcomes

CO1	Relate the theories of Motor control and Motor learning during the planning of rehabilitation for various neurological conditions.
CO2	To utilize the knowledge in understanding the assessment and physiotherapy management of Spinal Cord Injury and various Muscular Disorders
CO3	To demonstrate the knowledge in physiotherapy assessment and management of Peripheral and Cranial nerve disorders
CO4	To illustrate the physiotherapy assessment and management of Congenital, Autoimmune and Infectious disorders

Suggested Reading

1. Michael Donaghy. Brain's Diseases of the Nervous system 12th edition, , Oxford University Press, 2009, ISBN: 978-0198569381
2. Kenneth W. Lindsay, Ian Bone, Geraint Fuller. Neurology & Neurosurgery Illustrated 5th edition, Churchill Livingstone, 2010, ISBN: 978-0443069574
3. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston. Davidson's Principles & Practice of medicine 21st edition, Churchill Livingstone, 2010, ISBN: 978-0702030857
4. Niraj Ahuja. A Short Textbook of Psychiatry, 6th edition, Jaypee Brothers Medical Publishers (P) Ltd, 2006, ISBN: 9788180618710
5. Michael Gelder, Paul Harrison, Philip Cowen. Shorter Oxford Text Book of Psychiatry 6th edition, OUP Oxford Publishers, 2006, ISBN: 978-0198566670

CO5	Relate clinical signs and symptoms for the diagnosis and management of Cerebro-vascular disorders and Head Injury
CO6	Analyze Psychomotor Physiotherapeutic Approaches

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

<ul style="list-style-type: none"> Management, Evaluation and Rehabilitation of: <ul style="list-style-type: none"> Disorders of cerebral circulation Head Injury
Unit VI Psychomotor Physiotherapeutic Approaches:
<ul style="list-style-type: none"> Psychotherapeutic oriented approach for disorders such as schizophrenia, Personality disorder and eating disorder. Stress reduction programme: relaxation techniques, aqua therapy, Tai Chi. Guided Imagery techniques. Cognitive behavioral therapy.

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Suggested Reading

1. Michael Donaghy, Brain's Diseases of the Nervous system 12th edition, Oxford University Press, 2009, ISBN: 978-0198569381
2. Kenneth W. Lindsay, Ian Bone, Geraint Fuller, Neurology & Neurosurgery Illustrated 5th edition, Churchill Livingstone, 2010, ISBN: 978-0443069574
3. Susan B.O'Sullivan, Thomas J. Schmitz, Physical Rehabilitation 5th edition, F.A. Davis Company, 2006, ISBN: 978-0803612471
4. Anne Shumway-Cook, Marjorie H. Woollacott, Motor Control: theory & practical Application 2nd edition, Lippincott Williams & Wilkins, 2001, ISBN: 9780683306439
5. Darcy A. Umphred, Neurological Rehabilitation 5th edition, Mosby, 2006, ISBN: 978-0323033060

Course Content:

Unit I: Motor Control theories and Its assessment link
<ul style="list-style-type: none"> Motor control, Theories of Motor Control and Motor Development, Neural Plasticity and clinical implication. Theories of Motor learning Principles of pediatric assessment, geriatric assessment
Unit II: Muscle and Spine disorders
Management, Evaluation and Rehabilitation of: Spinal Cord Injury Disorders of muscles
Unit III: Nerve injuries
<ul style="list-style-type: none"> Disorders of Peripheral nerves Disorders of cranial nerves
Unit IV: Nervous injuries
<ul style="list-style-type: none"> Management, Evaluation and Rehabilitation of: <ul style="list-style-type: none"> Congenital & hereditary Disorders Autoimmune disorders Infectious disorders of nervous system
Unit V: Head injuries

Name of The Course	Physiotherapeutics in neurological disorders Lab-I			
Course Code	MPTN6003			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	0	0	2	1

Course Objectives

1. Evaluation and examination of a patient with neurological pathology
2. General outline of electro diagnostic procedures
3. Interpretations and prognosis in different neurological conditions

4. Brunnstrom
5. PNF
6. Rood's Approach
7. Neural mobilisation

Course Outcomes

CO1	To interpret the differential diagnosis of various neurological conditions.
CO2	To apply the various therapeutic techniques for the management of neurological conditions.

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessments Test (CAT)	End Term Exam (ETE)	Total Marks
30	-	70	100

Course Content:

- Review of General assessment
- Assessment of Higher mental functions
- Neurodevelopment assessment
- Pain assessment
- Sensory assessment
- Assessment of Tone, flexibility, tightness
- Motor Control assessment
- **Muscle Length Testing**
- **Postural assessment**
- Limb length measurement
- Range of Motion
- Balance assessment
- Coordination assessment
- Reflex Testing
- Cranial nerve testing
- Nerve Tension testing
- EMG/ NCV report reading & analysis
- Clinical Gait assessment
- Functional assessment

- Advance Physiotherapy Treatment approaches
 1. Neurodevelopment technique
 2. Bobath
 3. Vojta

Suggested Reading

1. Michael Donaghy, Brain's Diseases of the Nervous system 12th edition, Michael Donaghy, Oxford University Press, 2009, ISBN: 978-0198569381
2. W. Lindsay, Ian Bone, Geraint Fuller, Neurology & Neurosurgery Illustrated 5th edition, Kenneth Churchill Livingstone, 2010, ISBN: 978-0443069574
3. Susan B.O'Sullivan, Thomas J. Schmitz, Physical Rehabilitation 5th edition, F.A. Davis Company, 2006, ISBN: 978-0803612471
4. Anne Shumway-Cook, Marjorie H. Woollacott, Motor Control: theory & practical Application 2nd edition, Lippincott Williams & Wilkins, 2001, ISBN: 9780683306439
5. Sophie Levitt, Treatment of Cerebral Palsy and Motor Delay 5th edition, Wiley-Blackwell, 2010, ISBN: 978-1405176163
6. Darcy A. Umphred, Neurological Rehabilitation 5th edition, Mosby, 2006, ISBN: 978-0323033060

Name of The Course	Clinical posting – III				
	MPTN6004				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	0	0	24	12	

Course Objectives

1. To sensitize potential learners with essential knowledge, this will lay a sound foundation for their learning across the post-Post-graduate program and across their career
2. To ensure the attention of a student and make them more receptive such as group activities,

interactive sessions, role plays, and clinical bedside demonstrations.

Course Outcomes

CO1	Understanding of community and health care Workers
CO2	Understanding the bedside assessment of a patient and its management
CO3	Understanding of different departments in a Hospital
CO4	Understanding basic knowledge of modality and its implementation
CO5	Understanding basic knowledge of neuro-rehabilitation and its implementation
CO6	Understanding the recent advance techniques in neuro-rehabilitation and its application

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
30	-	70	100

Course Content:

Unit I: OPD visit
OPD, hospital and clinical visit or posting of the students to learn & upgrade their knowledge in the approach, assessment, diagnosis, and Physiotherapy management of patients visiting the department.
Unit II: Application of Modalities
Application of various modalities and therapeutic techniques in neurological conditions
Unit III: Collection of Data
Approach to patient, collection of demographic data, art of history taking, bed-sides; OPD manners in relation to patient, general assessment of patient from therapeutic

point of view, ability to find provisional diagnosis logically, and application of therapeutic skill learned.

Unit IV: Rehabilitation Planning

Short term and long term goal planning in neurorehabilitation

Unit V: Medical Records

Record keeping and exercise prescription in physiotherapy

UNIT VI: Recent Advance Techniques

- Hands on practice in neuro-rehabilitation approach
- Bobath/NDT
- MRP
- Voijta
- Biofeedback
- Vestibular Rehabilitation
- Topic presentation
- Case presentation of any case from their clinical visit

Suggested Reading

1. Kenneth W. Lindsay, Ian Bone, Geraint Fuller, Neurology & Neurosurgery Illustrated 5th edition, Churchill Livingstone, 2010, ISBN: 978-0443069574
2. Susan B.O'Sullivan, Thomas J. Schmitz, Physical Rehabilitation 5th edition, F.A. Davis Company, 2006, ISBN: 978-0803612471
3. Anne Shumway-Cook, Marjorie H. Woollacott, Motor Control: theory & practical Application 2nd edition, Lippincott Williams & Wilkins, 2001, ISBN: 9780683306439
4. Darcy A. Umphred, Neurological Rehabilitation 5th edition, Mosby, 2006, ISBN: 978-0323033060

Name of The Course	Diagnostic imaging			
Course Code	MPTN6005			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	2	0	0	2

Course Objectives

1. To aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management.
2. Demonstrate the study of common diagnostic and therapeutic imaging tests.
3. The course will cover that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

Course Outcomes

CO1	To illustrate the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management.
CO2	Demonstrate the study of common diagnostic and therapeutic imaging tests.
CO3	To evaluate that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

Continuous Assessment Pattern

Internal Assessment (IA)	Continuou s Assessment Test(CAT)	End Term Exam (ETE)	Total Marks
30	-	70	100

Course Content:

Unit I: Introduction to Image Interpretation

- History
 - A New Kind of Ray
 - How a Medical Image Helps
 - What Imaging Studies Reveal
 - Radiography (x-rays)
- Fluoroscopy Computed
- Tomography (CT)
- Magnetic Resonance Imaging (MRI)
- Ultrasound
- Endoscopy.

Unit II: Radiography And Mammography

- Equipment components
- Procedures for Radiography & Mammography
- Benefits versus Risks and Costs
- Indications and contraindications

Unit III: Introduction to Fluoroscop, CT, MRI

- What is Fluoroscopy?
- Equipment used for fluoroscopy
- Indications and Contra indications
- How it helps in diagnosis
- The Findings in Fluoroscopy
- Benefits versus Risks and Costs.
- What is Computed Tomography
 - Indications and Contra indications
 - How it helps in diagnosis
 - The Findings in Computed Tomography
 - Benefits versus Risks and Costs.
- MRI
 - What is MRI?
 - Equipment used for MRI
 - Indications and Contra indications
 - How it helps in diagnosis
 - The Findings in MRI
 - Benefits versus Risks and Costs
 - Functional MRI.

Suggested Reading

1. **Plaats**, G.J.van der. A textbook for radiographers and Radiological Technicians, Churchill Livingstone, ISBN 978-94-009-8785-2
2. James Swain Kenneth Bush Juliette Brossing. Diagnostic Imaging for Physical Therapists, Saunders, 1st Edition, 2008 ISBN: 9781416029038
3. G Balachandran. MRI Spine in Low Backache Made Easy: for the General Practitioner, 1/e, 2012, Jaypee Brothers, ISBN: 9789350257142
 1. Govind B Chavan. MRI Made Easy (for Beginners), 2/e, 2013, Jaypee Brothers, ISBN: 9789350902707
4. Joseph H Introcaso. Musculoskeletal Ultrasound. 3/e, 2016, Jaypee Brothers, ISBN: 978935152933

Name of The Course	Evaluation methods and outcome measures				
Course Code	MPTN6006				
Prerequisite					
Co-requisite					
Anti-requisite					
		L	T	P	C
		2	0	0	2

Course Objectives

1. To describe and compare different health outcomes measures
2. To describe and compare different methods used to value health states
3. To analyze health outcomes data

Course Outcomes

CO1	Reflect on, evaluate and explain all stages of the physiotherapy process based on theoretical and practical knowledge, and assess if the patient should be referred to another care provider
CO2	To reflect on the choice of different methods when valuing health states
CO3	To reflect on multidisciplinary in population

health studies

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I: The physiotherapy process and ICF concerning disability

The physiotherapy process and ICF concerning disability, functioning and contextual factors including behavioral medical aspects in rehabilitation in different rehabilitation contexts

The role of the physiotherapist as caregiver, educationalist, consultant and team member

Evidence-based working method (published knowledge, best practice, the patient's wishes and available resources)

Contraindications for different examination and treatment methods

Gender, culture, diversity, laws and regulations and ethical rules

Physical activity in rehabilitation

Unit II: Clinical education with a focus on physiotherapy examination, assessment and treatment in rehabilitation of diseases/injuries in the musculoskeletal system

Movement habits and body positions, as well as behaviours and reference to problems triggering or tending to maintain pain conditions principles of differential diagnoses concerning joint, muscle and nerve involvement

Hyper- and hypomobility and their causes

Muscle function regarding strength, endurance, coordination, muscle length and pain treatment with devices and orthopedic technical aids

Unit III: Physiotherapy examination, assessment and treatment in rehabilitation of psychosomatic problems

Psychosomatic approach treatment, reflection and communication psychosomatic orientated examination with an emphasis on resource- and problem analysis psychosomatic-targeted treatment methods; body awareness, therapeutic touch, relaxation and stress +management

Name of The Course	Advance neurological physiotherapy Techniques				
Course Code	MPTN6007				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	4	0	0	4	

Course Objectives

To Study

1. About assessment & evaluation techniques in various disorders.
2. About the Interpretation of various clinical tests.

Course Outcomes

CO1	Assess and plan treatment for general neurological disorders
CO2	Assess motor learning and developmental screening
CO3	Perform advance neurological techniques
CO4	Analyze and diagnose abnormal gait

CO5	Perform evidence based practice in physiotherapy
CO6	Recent Advances in advance neurological physiotherapy techniques

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

UNIT I: Neurological Physiotherapy assessment

- General Neurological Physiotherapy assessment
- Clinical decision making-planning effective treatment
- Anthropometric measurements.
- Special tests and Scales used in Neurological disorders.

Unit II: Motor Control Assessment

- Developmental screening, motor learning –motor control assessment.

Unit III: Neuro Techniques

- Neurodevelopment technique
- Bobath
- Vojta
- Brunnstrom
- PNF
- Rood's Approach
- Neural mobilisation
-

Unit IV: Gait Analysis

- Gait analysis and diagnosis.
- Aids and appliances, adaptive functional devices to improve movement dysfunction.

Unit V:Evidenced based practices in physiotherapy

- Evidenced based practices in physiotherapy
 - Principles of evidence based practices
 - Elements of evidences

- Appraising the evidence

UNIT VI :Recent Advances in Neurological Physiotherapy Techniques

- Rehab Robotics
- Gamified Rehab
- Light therapy

On completion of the course the student should be able to:

CO1	Determine the rehabilitate of neurological patients
CO2	Demonstrate balance and coordination training to neurological patients
CO3	Evaluate and treat degenerative and movement disorders
CO4	Develop assessment and management program for Tumors, Reflex Sympathetic dystrophy and Epilepsy
CO5	Evaluate and treat post-surgical conditions
CO6	To study recent advances in physiotherapeutics in neurology-ii

Suggested Reading

1. Susan B. O'Sullivan, Thomas B. Schmitz, Physical Rehabilitation 5th Edition, F a Davis Company, 2007, ISBN: 9780803612471
2. Robert A. Donatelli, Michael J. Wooden, Orthopaedic Physical Therapy 4th edition, Churchill Livingstone; 2009, ISBN: 978- 0443069420
3. Karim Khan, Brukner & Khan's Clinical Sports Medicine 4th edition, Peter Brukner, McGraw-Hill Medical, 2012, ISBN: 978-0070998131

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
10	20	70	100

Course Content:

Unit I:Gait Training

- Gait Training
- General principle of design and fall prevention strategies in geriatrics
- Assistive Technologies and its role in Neurorehabilitation
- Prosthetics and Orthotics in Neurorehabilitation
- Wheelchair skills- Basic & Advanced

Unit II:Balance Training

- Balance & Coordination training
- Vestibular training
- Cognitive and Perceptual disorders
- Environmental modifications

Name of The Course	Physiotherapeutics in Neurological disorders -II				
Course Code	MPTN6008				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	4	0	0	4	

Course Objectives

To study the

- Evaluation and examination of a patient with neurological pathology
- Principles of Physiotherapy at various stages of Rehabilitation, establishing the goals of rehabilitation and ADL training
- Advanced techniques related to rehabilitation of neurological patient.

Course Outcomes

<ul style="list-style-type: none"> Group exercises
Unit III: Management, Evaluation and Rehabilitation
<ul style="list-style-type: none"> Degenerative disorders Movement disorders Balance disorders
Unit IV: Management, Evaluation and Rehabilitation
<ul style="list-style-type: none"> Metabolic & Nutritional disorders Disorders of nervous system due to drugs & chemical agents Tumors Epilepsy RSD
Unit V: Management, Evaluation and Rehabilitation
<ul style="list-style-type: none"> Intracranial abscess Malformations of spine & spinal cord Surgeries for disc disorders Decompression surgeries for tumors Stereotactic surgery Image guided frameless stereotaxy Psychosurgery
<ul style="list-style-type: none">
Unit VI: Recent Advances In Physiotherapeutics In Neurology-II
<ul style="list-style-type: none"> Virtual Reality based training Robotic training Vestibular Training

Churchill Livingstone, 2010, ISBN: 978-0443069574

- Susan B.O'Sullivan, Thomas J. Schmitz, Physical Rehabilitation 5th edition, F.A. Davis Company, 2006, ISBN: 978-0803612471
- Anne Shumway-Cook, Marjorie H. Woollacott, Motor Control: theory & practical Application 2nd edition, Lippincott Williams & Wilkins, 2001, ISBN: 9780683306439
- Sophie Levitt, Treatment of Cerebral Palsy and Motor Delay 5th edition, Wiley-Blackwell, 2010, ISBN: 978-1405176163
- Darcy A. Umphred, Neurological Rehabilitation 5th edition, Mosby, 2006, ISBN: 978-0323033060

Name of The Course	Physiotherapeutics in Neurological disorders lab -II			
Course Code	MPTN6009			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	0	0	2	1

Course Objectives

To Study:

- Evaluation and examination of a patient with neurological pathology
- General outline of electro diagnostic procedures
- Interpretations and prognosis in different neurological conditions

Course Outcomes

CO1	To interpret the differential diagnosis of various neurological conditions.
CO2	To apply the various therapeutic techniques for the management of neurological conditions

Suggested Reading

- Michael Donaghy, Brain's Diseases of the Nervous system 12th edition, Michael Donaghy, Oxford University Press, 2009, ISBN: 978-0198569381
- W. Lindsay, Ian Bone, Geraint Fuller, Neurology & Neurosurgery Illustrated 5th edition, Kenneth

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment Test (CAT)	End Term Exam (ETE)	Total Marks
30	-	70	100

Course Content:

- Concepts of advanced treatment techniques :
 - Exercise prescription in ageing
 - Positioning and handling techniques for head control and trunk control in pediatrics
 - Wheel chair skills
 - Group exercises
 - Balance & Coordination training
 - Vestibular training
 - Environmental modifications
 - Group exercises
 - Physiotherapy in home setting

Name of The Course	Clinical posting – IV			
	MPTN6010			
Prerequisite				
Co-requisite				
Anti-requisite				
	L	T	P	C
	0	0	24	12

Course Objectives

- To sensitize potential learners with essential knowledge, this will lay a sound foundation for their learning across the post-Post-graduate program and across their career
- To ensure the attention of a student and make them more receptive such as group activities, interactive sessions, role plays, and clinical bed-side demonstrations.

Course Outcomes

CO1	Understanding of community and health care workers
CO2	Understanding the bedside assessment of a patient and its management
CO3	Understanding of different departments in a hospital
CO4	Understanding basic knowledge of modality and its implementation
CO5	Understanding basic knowledge of neuro-rehabilitation and its implementation
CO6	Understanding the recent advance techniques in neuro-rehabilitation and its application

Continuous Assessment Pattern

Internal Assessment (IA)	Continuous Assessment	End Term Exam (ETE)	Total Marks

Suggested Reading

- Michael Donaghy, Brain's Diseases of the Nervous system 12th edition, Michael Donaghy, Oxford University Press, 2009, ISBN: 978-0198569381
- W. Lindsay, Ian Bone, Geraint Fuller, Neurology & Neurosurgery Illustrated 5th edition, Kenneth Churchill Livingstone, 2010, ISBN: 978-0443069574
- Susan B.O'Sullivan, Thomas J. Schmitz, Physical Rehabilitation 5th edition, F.A. Davis Company, 2006, ISBN: 978-0803612471
- Anne Shumway-Cook, Marjorie H. Woollacott, Motor Control: theory & practical Application 2nd edition, Lippincott Williams & Wilkins, 2001, ISBN: 9780683306439
- Sophie Levitt, Treatment of Cerebral Palsy and Motor Delay 5th edition, Wiley-Blackwell, 2010, ISBN: 978-1405176163
- Darcy A. Umphred, Neurological Rehabilitation 5th edition, Mosby, 2006, ISBN: 978-0323033060

Course Content:

Unit I: OPD visit
OPD, hospital and clinical visit or posting of the students to learn & upgrade their knowledge in the approach, assessment, diagnosis, and Physiotherapy management of patients visiting the department.
Unit II: Application of Modalities
Application of various modalities and therapeutic techniques in neurological conditions
Unit III: Collection Of Data
Approach to patient, collection of demographic data, art of history taking, bed-sides; OPD manners in relation to patient, general assessment of patient from therapeutic point of view, ability to find provisional diagnosis logically, and application of therapeutic skill learned.
Unit IV: Rehabilitation Planning
Short term and long term goal planning in neurorehabilitation
Unit V: Medical Records
Record keeping and exercise prescription in physiotherapy
UNIT VI: Recent Advance Techniques
<ul style="list-style-type: none"> Hands on practice in neuro-rehabilitation approach Bobath/NDT MRP Voijta Biofeedback Vestibular Rehabilitation Topic presentation Case presentation of any case from their clinical visit

Suggested Reading

1. Kenneth W. Lindsay, Ian Bone, Geraint Fuller, Neurology & Neurosurgery Illustrated 5th edition, Churchill Livingstone, 2010, ISBN: 978-0443069574
2. Susan B.O'Sullivan, Thomas J. Schmitz, Physical Rehabilitation 5th edition, F.A. Davis Company, 2006, ISBN: 978-0803612471
3. Anne Shumway-Cook, Marjorie H. Woollacott, Motor Control: theory & practical Application 2nd edition, Lippincott Williams & Wilkins, 2001, ISBN: 9780683306439
4. Darcy A. Umphred, Neurological Rehabilitation 5th edition, Mosby, 2006, ISBN: 978-0323033060

Name of The Course	Dissertation				
Course Code	MPTN6011				
Prerequisite					
Co-requisite					
Anti-requisite					
	L	T	P	C	
	0	0	4	2	

Course Objectives**To study**

- Introduction writing
- Methodology writing
- Data Analysis writing
- Result writing
- Discussion writing

CO1	Understanding of How to write Introduction
CO2	Understanding of How to write Methodology
CO3	Understanding of How to write Data Analysis

Course content

- Introduction
- Statement of Question
- Aim and Objective
- Significance of study
- Hypothesis
- Operational definition
- Review of Literature
- Methodology
- Data Analysis
- Result
- Discussion
- Conclusion
- Limitations #References
- Appendix

Suggested Reading

1. Research in Education, 10th Edition Best & Kahn
2. Research Methodology C.R.KOTHAR
3. Methodology of Educational Research Lokesh Koul