

Faculty of Sports Medicine & Physiotherapy

SYLLABUS

FOR

MASTER OF NEUROLOGICAL PHYSIOTHERAPY

(SEMESTER: I-IV)

(For Colleges)

Session: 2014–15



GURU NANAK DEV UNIVERSITY

AMRITSAR

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MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER SYSTEM)

Scheme of Examination

A. Theory Examination:

Semester – I:

Paper	Paper Code	Course Title	Contact Hours	Max. Marks
1.1	A.B.M.S.-S1	Applied Basic Medical Sciences	50	100
1.2	A.E.N.P-S1	Assessment and Evaluation in Neurophysiotherapy	50	100
1.3	B.P.P.-S1	Basic Physiotherapy Principles	50	100
1.4	R.E.M.-S1	Research and Educational Methodology	50	100

Semester – II:

Paper	Paper Code	Course Title	Contact Hours	Max. Marks
2.1	A.P.C.S.-S2	Applied Para Clinical Sciences	50	100
2.2	N.H.M.-S2	Neuromechanics of Human Motion	50	100
2.3	P.M.-S2	Physiotherapy Methods	50	100
2.4	N.N.-S2	Neurology and Neurosurgery	50	100

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER SYSTEM)

Semester – III:

Paper	Paper Code	Course Title	Contact Hours	M. Marks
3.1	P.N.P.-S3	Pediatric Neurophysiotherapy	50	100
3.2	P.O.N.P.-S3	Principles of Orthotics in Neurological Physiotherapy	50	100
3.3	P.N.D.-S3	Physiotherapy in Neurological Disorders	50	100
3.4	P.N.S.-S3	Physiotherapy in Neurosurgery	50	100

Semester – IV:

Paper	Paper Code	Course Title	Contact Hours	M. Marks
4.1	G.N.P.-S4	Geriatric Neurophysiotherapy	50	100
4.2	D.P.R.-S4	Disability Prevention and Rehabilitation	50	100
4.3	M.E.M.L.A.-S4	Management Ethics and Medico Legal Aspects	50	100
4.4	C.A.C.A.-S4	Current, Alternative and Contemporary Approaches	50	100

B. Practical Examination:

Practical examination of 600 marks will be conducted at the end of 4th Semester. The distribution of marks will be as under:-

- | | |
|---|-----------|
| a. Practical (Patient evaluation and management etc.) | 400 Marks |
| b. Viva – Voce | 200 Marks |

C. Dissertation – 600 Marks

The topic of dissertation will be allocated in Second Semester and candidate will work for 2 Semesters and submit a written thesis in 4th Semester. The Evaluation of dissertation will be done along with 4th Semester examination.

Practical Attachments

To enable the students to acquire practicing in hand on skills, maximum emphasis will be laid on regular practical classes, demonstration and clinical practice. The students will undergo Clinical / Field training in hospitals attached with the institute.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – I)

1.1 APPLIED BASIC MEDICAL SCIENCES (A.B.M.S.-S1)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I
Neuroanatomy (Review)

1. Development of nervous system,
2. Peripheral nerves and ganglia, receptors and effectors, dermatomes and muscular activity, CNS an overview, spinal cord, brainstem.
3. Nuclei, functional components and distribution of cranial nerves.
 - Cerebellum and fourth ventricle
 - Diencephalon and third ventricle
 - Cerebrum,
 - Basal nuclei
4. Blood supply of the brain
5. Meninges, cerebrospinal fluid and Fluid compartments and fluid balance in the CNS
6. Somatic motor and sensory pathways
Special senses and their neural pathways
Reticular formation and limbic system
Sensory system, spinal cord and its connection
7. Autonomic nervous system
8. Brainstem and its connection, Inferior Colliculi, Epithalamus, Rhinencephalon, Meninges, Internal capsule, Auditory radiation, Pyramidal system, anatomic integration, neuromuscular junction, thalamus, Extra pyramidal systems.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – I)

UNIT – II
(Neurophysiology)

- Organization and function of nervous system
- Basic Neurophysiology, concerned to motor unit potentials, nerve conduction neuromuscular junction transmission and reflexes
- Somatosensory function
- Higher intellectual function
- Reflex maturation- Neurophysiologic basis
- Normal sequential physiological changes throughout the developmental age
- Physiology of pain: Models of pain, Basic molecular biology, neurobiology, stress biology and pain, Peripheral and central pain mechanisms, theory of modulation of pain.
- Properties of nerve fibers, synapse
- Neurotransmitters-their clinical co-relation
- Thermoregulation
- Physiological basis of emotions.
- Tone and its regulation
- Neurophysiology of special senses

References:

1. Review of Medical Physiology, W F Ganong, MGH.
2. Textbook of Medical Physiology, C Guyton, W B Sanders.
3. Determinants of Abnormal Motor Control, Dunean & Badke, WBS.
4. Abnormal Postural Reflex Activity Caused by Brain Lesions, B Bobath, Heinmann
London
5. Pain, H Fields, MGH.
6. Neuroanatomy- Snells.
7. Grays Anatomy-Grays.
8. Clinical Neurophysiology- Andrew Robinson.
9. Motor Learning- Optimizing Motor Performance-Carr and Shepherd.
10. Textbook of Medical Physiology- Guyton-Mosby.
11. Grunts- Methods of Anatomy- Basmajin & Slonekar- Williams & Wilkins.
12. Textbook of Clinical Neuroanatomy- Vishram Singh.
13. Essentials of Neuroanatomy- Inderbir Singh.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – I)

1.2 ASSESSMENT AND EVALUATION IN NEUROPHYSIOTHERAPY
(A.E.N.P-SI)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I
(CLINICAL DECISION MAKING)

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

UNIT – II
(EXAMINATION)

- Sensory System: clinical indications, testing instruments
- Motor system: Elements, tests and measures.

UNIT – III

- Examination of coordination: Screening, non equilibrium and equilibrium tests, Instruments.
- Functional level: Response format and instruments like FIM, SIP etc.
- Examination of Balance, Vestibular System: tests and measures

UNIT – IV

- Practical
- Gait & Environment

References:

1. Physical Rehabilitation: Susan O' Sullivan 5th Edition, JP Brothers.
2. Gilroy's Basic Neurology, J Gilroy, Mcgrew Hill.
3. Qualitative Research in Evidence Based Rehabilitation: Karen Whalley Hammell.
4. Neurological Examination Made Easy, Geriant fuller, Churchill Livingstone.
5. Clinical Evaluation of Muscle Function, M.Lacote, Churchill Livingstone.
6. Neuroscience- Exploring the Brain, Dhaines, Churchill Livingstone.
7. Neurological Assessment-Blicker Staff.
8. Assessment in Neurology- Dejong.
9. Differential Diagnosis, John Pattern.
10. Neurology in Clinical Practice, Bradley and Darof.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – I)

1.3 BASIC PHYSIOTHERAPY PRINCIPLES (B.P.P.-S1)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

- Physiotherapy Approach to Neurology and Neurosurgery: Planning of therapeutic exercise program, Exercise Prescription, Instructing the patient- Methods of Instruction, Schemes of exercise- General, Specific, Home Exercise Program, Treatment Sessions, and Frequency.
- Determination of the type of therapeutic exercises, Details of Exercises to improve, restore or maintenance of mobility and flexibility stability, muscle strength, endurance, balance and functional skills.

UNIT – II

- Area of Special Considerations in Neuro Physiotherapy, Referral system for early Physiotherapy, preventive Physiotherapy
- Strategies to improve motor and sensory function: Principles of motor control, framework for intervention and various intervention strategies.
- Musculoskeletal treatment concepts applied to Neurology: Adverse neural tissue tension tests in upper and lower limbs.

Practicals: The students will undergo hands on training on various Neuro physiotherapy techniques for handling Neurological patients.

References:

1. Neurological Physiotherapy, A Problem Solving Approach, Susan Edwards, Churchill Livingstone.
2. Neurological Rehabilitation, Umpherd, Mosby.
3. Motor Assessment of Developing Infant, Piper & Darrah, WE Saunders.
4. Pediatric Physical Therapy, Teckling, Lippincott.
5. Impact of Neurobehavioral Deficit on ADL, G Arndoltis, Mosby.
6. Therapeutic Exercises: Foundation and Techniques. Carolyn Kiser, Lynn Colby. FA Davis.
7. Selective Trunk Activity in The Treatment of Trunk Hemiplegic, P Davies, Springer, New York.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – I)

1.4 RESEARCH & EDUCATIONAL METHODOLOGY (R.E.M.-SI)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

**UNIT – I
(Research Methodology)**

1. Introduction:
 - a. Importance of research in clinical practice
 - b. Scientific approach
 - c. Characteristics
 - d. Purposes and limitations.
2. Ethical issues in research.
3. Structure, formulation and implementation of a research project
4. Research Questions:
 - a. Selection and statement of problem
 - b. Literature review
 - c. Meta-analysis.
5. Types of Research:
 - a. Basic and Applied
 - b. Qualitative & Quantitative
 - c. Descriptive & Experimental
 - d. Longitudinal & Cross-sectional
6. Data Analysis:
 - a. Statistical Tests of significance
 - b. Correlation
 - c. Reliability
 - d. Validity
 - e. Parametric and Non-parametric statistics
7. Experimental Research:
 - a. Types of Sampling
 - b. Variables
 - c. Experimental design
 - d. Factorial design
8. Survey Research:
 - a. Conducting a survey
 - b. Questionnaires
 - c. Steps in conducting survey research
 - d. Epidemiological research

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – I)

UNIT – II

1. Presentation
 - a. Symposia
 - b. Seminar
 - c. Conference
 - d. Journal
 - e. Thesis
 - f. Book
 - g. Key element of scientific writing.
2. Presenting Research
 - i) Writing and submitting papers
 - (a) Strategies of paper writing
 - (b) Design of paper writing
 - (c) Tactics of paper writing
 - ii) Where to publish
 - iii) Poster presentation of a research paper
 - (a) Pre ample
 - (b) Poster space
 - (c) Standard format
 - (d) Planning
 - (e) Design
3. Review of an indexed refereed research paper.
 - i) Evaluating paper scientific merit.
 - ii) Providing constructive feedback to the author.
 - iii) Typical review formats for reviewing a paper
 - iv) Reasons for rejection
4. Oral Presentations at Conferences/Seminars
 - i) Preparing presentation
 - ii) Duration of presentation
 - iii) What to present

UNIT – III**(Educational Methodology)**

1. Aim, philosophy and issues in physiotherapy education
2. Principles and methods of teaching with respect to physiotherapy students and client:
Strategies and planning of teaching, curriculum development, formation of course
Objective, time management, role of Audio – visual aids, method of knowledge
Dissemination
3. Methods of outcome evaluation

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – I)

Practicals:

The student will be required to prepare sample research proposal. He will have to teach at least one subject of Bachelor in Physiotherapy and will present the teaching plan.

References:

1. Mohsin S.M.: Research Methods in Behavioral Sciences: Orient Publications.
2. Colton: Statistics in Medicine, Little Brown Company, Boston.
3. Mahajan: Methods in Biostatistics, Jay Pee Brothers.
4. Vincent: Statistics in Kinesiology, Human Kinetics.
5. Hicks: Research for Physiotherapists, Churchill Livingstone.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – II)

2.1 APPLIED PARA CLINICAL SCIENCES (A.P.C.S.-S2)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

Unit – I

Pathology:

1. Inflammation and repair
2. “Failed” healing responses
3. Regional considerations of Inflammation & repair of peripheral nerves and nervous tissue.

Unit – II

Pharmacology:

1. Principles of drug action.
2. Basic pharmacokinetics and Pharmacodynamics.
3. The use of drugs in various neuromuscular disorders.

Unit – III

Radiology and Electro Diagnosis:

- Basics of radiology including ultra sonography CT & MRI scanning
- Electro diagnosis: Methods, clinical applications.
- EMG: Response analysis, NCV.
- Electrical Stimulation, Evoked potentials

References:

1. The Pharmacological Basis of Therapeutics – Goodman and Gilman – MacMillan.
2. Pharmacology and Pharmacotherapeutics – Satoskar & Bhandarkar – Popular Publication. Bombay.
3. Davidsons – Principles and Practice of Medicine – Edward – Churchill Livingstone.
4. Text Book of Radiology – Sutton D. – Churchill Livingstone.
5. Electromyography and Neuromuscular Disorders: Clinical EMG Correlations, David C. Preston.
6. EMG Pearls, Steven A Greenberg.
7. Clayton’s Electrotherapy.
8. Electrotherapy Explained, John Low & Reed.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – II)

2.2 NEUROMECHANICS OF HUMAN MOTION (N.H.M.-S2)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

Neurological Basis:

- Anatomic motor control structure, Motor development, interaction of child and environment
- Motor developmental theories, their principles and applications
- Sensory system and sensory input: tactile, vestibular, auditory, visual, kinesthetic modality
- Motor programming
- Motor output: As a reflex, reaction, skill.
- Feedback
- Muscle tone : main predictor of motor control
- Motor learning: theories, their application, transfer of motor learning

UNIT – II

Mechanical Basis:

- Framework and joints of the body, Role of muscles, types of muscles, contractions.
- Mechanical principles: Motion, Angular motion, force system, COG, co-relations and support system.

UNIT – III

- Abnormal and normal movements: characteristics, abnormal synergy patterns and their basis.
- Human movement analysis: instruments, technique, interpretation.

References:

1. Paediatrics adapted Motor Development and Exercise. Charles C Thomas. Publications Ltd. USA.
2. Neurodevelopment Treatment Approaches Theoretical Principles of Clinical Practice: NDTA USA.
3. Brunnstrom – Clinical Kinesiology, F.A. Davis.
4. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi, 1997, Brown & Benchmark.
5. Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
6. White and Punjabi – Biomechanics of Spine – Lippincott.
7. Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
8. Mishra: Clinical Neurophysiology, B.I. Churchill Livingstone.
9. Rehabilitation of Stroke, Kaplan & Cailliet, Butterworth Heinemann.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – II)

2.3 PHYSIOTHERAPY METHODS (P.M.-S2)**Time: 3 Hrs.****Marks: 100****Instructions for Paper Setters:**

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

- Electrotherapy in Neurophysiotherapy :goals and objectives, selection criteria for appropriate modality, instructing the patient- methods of instruction, scheme of electrotherapy treatment, modalities to enhance tissue healing, reduce inflammatory process, treatment protocol, dosimetry and dangers.
- Modalities to facilitate or improve muscle function, reduce pain ,spasticity: Selection, treatment protocol, dosimetry and dangers
- Modalities used for Electro diagnosis.

UNIT – II

- Proprioceptive Neuromuscular facilitation (PNF): History, scope, basic principles, techniques and applications.
- Sensory Motor Treatment approach: The Roods, Brunnstorm Approach of treatment: History, scope, basic principles, techniques and applications.

UNIT – III

- Patterning Therapy: Doman Delacato technique: History, scope, basic principles, techniques and applications.
- The Vojta Technique: History, scope, basic principles, techniques and applications.
- Conductive Education: Peto Andras Technique: History, scope, basic principles, techniques and applications.
- Enforced Use Therapy

Practicals: The students will undergo hands on training on various Neuro physiotherapy techniques for handling Neurological patients.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – II)

References:

1. Adult Hemiplegic: Evaluation and Treatment-Bobath-oxford Butterworth Heinemann.
2. Neurological Rehabilitation. Carr and Shepherd. Butterworth Heinemann.
3. Electrotherapy: Evidence-based Practice. Tim Watson. Churchill Livingstone.
4. Electrotherapy Explained: Principles and Practice. Low and Reed. Butterworth-Heinemann.
5. Treatment of Cerebral Palsy and Motor Delay-Sophie Levitt.
6. Motor relearning Programme for Stroke-Carr & Shepherd.
7. Electrotherapy: Evidence-Based Practice. Sheila Kitchen. Churchill Livingstone
8. PNF in Practice: An Illustrated Guide. Susan S Adler, Dominick Beckers, Math Buck. Springer.
9. Brunnstrom's movement therapy in Hemiplegia- Sawner & Lavigne. Lippincott Williams & Wilkins.
10. Physical Therapy of Cerebral Palsy. Miller. Springer.
11. The Bobath Concept in Adult Neurology. Bente E. Bassoe, Gjelsvic. Thieme Medical Pub.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – II)

2.4 NEUROLOGY AND NEUROSURGERY (N.N.-S2)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

Neurology:

- Cerebrovascular accidents: primary and secondary impairments, acute care.
- Infections of Nervous System: transverse myelitis, meningitis, encephalitis, types, post infection sequelae, Poliomyelitis, post polio syndrome, GBS.
- Peripheral nerve and cranial nerve lesions.
- Disorders of movement: Cerebellum, Basal ganglia, vestibular system etc.

UNIT – II

- Demyelinating disorders of nervous system: primary and secondary impairments and prognosis
- Degenerative diseases of nervous system.
- Disease of muscles: Classification, myopathies, Muscular dystrophies, primary and secondary impairments and Physiotherapy.
- Miscellaneous procedures like phenol injections, BTX-type A injections etc., indications and complications.

UNIT – III

Neurosurgery:

- Neurosurgery ICU
- Common surgeries of cranium ,brain, vertebral column and spinal cord and their complications
- Common surgeries of peripheral nerves.
- Surgical interventions in traumatic head injuries, complications and outcomes.

Miscellaneous: SPR, Neurectomies, ITB pump etc., indications and complications.

Practicals: The students will attend the various private hospitals attached with the department to acquaint himself/herself for various neurological and neurosurgical conditions.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – II)

References:

1. Handbook of Neurosurgery. Mark S Greenberg. Thieme.
2. Principles of Neurological Surgery. Richard G Ellenbogen, Saleem I Abdul Rauf, Laligam N Shekhar. Saunders.
3. Neurology and Neurosurgery Illustrated. Kenneth W. Lindsay, Ian Bone, Geraint Fuller. Churchill Livingstone.
4. Essential Neurosurgery. Andrew H. Kaye. Wiley Blackwell.
5. Principles of Neurosurgery. Setti Rengachary and Richard Ellenbogen Mosby
6. Neurosurgery Review, Raj Kumar. Jaypee.
7. The Textbook of Human Neuroanatomy. I.B. Singh. Jaypee.
8. Brain's Disease of the Nervous System- Nalton- ELBS.
9. Neurological Assessment- Blicher Staff.
10. Davidson's Principles and Practices of Medicine- Edward- Churchill Livingstone.
11. Hutchinson's Clinical Methods- Swash- Bailliere Tindall.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – III)

3.1 PEDIATRIC NEUROPHYSIOTHERAPY (P.N.P.-S3)**Time: 3 Hrs.****Marks: 100****Instructions for Paper Setters:**

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

- Child Development: various components, various factors, developmental delay.
- Assessment of full term, preterm baby: various screening instruments
- Developmental delay various factors responsible
- Early intervention therapy: Principles, facilitation techniques, outcomes
- Neurodevelopment therapy: basic Principles, interventions and techniques
- Sensory integration therapy: basic Principles, interventions and techniques

UNIT – II

- Medical and biological conditions: prematurity and low birth weight, Sensory impairments, Visual impairments, cerebral palsy: epidemiology, etiological factors, various treatment strategies in detail, alternative strategies and outcomes, various orthotic and adaptive appliances and support systems.
- Birth Trauma: Congenital defects

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – III)**Practicals:**

- The students will attend the various private hospitals attached with the department to acquaint him/her for various pediatric conditions.
- The students will undergo hands on training on various Neuro physiotherapy techniques for handling Paediatric patients.

References:

1. The Normal Child- Ronald s Illingworth-Churchill Livingstone
2. Pediatric Physical Therapy Teckling- Lippincott
3. Treatment of Cerebral Palsy and Motor Delay- Levin's- Blackwell Scientific Publication London
4. Physiotherapy in Pediatrics- Shepherd- Churchill Livingstone
5. Motor Assessment of Developing Infant- Piper & Darrah-W.E. Saunders
6. Pediatric Physical Therapy, Teckling, Lippincott
7. Impact of Neurobehavioral Deficit on ADL, G Arndoltis, Mosby
8. Motor Assessment of Developing Infant, Piper & Darrah, WE Saunders
9. Pediatric Adaptive Motor Development and Exercises-Jo. E. Cowdence et al- Charlse Thomas USA
10. Treatment of Cerebral Palsy and Motor Delay- Sophie Levitt

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – III)

3.2 PRINCIPLES OF ORTHOTICS IN NEUROLOGICAL PHYSIOTHERAPY
(P.O.N.P.-S3)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

1. Principles of orthotic management, Orthosis prescription
2. Hand Splints: Indications, fabrication of simple splints
3. Spastic hand: orthotic management
4. Common deformities in neurological patients: orthotic prescription
5. Principles of fitting and alignment.

UNIT – II

1. Assistive devices:
 - Various assistive aids, types prescription and gait training
2. Adaptive appliances:
 - Types, prescription, procedures and occupational therapy.
3. Wheel chair: planning and prescription in CVA, PNI, CP and spinal cord injuries

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – III)

UNIT – III

Miscellaneous

Seating systems, positioning devices, tone reducing casts.

References:

1. Occupational Therapy for Physical Dysfunction .Williams and Wilkin
2. Lower Limb Orthotics New York University Medical Center Publication.
3. Prosthetics Atlas and Orthotics Atlas – C.V. Mosby.
4. Hand Splinting. Principles of Design and Fabrication .W.B Saunders
5. Orthotics in Rehabilitation McKee/Morgan.JP Brothers.
6. Orthotics a Comprehensive Clinical Approach. Edelstein, Buckner JP Brothers.
7. Orthotics in Neurological Rehabilitation – Aisen, Demos publication, New York 1992
8. Biomechanical Basis of Orthotics and Prosthetic Management- Butterworth Heinemann
9. Kinesiology Orthotics: Clinical Practice and Rehabilitation Technology- Churchill Livingstone, Redford, J.B. (1993). - Brunnstrom Singe, F.A. Davis-Philadelphia 1966.
10. The Functional Foot Orthosis, New York, Churchill Livingstone-Philips, J.W. (1995).
11. Lower Limb Amputations: A Guide to rehabilitation-F.A. Davis.
12. Hand Splinting: Principles and Methods (2nd ed) – St. Louis, C.V. Mosby.
13. Upper Extremity: Traumatic Injuries and Conditions- Child, S. (1997).
14. The Hand-Examination and diagnosis- Churchill Livingstone
15. Plastic Engineering Handbook of the Society of the Plastics Industry, 5th edition, New York. Berins Michael L.
16. Atlas of Limb Prosthetics- Bowker, P., and Michael, D. Chaps, C.V. Mosby.
17. Neural Prostheses: Replacing Motor Function after Disease or Disability-Popovic D.
18. Textbook of Disorder and Injuries of the Musculoskeletal System-Salter, R.B.
19. Gait Analysis- Perry J., Black Thorofare, New Jersey, 1992

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – III)

3.3 PHYSIOTHERAPY IN NEUROLOGICAL DISORDERS(P.N.D.-S3)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

Principle of management by physiotherapy of following neurological conditions:

UNIT – I

- Cerebrovascular accidents: Epidemiology, Etiological factors, clinical features and investigations, primary and secondary impairments, prevention strategies, functional approaches for stroke management.
- Infections of Nervous System: meningitis, encephalitis, types, post infection sequelae, Poliomyelitis, post polio syndrome, GBS.
- Disorders of movement: Lesions in UMN & LMN, Cerebellum, Basal ganglia, vestibular system.

UNIT – II

- Demyelinating disorders of nervous system: Epidemiology Clinical features, Physiotherapy, Guidance/ counseling
- Degenerative diseases of nervous system: Epidemiology Clinical features, Physiotherapy, Guidance/ counseling
- Disease of muscles: Classification, myopathies, Muscular dystrophies, primary and secondary impairments and Physiotherapy.
- Neuropathies: classification, clinical manifestations and Physiotherapy.

UNIT – III

- Diseases of spinal cord: Lathyrism, transverse myelitis, Syringomyelia, radiculopathy, tumors of spinal cord, vestibular disorder (infection).
- Diseases of peripheral nerves: classification, differential diagnosis and prognosis, medical and surgical management, evaluation, rehabilitation.
- Diseases of cranial nerves.
- Neuropsychological problems and rehabilitation.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – III)

Practicals:

- The students will attend the various private hospitals attached with the department to acquaint him/her for various Neurological conditions.
- The students will undergo hands on training on various Neuro Physiotherapy techniques for handling Neurological patients.

References:

1. Adult Hemiplegia-Evaluation and Treatment-Bobath-Oxford Butterwort Heinemann
2. Neurological Rehabilitation-Carr and Shepherd Butterworth Heinemann
3. Tetraplegia & Paraplegia: A Guide for Physiotherapists.Bromley. Churchill Livingstone
4. Neurological Physiotherapy-A Problem Solving Approach- Susan Edwards- Churchill Livingstone
5. Neurological Rehabilitation-Umpherd- Mosby
6. Brunnstrom Movement Therapy in Hemiplegia. Sawner & La vigne. Lippincott
7. Brain's Disease of the Nervous System- Nalton- ELBS
8. Steps to Follow- Patricia M Davies- Springer
9. Muscle Energy Technique- Chaitow- Churchill Livingstone
10. Hutchinson's Clinical Methods- Swash- Bailliere Tindall

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – III)

3.4 PHYSIOTHERAPY IN NEUROSURGERY (P.N.S.-S3)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

- Traumatic brain injury: acute respiratory care in ICU, Prognostic outcome, Physiotherapy management for secondary impairments.
- Traumatic spinal cord injuries: acute respiratory care in ICU, Prognostic outcome, Physiotherapy management for secondary impairments. Community integration
- Space occupying lesions in CNS: Acute care, outcome and physiotherapy

UNIT – II

- Disturbances of CSF and its circulation: methods of facilitation.
- Peripheral nerve injuries: Birth injury, Accidental injury, Physiotherapy management.
- Vestibular Disorders And Physiotherapy Interventions

UNIT – III

- Compressive myelopathies: Post operative rehabilitation regime.
- Spasticity management techniques: Phenol Injections, Botulinum toxin type A injections, Intrathecal baclofen pump (ITB) and physiotherapy.

Practicals:

- The students will attend the various private hospitals attached with the department to acquaint him/her for various neurosurgical conditions.
- The students will undergo hands on training on various Neuro Physiotherapy techniques for handling neurosurgical patients.

References:

1. Neurology and Neurosurgery Illustrated, Lince & Bone
2. Handbook of Neurosurgery, Greenberg
3. Neurological Rehabilitation-Carr and Shepherd Butterworth Heinemann
4. Tetraplegia & Paraplegia- a Guide for Physiotherapists-Bromley- Churchill Livingstone
5. Neurological Physiotherapy-a Problem Solving Approach- Susan Edwards- Churchill Livingstone
6. Neurological Rehabilitation-Umpherd- Mosby
7. Brain's Disease of the Nervous System- Nalton- ELBS

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – IV)

4.1 GERIATRIC NEUROPHYSIOTHERAPY (G.N.P.-S4)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

- Implications of an ageing population for rehabilitation, Physiological changes in elderly, Sensory motor changes and adaptation in older adult, Functional assessment of the elderly, Conservative pain management of the older patient, Patient education as a treatment modality, the older adult with developmental disability, Posture in older adult.
- Exercise prescription in elderly.

UNIT – II

COMMON PROBLEMS AND DISORDERS

- Disorders of muscles in elderly and role of physiotherapy.
- Movement disorders in elderly: Parkinson's disease, Huntington's disease, Essential tremor, dystonia-their physiotherapy management
- Disorders of balance: Physiology of balance, Balance and ageing, Disorders of balance, Dizziness, Falls-training and prevention
- Stroke (CVA), Dementias -Alzheimer's disease etc.-Their Physiotherapy management
- Various energy conservation techniques and endurance training in elderly

UNIT – III

- Geriatric rehabilitation services: care in the patient's own home, day care outside the home, domiciliary services, sheltered housing, group homes and assisted living facilities, nursing home care, Dementia/psychiatric units, hospitalization, ethical considerations (euthanasia, living will etc.)

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – IV)

Practicals:

- The students will attend the various private hospitals attached with the department to acquaint him/her for various geriatric conditions.
- The students will undergo hands on training on various Neuro Physiotherapy techniques for handling geriatric patients.

References:

1. Physical Rehabilitation, Susan O' Sullivan
2. Cash's Neurological Physiotherapy
3. Geriatric Physical Therapy, Guccione
4. Neurological Rehabilitation, Umpherd
5. Principles of Geriatric Physiotherapy, Multani Narinder Kaur, Verma Satish Kumar.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – IV)

4.2 DISABILITY PREVENTION AND REHABILITATION (D.P.R.-S4)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

- Disability: Definition, classification, early identification, early intervention, prevention for disabilities.
- Concepts, Principles, Components, planning and Implementation of CBR, Supervision, Monitoring, Evaluation of community-based Rehabilitation, Resources CBR and Disability Rehabilitation, Legislations.

UNIT – II

- Employment for persons with disabilities: present & futuristic view
- HRD in disability management
- Inclusive education and the common school in India
- Accessibility issues
- Social security for persons with disability in India
- Information, communication and technology: a tool for empowerment of persons with disabilities
- Human rights for persons with disabilities
- Public-private partnership

UNIT – III

- Sustainable strategies for disability management: visual disability, hearing disability, mental retardation, cerebral palsy and other behavioral disorders, genetic and congenital disorders, loco motor disability.
- Future challenges in rehabilitation of PWD.

References:

1. Disability Management in India, C S Mahpatra, NIMH
2. Neuroscience- Exploring the Brain, M Bears et al, Williams & Wilkins
3. Guidelines for Evaluation of Permanent Physical Impairment, Punjab Chapter for Orthopedics, Punjab
4. Disability Prevention and Rehabilitation, Clusnar, ELBS
5. CBR For Persons with Diabilities, Pruthvish, Jaypee
6. Rehabilitation of Stroke, Kaplan & Cailliet, Butterworth Heinmann

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – IV)

4.3 MANAGEMENT ETHICS AND MEDICO LEGAL ASPECTS (M.E.M.L.A.–S4)

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

1. Management process: planning, organization, direction, controlling and decision- making
2. Personal management: staffing, recruitment selection performance proposal, collective bargaining, discipline and job satisfaction
3. Quantitative methods of management: relevance of statistical and/or techniques in management
4. Roles of physiotherapy director, physiotherapy supervisor, physiotherapy assistant, physiotherapy, occupational therapist, home health aid and volunteer.
5. Healthcare and management: health care delivery system, marketing and information management, organizing and engaging people in work setting
6. Money matters: health care financial management, facility planning, risk management, ownership and private practice in physiotherapy
7. Physiotherapy: definition and development, implications and conformation to the rules of professional conduct, legal responsibility, understanding physiotherapists liability and obligations in the case of medico legal action
8. Physiotherapy department management
 - Policies and procedures
 - Recruitment, interview, probation, salary, hours of working, leave facilities, retirement, referred policy
 - Maintenance of records equipment, statistics
 - Planning, design construction, expansion plan

UNIT – II

Physiotherapy Ethics

1. Morals and ethics
2. Ethical issue in physiotherapy
3. Rules and regulations of council

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – IV)

UNIT – III

Negligence and practice licensure, workmen compensation. proper maintenance of patient's record.

References:

1. Healthcare Management- Montague Brown-Aspen
2. Health Care Management in Physical – Therapy- Mark A. Brimer-Charles C. Thomas
Publisher, Limited, 1990
3. Qualitative Research in Evidence Based Rehabilitation: Karen Whalley Hammell
4. Physical Rehabilitation: Susan O' Sullivan
5. Legal Aspects of Patient Care: RK Sharma
6. Legal Aspects of Physiotherapy. Dimond C. Wiley-Blackwell

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – IV)

**4.4 CURRENT, ALTERNATIVE AND
CONTEMPORARY APPROACHES (C.A.C.A.-S4)**

Time: 3 Hrs.

Marks: 100

Instructions for Paper Setters:

1. There will be twelve questions of equal marks distribution. Candidate will have to answer any ten questions.
2. The questions should be equally distributed in the whole syllabus.

UNIT – I

- Combined multisensory approach: basic Principles, interventions and techniques
- Neurodynamics and neural tissue mobilization (Butler): clinical reasoning, indication, contraindication and precautions in management of adverse neural tension.
- Oromotor rehabilitation
- Functional Electrical stimulation.

UNIT – II

- Physical body system approaches:
 - a) Craniosacral therapy: structure, technique, outcome and uses
 - b) MFR: facial system, intervention, uses
- Movement therapy approaches:
 - a) Feldenkrais :clinical application, outcome
 - b) Tai-chi: philosophy ,principles, outcome

UNIT – III

- Miscellaneous: Aquatic therapy, Hippotherapy, Electrical stimulation, Acupuncture, Biofeed back, MOVE, space suit therapy, sports.

Practicals:

- It will be mandatory for the students to conduct seminars on the latest and alternative trends in neurological Physiotherapy.
- The students will undergo hands on training on current concepts.

MASTER OF NEUROLOGICAL PHYSIOTHERAPY (SEMESTER – IV)

References:

1. Neurological Rehabilitation-Umpherd, Mosby
2. Physical Rehabilitation. O'sullivan Schmitz .FA Davis JP Brothers.
3. Neurodevelopment Treatment Approaches Theoretical Principles of Clinical practice:
NDTA USA
4. Physical Therapy in Cerebral Palsy. Freeman Miller, Fringer
5. Neuro Rehabilitation. Shreen D. Farber. Saunders
6. Oral Motor Exercises for Speech Clarity. Sara Rosenfeld Johnson, Monica O'Brien.
7. Functional Electrical Stimulation: Standing and Walking after SCI. Alojz R.Krali and
Todej Bajd
8. FES: Technological Restoration after SCI. Chandler A. Philips. Springer
9. Craniosacral Therapy. Jhon E. Upledger, Donald Ash, Richard Grossinger, Don Cohen.
10. An Introduction to CST. Anatomy, Function Treatment. Don Cohen, Jhon E. Upledger
11. The Fundamentals of CST. Anthony P.Arnold
12. The Myofascial Release Manual.Carol Manheim
13. The manual of Trigger Points and MFR. Dimitrois Kostopoulos,Konstantine Rizopoulos
14. The Feldenkrais Method. Yachanan Rywerant, Moshe Feldenkrais.BHP
15. An Introduction to Movement Therapy. Sharon W.Goodill
16. Kinetic Control: The Management of Uncontrolled Movements. Mottram. Churchill
Livingstone
17. Tai chi. Paul Brecher
18. The Essentials of tai-chi. Waysujn Liao
19. Facilitation Techniques Based on NDT. Lois Bly, Allison Whiteside
20. Sensory Integration and Child. A.Jean Ayres
21. Sensory Integration: Theory and Practice. Anita Bundy, Shelly Lane, Elizabeth Murray
22. Neurodynamics Techniques .Davis Butler
23. Aquatic Therapy programming. Joanne M Koury
24. Biofeedback for Brain. Paul G Swingle
25. Therapeutic Modalities in Rehabilitation.William Prentice