

**MANAV BHARTI UNIVERSITY**  
**DEPARTMENT OF PHYSIOTHERAPY**  
**PROPOSED SYLLABUS FOR**  
**MASTER OF PHYSIOTHERAPY (NEURO)**  
**TWO YEARS DEGREE COURSE**  
**REVISED SYLLABUS**  
**TO BE IMPLEMENTED FROM: 2009-2010**

**COURSES OF STUDY AND SCHEME OF EXAMINATION**

NAME OF THE PROGRAMME		MASTER OF PHYSIOTHERAPY	
Programme core (PC)	Programme elective (PE)	Open elective (OE)	Total credits
110	-----	-----	110

**NOTE: -**

- Weightage of minor and major tests etc shall be conducted as per policy of the university.
- All other rules and regulations for the students of physiotherapy shall be applicable as per ordinance of the Department\ University already in force and/or as amended from time to time.

**MANAV BHARTI UNIVERSITY**  
**MPO:101**  
**(1ST YEAR)**  
**FIRST SEMESTER**  
**Review of human Sciences (Anatomy)**

**1. Human anatomy**

- i) Bone/joints (Osteo and Arthrology)
- ii) Muscles (Myology)
- iii) Nervous and Nervous system
- iv) Integumentary System

**2. Upper limb and lower limb**

- i) Bone and joints
- ii) Muscles
- iii) Nervous and nervous system,
- iv) Vascular system

**Various regions:**

- Upper limb pectoral, axilla, scapular, arm, forearm, acubital fossa and hand.
- Lower limb-thigh, gluteal region, popliteal fossa, leg and foot

**3. Introduction to trunk region**

- i) Bone and joints (Vertebrae, Ribs and Sternum)
- ii) Muscles
- iii) Nerve and plexuses
- iv) Vascular structures
- v) Various region-
  - Thoracic
  - Lumbar
  - Sacro-coccygeal.

**4. Head & Neck**

- i) Bone & joints
- ii) Muscles
- iii) Nerve and plexuses.
- iv) Vascular structures
- v) Various regions-
  - Head-carnial cavity, orbit, nasal, cavity, oral cavity

- Neck-triangles (anterior & posterior) back of neck

## 5 Neuro-Anatomy

- i) Nervous System
  - Central Nervous System (Brain and Spinal Cord)
  - Somatic Nervous System (Cranial and Spinal Nervous)
  - Autonomic Nervous System
- ii) Meninges and Ventricular System of C.N.S.
- iii) Blood Supply to C.N.S.

### Reference books

- McMinn's Color Atlas of Human Anatomy. / Abrahams, Peter H.
- Cunningham's Manual of Practical Anatomy/by G.J. Romanes
- Textbook of human Neuroanatomy. / Singh, Inderbir.
- Clinical Anatomy for medical students. / Snell, Richard S.
- Essential clinical anatomy. / More, Keith L.
- Human anatomy : color atlas and text/ by J.A. Gosling, P.F. Harris, I. Whitmore and P.L.T. Willan
- Human Anatomy :Regional and applied/by B.D.Chaurasia

**MANAV BHARTU UNIVERSITY**  
**MPN:102**  
**FIRST SEMESTER**  
**Review of human Sciences (Physiology)**

**Human Physiology & Nutrition**

- 1) **Cardiovascular System**
  - i) Structure and Properties of Heart
  - ii) Cardiac Cycle
  - iii) The regulation of Heart's performance/circulation during Exercise
  - iv) Cardiac Output
  - v) The Arterial Blood Pressure
  - vi) The Physiology of Vascular System
  - vii) Lymphatic Circulation
  - viii) Protection from Coronary Heart Disease
  - ix) Sudden Cardiac Death in Sports
  
- 2) **Respiratory System**
  - i) Ventilation and Control of Ventilation
  - ii) Alveolar air
  - iii) Regulation of Breathing/Respiration during Exercise
  - iv) Pulmonary function test
  - v) Air Conditioning
  - vi) Second wind
  - vii) Oxygen Debt
  - viii) Breath holding and Scuba Diving, High Pressure Ventilation
  
- 3) **Muscle Physiology**
  - x) Electrical properties of Neuron
  - xi) Classification of Nerve Injury
  - xii) Effects of Nerve injury
  - xiii) Structure of Skeletal Muscle
  - xiv) Electrical properties of Skeletal Muscle
  - xv) The Contractile Mechanism
  - xvi) Length-Tension Relationship
  - xvii) Fast and Slow Muscles
  - xviii) Skeletal Muscle Metabolism
  - xix) Growth and Exercise
  - xx) Repair and Adaptation during Exercise
  - xxi) Training for Muscular Strength and Endurance
  - xxii) Muscle tissue fiber typing and its significance

**4) Gastrointestinal tract& Endocrine:**

- i) Effects of sports on G.I.T. and liver
- ii) Hormone regulation fluid and Electrolytes during Exercise
- iii) Exercise and Menstrual Cycle
- iv) Stress Hormones in Exercise
- v) Effects of Exercise on various Hormones in the Body
- vi) Opioids, Runner's high

**5) Nervous System**

- i) Elementary Neuro-anatomy
- ii) Neurons and Neuralgia
- iii) Properties of nerve fibers, synapse
- iv) Spinal cord
- v) Cerebral cortex
- vi) Pyramidal and extra pyramidal system
- vii) The cerebellum
- viii) Autonomic nervous system
- ix) Cerebrospinal fluid
- x) Cranial nerves

**Reference books**

- Principles of exercise physiology. / Axen, Kenneth.
- Physiology of sport and exercise by Wilmore, Jack M
- Textbook of practical physiology. / Ghai, C.L.
- Concise medical physiology. / Chaudhuri, Sujit K.
- Human physiology/by N M Muthayya. / Muthayya, M N.
- Samson Wright's applied physiology. / Keele, Cyril A.
- Textbook of medical physiology. / Guyton, Arthur C
- Textbook of physiology/by A.K. Jain / Jain, A.K.

**MPN:103**  
**FIRST SEMESTER**  
**Applied physiotherapy**

**1) Exercise Therapy**

- i) Assessment techniques: Manual Muscle Testing and Goniometry.
- ii) Stretching and Mobilization.
- iii) Re-education and Strengthening.
- iv) Balance and Co-ordination Ex.
- v) Gait Analysis and Training (Both Normal and Pathological Gaits)
- vi) Relaxation and soft Tissue Manipulations
- vii) Posture
- viii) PNF and Neuromuscular Coordination
- ix) Hydrotherapy
- x) Joint Mobilization

**2) Electro-Therapy.**

- i) General Review of Low, Med and high currents and their modifications like Di-dynamic and Russian Currents etc.
- ii) Laser
- iii) Cryotherapy
- iv) UVR and IRR
- v) Other thermal modalities like SWD. MWD, Hydro Collator, Wax therapy. Fluido-therapy.

**Practicals:-**

**1) Ex. Therapy:**

- i) Musculo skeletal and Neurological Assessment
- ii) Strengthening techniques
- iii) Soft tissue stretching and mobilization
- iv) Gait analysis and training
- v) Postural assessment and re-education
- vi) Balance and Coordination
- vii) Hydrotherapy.

2) **Electrotherapy**

**A. All types of low and medium frequency currents**

- Faradic
- Galvanic
- High Voltage Current
- Di dynamic
- Russian
- Interferential Therapy
- Tens
- Micro currents

**B. All types of high frequency currents and modalities**

- Cryotherapy
- UVR
- IRR
- LASER
- Other thermalmodalities like Hydro-Collator Waxtherapy, Fluidotherapy.

**Reference books**

- The principles of exercise therapy / Gardniner, M Dena.
- Therapeutic exercise: foundations and techniques/by
- Carolyn Kisner and Lynn Allen Colby. / Kisner,
- Practical exercise therapy/by Margaret Hollis & Phyl Fletcher-Cook
- Electrotherapy explained : principles and practice/by
- John low, Ann Reed and Mary Dyson. / low, John
- Clayton's electrotherapy/ edited by Sheila Kitchen and
- Sarah Bazin. / Kitchen, Sheila
- Muscles testing and function/by Florence Peterson
- Kendall (et..al) / Kendall, Florence Peterson
- Therapeutic modalities for physical therapists/by William E. Prentice, William
- Quillen and Frank Underwood / Prentice, William E.
- Therapeutic exercise moving toward function/by Carrie
- M. Hall and Lori Thein Brody. / Hall, Carrie M.
- Daniels and worthingham's muscle testing techniques of
- manual examination/by Helen J. Hislop and Jacqueline
- Montgomery / Hislop, Helen J.

**MPN:104**  
**FIRST SEMESTER**  
**Applied Biomechanics**

**1. Fundamental Mechanics**

- i) Forces; composition and resolution of forces; force systems
- ii) Force of gravity and COG
- iii) Stability
- iv) Reaction forces
- v) Friction
- vi) Moments
- vii) Newton's laws
- viii) Equilibrium: static and dynamic
- ix) Simple Machines: Levers, pulleys and wheel and axle
- x) Work, power and energy
- xi) Density and Mass
- xii) Segmental dimensions
- xiii) Poisson's effect
- xiv) Stress and strain
- xv) Modulus of rigidity and modulus of elasticity
- xvi) Strain energy
- xvii) Static and cyclic load behaviors
- xviii) Load: Load sharing and load transfer

**2. Kinematics**

- i) Motion: types, location, magnitude and Direction
- ii) Angular motion and its various parameters
- iii) Linear motion and its various parameters
- iv) Projectile motion

**3. Muscle Mechanics**

- i) Structure and composition of muscle
- ii) Fiber length and cross-section areas
- iii) Mechanical properties
- iv) EMG changes during fatigue and contraction
- v) Changes in mechanical properties because of aging, exercise and immobilized of immobilization
- vi) Clinical applications

**4. Ligament and Tendon Mechanics:**

- i) Structure, composition and mechanical properties
- ii) Cross-sectional area measurement
- iii) Muscle tendon properties



- iv) Temperature sensitivity
- v) Changes in mechanical properties because of aging, exercise and immobilization
- vi) Mechanoreceptors
- vii) Clinical application

**5. Joint Mechanics**

- i) Joint design
- ii) Joint categories
- iii) Joint functions: Arthrokinematics, Osteokinematics and kinematics chains
- iv) Joint forces, equilibrium and distribution of these forces
- v) Degenerative changes in weight bearing joints and compensatory actions
- vi) Joint stability and its mechanisms
- vii) Clinical applications

**6. Measurement Instruments**

- i) Photo-optical devices
- ii) Pressure transducers and Force Plates
- iii) Gait Analyzer
- iv) Isokinetic device
- v) EMG (Electro physiology of muscle contraction, recording, processing)
- vi) Relationship between EMG and Biomechanical Variables

**7. Mechanical energy. Work and Power**

- i) Definitions
- ii) Positive and negative muscles work
- iii) Muscle mechanical power
- iv) Causes of inefficient, movement co-contractions, Isometric contractions, against gravity jerky movement, energy generation at one joint and absorption at another, energy flow.
- v) Energy Storage

**8. Gait**

- i) Gait parameter: kinetic, kinematics, time-space
- ii) Pathological gait
- iii) Running
- iv) Stair climbing
- v) Changes in gait following various surgeries/diseases/disorders

**9. Cardiopulmonary Mechanics:**

- i) Cardio Mechanics

- ii) Pulmonary Mechanics
- iii) Vascular Mechanics

**10. Joint structure and function of**

- i) Vertebral column
- ii) Hip joint
- iii) Knee joint
- iv) Ankle and foot complex
- v) Shoulder joint
- vi) Elbow joint
- vii) Wrist and hand complex

**10. Bone Mechanics**

- i) structure and composition of bone
- ii) Stress
- iii) Strain
- iv) Modulus of Rigidity & Modulus of elasticity
- v) Mechanical properties of Trabecular system
- vi) Mechanical properties of Cortical bone
- vii) Bone Remodelling
- viii) Response of bone to aging & exercise & immobilization
- ix) Mechanics to prevent fracture in bone
- x) Clinical application

**Practical in Applied Biomechanics:**

This course will enable the students to apply their knowledge of biomechanics and ergonomics in practical situation on their patients

- i) Evaluation and assessment of joint motion (planes, axes etc)
- ii) Evaluation and assessment of posture
- iii) Evaluation and assessment of Gait
- iv) Practical usage of all examination and assessment devices.

## Reference books

- Introduction to kinesiology/Hoffman, Shirf
- Kinesiology: the Mechanics & Pathomechanics of human
- Movement/by Carol A. Oatis. / Oatis, Carol A.
- Joint Structure and Function Cynthia Norkins
- Joint Structure and Function: a comprehensive analysis./Levangie, Pamela K
- Clinical biomechanics of the lower extrmities/by Ronald L. Valmassy. / Valmassy, Ronald L.
- Fundamentals of Biomechanics, Orkaya, N
- Ergonomics for Therapists: Karen Jacobs Carl M. Bettencourt
- Handbook of Human Factors and Ergonomics: Gavriel Salvendy
- Ergonomics: How to Design for Ease and Efficiency: K.H.E. Kroemer, H.B. Kroemer, K.E. Kroemer-Elbert
- Ergonomics, Work, and Health: Pheasant, Stephen
- A Guide to Human Factors and Ergonomics: Martin Helander

**MANAV BHARTU UNIVERSITY**  
**MPN:105**  
**FIRST SEMESTER**  
**Biostatistics and Research Methodology**

**1) Research Methodology**

- i) How to read and critique research
- ii) Introduction to research: Framework, levels of measurement, variables
- iii) Basic research concepts: Validity and reliability
- iv) Design instrumentation and analysis of qualitative research
- v) Design instrumentation and analysis of Quantitative research
- vi) How to write a research proposal
- vii) The use and protection of human and animal subjects.

**2) Biostatistics**

- i) Introduction:  
Description and inferential statistics  
Methods of collection, classification, Tabulation and presentation of data
- ii) Central Tendency:  
Mean, Median, Mode and Standard deviation.
- iii) Co-relation and Regression  
Karl Pearson's co-relation method  
Rank co-relation method  
Regression and co efficiencies  
Sampling and hypothesis and testing  
Data collection  
Types of sampling  
Tests
- iv) Probability, Binomial distribution, poisson distribution, Normal distribution,
- v) One way ANOVA, Two Way ANOVA
- vi) Test of significance (t, chi square, f, z)
- vii). Non parametric tests
- viii) Simple statistical analysis using available software.

## **Reference books**

- Research methods in physical activity: Thomas, J
- Statistical applications for health information management: Osborn, CE
- Clinical research for health professionals: a user-friendly Guide: Batavia, Mitchell.
- Clinical audit in physiotherapy: from theory into practice. / Barnard, Sue.
- Practical research: a guide for therapists. / French, Sally
- Rehabilitation Research: Principles and Applications: Elizabeth Domholdt
- Methods in biostatistics for medical students and research workers. Mahajan, B.K.
- Manual of biostatistics: Baride, JP
- Medical biostatistics: Indrayan, A

Course No.	Subject	Title	Teaching Hours /Week	
			L – T – P	Credits
MPN 106	Seminars/ Case Presentations	PC		

### **Seminar**

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them

Course No.	Subject	Title	Teaching Hours /Week	
			L – T – P	Credits
MPN 107	Clinical Training			

### **Clinical Training**

Students will engage in clinical training in hospital based medical and physiotherapy departments/ settings to enhance their clinical skills and apply contemporary knowledge gained during teaching sessions.

**MPN:201**  
**SECOND SEMESTER**  
**Review of basic sciences (Pathology)**

1. **General Pathology** (cell injury, inflammation, Repair, immune system)

**A. Nervous System**

- i) Infection
  - Meningitis
  - Encephalitis
- ii) Vascular Disease
  - Ischemic encephalopathy
  - Cerebral infarction
  - Intracranial infarction
  - Intracranial hemorrhage
- iii) Degenerative disease
  - Alzheimer's disease
  - Huntington's disease
  - Parkinson's disease
  - Motor neuron disease
- iv) Demyelinating disease
  - Multiple sclerosis
- v) The peripheral nervous system
  - Peripheral neuropathy
  - Acute idiopathic polyneuropathy
  - Diabetic neuropathy

**B. Musculoskeletal System**

- i) Bones
  - Hereditary and metabolic diseases (Osteoporosis, rickets, osteomalacia, osteitis fibrosa cystica, renal osteodystrophy)
  - Infections (Osteomyelitis and tuberculosis)
- ii) Joints
  - Degenerative joint disease
  - Bursitis
- iii) Skeletal muscles
  - Muscle atrophy

- Myositis
- Muscular dystrophy
- Myasthenia gravis

### **C. Cardiovascular system**

- i) Rheumatic heart disease
- ii) Myocardial infarction
- iii) Atherosclerosis
- iv) Congenital heart diseases

### **Reference books**

- Textbook of Pathology. / Mohan, Harsh.
- Pathology illustrated/ by Peter S. Macfarlane, Robin Reid and Robin Callander / Mcfarlane, Peter S.
- Pathology: implications for the physical therapists/by Catherine Cavallaro DGoodmann and Williams G. Boissonn
- Pathology, quick review, Harsh.



**MPN:201**  
**SECOND SEMESTER**  
**Review of basic sciences (Pharmacology)**

- i) Drugs used in pain
- ii) Local anesthetics
- iii) Steroids
- iv) Muscle relaxants
- v) Drugs acting upon Central and Autonomic nervous system
- vi) Topically acting upon Cardio Respiratory system
- vii) Drugs acting upon Musculoskeletal system
- viii) Cardio-vascular System:
- ix) Therapeutic agents (classification, effects on cardio-vascular system, uses & adverse reactions)
- x) reactions)
- xi) Drugs used in cardiac failure, hypertension & arrhythmias and interaction with
- xii) physical therapy
- xiii) Drug therapy in vascular disease & ischaemia and interaction with physical therapy
- xiv) Respiratory system:
- xv) Therapeutic agents - uses, side effects and interaction with physical therapy
- xvi) Diabetes mellitus:
- xvii) Drug therapy and its interaction with physical therapy

**Reference books**

- Essential of medical pharmacology/by K.D. Tripathi
- Pharmacology drug actions & reactions
- Blueprints notes & cases: pharmacology,
- Textbook of pharmacology, Seth, SD

**MPN:202**  
**SECOND SEMESTER**  
**Advanced Physiotherapy**

1. **Manual Therapy:** Introduction, History, Basic Classification, Assessment for manipulation, discussion in brief about the concepts of mobilization. Like Cyriax, Butter, ,Roods,NDT,Bobath,Carr & Shapherd in mobilization of its nerves, methodology in general with examples at view joints/nerves (Manipulation Studies and work acc. to their specialization)
2. **Muscle Energy techniques and positional stretch:** The basic concept and application of these techniques.
3. **Positional Release Therapy:** The basic concept and Application of these techniques.
4. **Nerve Conduction Studies and Electromyography:** normal, abnormal action potentials, its recording protocols analysis, application.
5. **Biofeed back.**

**Advanced Physiotherapy (practical)**

- (1) **Demonstration of following Manual Therapy Lack. To their specialization field:-**
  - Cyriax
  - Maitland
  - Mulligan
  - Butter
  - Nerve Mobilization
  - Roods
  - NDT
  - Bobath
- (2) **Outline and Practical knowledge of**
  - Muscle Energy Technique
  - Positional Stretch
  - Myofascial release etc
- (3) **Demonstration and practical knowledge of**

- NCV, EMG
- BIOFEEDBACK etc

### **Reference books**

- Electrotherapy explained : principles and practice/by John low, Ann Reed and Mary Dyson. / low, John
- Clayton's electrotherapy/ edited by Sheila Kitchen and Sarah Bazin. / Kitchen, Sheila
- Positional release techniques, Deig, D
- Muscle energy techniques, Chaitow, L

**MPN:203**  
**SECOND SEMESTER**  
**Professional Development & Ethics**

**1. Concepts of Teaching and Learning**

- i) Meaning and Scope of Educational Psychology
- ii) Meaning and Relationship between Teaching and Learning
- i) Learning Theories
- ii) Dynamics of Behavior
- iii) Individual Differences

**2. Curriculum**

- i) Meaning and Concepts
- ii) Basis of Curriculum Formulation Development
- iii) Framing Objectives for Curriculum
- iv) Process of Curriculum Development and Factors Affecting Curriculum Development
- v) Evaluation of Curriculum

**3 Method and Techniques of Teaching**

- i) Lecture, Demonstration, Discussion, Seminar, Assignment, Project and Case Study.

**4 Planning for Teaching**

- i) Bloom's Taxonomy of Instructional Objectives, Writing Instructional
- ii) Unit planning and Lesson planning

**5 Teaching Aides**

- i) Types of Teaching Aids
- ii) Principles of Selection, Preparation & Use of Audio-Visual aids.

**6 Measurement and Evaluation**

- i) Nature of Educational Measurement: Meaning, Process and Types of Tests
- ii) Construction of an Achievement Test and its Analysis Standardized Test
- iii) Introduction of some Standardized tools, Important Tests of Intelligence, Aptitude Personality.
- iv) Continuous and Comprehensive Evaluation

**7. Guidance and Counseling**

- i) Meaning and Concepts of Guidance and Counseling
- ii) Principles
- iii) Guidance and Counseling Services for Students and Faculty members
- iv) Faculty Development and Development of Personnel for physiotherapy Services

## **8. Clinical education**

- i) Awareness and guidance to the common people about health diseases and available professional services
- ii) Patient education
- iii) Education of the practitioners

## **9. Functions of management**

**10. Management process:** planning, organization, direction, controlling, and decision-making.

**11. Personal management:** staffing, recruitment selection performance appraisal, collective bargaining, discipline, and job satisfaction.

**12. Quantitative methods of management:** relevance of statistical and/ or techniques in management.

**13. Marketing:** marketing segmentation, marketing research production, planning pricing, and channels of distribution, promotion, consumer behavior and licenser.

**14. Total Quality Management:** basis of quality management, quality assurance program in hospitals, medical audit and international quality system.

**15. Hospital as an organization:** functions and types of hospitals selected, clinical supportive and ancillary staff of the hospital, emergency department, nursing, physical medicine and rehabilitation, clinical laboratory, pharmacy and dietary department.

**16. Roles of Physiotherapy Director, Physiotherapy Supervisor, Physiotherapy Assistant, Physiotherapy, Occupational therapist, Home Health Aide and Volunteer.**

**17. Direct care and referral relationships and confidentiality**

**18. Physiotherapy:** Definition and Development

**19. Implications and conformation to the Rules of Professional Conduct**

**20. Legal responsibility for their actions in the professional context and understanding the Physiotherapist's liability and obligations in the case of medico-legal action**

**21. Code of Ethics:** wider knowledge of ethics relating to current social and medical policy in the provision of health care.

**22. Function of relevant professional associations education body and trade union**

## **Reference books**

- Fox pro 2.5 made simple for DOS & Windows, Taxali, RK
- Computers and commonsense, Hunt, R & Shelly, J
- Social problems in India, Ahuja, R
- Health studies: an introduction, Naidoo,
- An introduction to Sociology/by Vidya Bhushan and D.R. Sachdeva. / Bhushan, Vidya.

Course No.	Subject	Title	Teaching Hours /Week	
			L – T – P	Credits
MPN 204	Seminars/ Case Presentations	PC		

### **Seminars/ Case Presentations**

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them

Course No.	Subject	Title	Teaching Hours /Week	
			L – T – P	Credits
MPN 205	Clinical Training			

### **Clinical Training**

Students will engage in clinical training in hospital based medical and physiotherapy departments/ settings to enhance their clinical skills and apply contemporary knowledge gained during teaching sessions.

**MPN:301**  
**THIRD SEMESTER**  
**Medical and Surgical Management Of**  
**neurological disorder**

- 1. Congenital and hereditary disorders**
- 2. Head injury.**
  - Comatose patient
  - Closed skull fractures
  - Haematomas, subdural, epidural and intracerebral
  - Open cranio-cerebral injuries
  - Reconstruction operations in head injuries
- 3 Disorders of spinal cord and cauda equine**
  - Acute traumatic injuries
  - Haematomyelia and acute central cervical cord Injuries
  - Slow progressive compression of the spinal cord
  - Syringomyelia
  - Ischaemia and infarction of the spinal cord and cauda
  - Spina bifida
- 4 Disorders of cranial nerves**
- 5 Disorders of peripheral nerves**
  - Peripheral neuropathies
  - Causalgia
  - Reflex sympathetic dystrophy
  - Irradiation neuropathy
  - Peripheral nerves tumors
  - Traumatic, compressive and ischaemic neuropathy
  - Spinal radiculitis and radiculopathy
  - Hereditary motor and sensory neuropathy
  - Acute idiopathic polyneuritis/chronic
  - Neuropathy due to infections
  - Vasculomotor neuropathy
  - Neuropathy due to systemic medical disorders
  - Drug induced neuropathy
- 6 Disorders of muscle**
  - The myotonic disorders
  - Inflammatory disorders of the muscle
  - Myasthenia gravis
  - Endocrine dystrophy
- 7 Cerebellar disorders**
  - Ataxia

- Motor neuron disease
- 8 Demyelinating disorders**
  - Multiple sclerosis
  - Diffuse sclerosis
- 9 Deficiency and nutritional disorders**
  - Deficiency of vitamins and related disorders
  - Other nutritional neuropathies
- 10 Disorders of cerebral circulation-Stroke**
- 11 Infectious disorders**
  - Meningitis
  - Encephalitis
  - Brain abscess
  - Syphilis
  - Herpes simplex
  - Chorea
  - Poliomyelitis
  - Tuberculosis
  - Transverse myelitis
- 12 Disorders of the vestibular system**
- 13 Extra pyramidal disorders**
  - Parkinsonism
  - Balance disorders
- 14 Epilepsy, dementia, Alzheimer,s disease**
- 15 Development of child-weight, height, circumference measurement related to age in normal child, developmental milestones, neonatal reflexes, factors, influencing growth and development, types of body built, physical examination of the child, growth patterns**
- 16 Nutrition and immunization of a normal child-normal nutrition requirement of a child, infant feeding, prevention of nutritional disorders, immunization**
- 17 General principles of neurosurgery**
- 18 Tumors**
  - Tumors of cranial bones**
    - Meningiomas
    - Tumors in spinal cord
    - Intra-cranial tumors
    - Other space-occupying lesions
- 19 Intracranial abscess**
- 20 Hydrocephalus**
- 21 Vascular disease of the brain**
  - Aneurysms
  - Thrombosis
- 22 Stereo tactic surgery**



<b>23</b>	<b>Cerebral malformations</b>
<b>24</b>	<b>Operations of the discs-cervical and lumbar disc operations</b>
<b>25</b>	<b>Malformations of the spine and spinal cord</b>
<b>26</b>	<b>Lumbar and cisternal punctures technique and complication</b>
<b>27</b>	<b>General rules of surgical repair of the peripheral nerves</b>
<b>28</b>	<b>Muscle lengthening/release operations</b>
<b>29</b>	<b>Spasticity reductions</b>
<b>30</b>	<b>Intensive Care Unit management of the neurologically Impaired Patient.</b>

**MPN:302**  
**THIRD SEMESTER**  
**Physiotherapy in neurological disorders**

**Unit-1: Introduction**

- i) The history of the illness.
- ii) Examination of the patient.
- iii) Investigation of the patient with neurological disease EMG, EEG, Nerve conduction test, Radiology X-ray, CT., MRI, Laboratory test etc.
- iv) Physiotherapy assessment & rehabilitation (Advanced therapeutic techniques like Bobath, Motor relearning, Rood, PNF, Mobilization etc.

**Unit-II: Cranial Nerves**

- i) Testing of cranial nerves
- ii) Disorders of cranial nerves, Cranial neuropathy
- iii) Rehabilitation protocol.

**Unit-III: Stupor and Coma**

- i) The neural basis of consciousness
- ii) Clinical terminology
- iii) Lesions responsible for stupor and coma
- iv) The assessment and investigation of the unconscious patient.
- v) The diagnosis of brain death
- vi) The management of the unconscious patient
- vii) Total rehabilitation protocol.

**Unit-IV: Disorders of the cerebral circulation**

- i) Epidemiology of the stroke
- ii) Causes, types, pathophysiology
- iii) Clinical features and investigation
- iv) Treatment of different type of stroke
- v) Recovery and rehabilitation
- vi) Stroke prevention

**Unit-V: Infectious disorders**

- i). Meningitis
- ii). Encephalitis
- iii). Brain abscess
- iv). Syphilis
- v). Herpes Simplex
- vi). Chorea
- vii). Tuberculosis
- viii). Transverse myelitis
- viv). Poliomyelitis

Classification, causes, pathophysiology clinical features complication.

**Unit-VI: Demyelinating diseases of the Nervous system**

- i) Classification of demyelinating diseases
- ii) Multiple sclerosis
- iii) Diffuse sclerosis

**Unit-VII: Movement disorders**

- i) Akinetic-rigidity syndromes disorders
- ii) Dyskinesias disorders

**Unit-VIII: Degenerative disease of the spinal cord and cerebellum.**

- i) All type of ataxia
- ii) Motor neurone disease
- iii) Spinal muscular atrophies.

**Unit-IX: Disorders of the spinal cord & cauda equine**

- i) Acute traumatic injuries of the spinal cord
- ii) Haematomyelia and acute central cervical cord injuries
- iii) Slow progressive compression of the spinal cord
- iv) Syringomyelia
- v) Ischaemia and infarction of the spinal cord and cauda equine
- vi) Rehabilitation of above mention disorders
- vii) Spina bifida

**Unit-X: Deficiency and Nutritional disorders**

- i) Deficiency of vitamins & related disorders
- ii) Other nutritional neuropathies

**Unit-XI: Disorders of Peripheral Nerves**

- i) Clinical diagnosis of peripheral neuropathy
- ii) All type of level of peripheral neuropathy and brachial plexus
- iii) Causalgia
- iv) Reflex sympathetic dystrophy
- v) Peipheral nerve tumours and irradiation neuropathy
- vi) Traumatic, compressive and ischaemic neuropathy
- vii) Spinal radiculitis and radiculopathy
- viii) Hereditary motor and sensory neuropathy (HMSN) (Type I, II, IV & V)
- ix) Acute idiopathic polyneuritis chronic
- x) Neuropathy due to infections
- xi) Vasculomotor neuropathy
- xii) Neuropathy due to systemic medical disorders
- xiii) Drug-induced neuropathy
- xiv) Ollitline metal-poisoning chemical chemical neuropathies

**Unit-XII: Disorders of Muscle**

- i) Classification of the muscular dystrophies
- ii) The myotonic disorders of muscle
- iii) The myotonic disorders
- iv) Myasthenia grevis
- v) Endocrine and metabolic myopathies

**Unit-XIII: Autonomic Nervous disorders**

- i) Disorders of autonomic function after lesions of the spinal Cord.

**Unit-XIV: Seizures**

- i) Epidemiology, classification, causes, factors precipating, diagnosis.
- ii) Myoclonus.

**Unit-XV: Disorders of higher cerebral cortical function.**

Disorders of different lobes

- a) Frontal lobes
- b) Temporal lobes
- c) Parietal lobes
- d) Occipital lobes
- e) Sub cortical lesions

**MANAV BAHRTI UNIVERSITY**

**MPO:303**  
**THIRD SEMESTER**  
**Neurosurgical rehabilitation**

**Unit-I Cranio cerebral injury (Head & Brain injury)**

- i) Closed skull fractures
- ii) Haematomas, epidural, subdural, intracerebral
- iii) Open cranio cerebral injuries
- iv) Re construction operation in head injuries

Epidemiology, Pathophysiologicals, Symptoms, Signs, Investigation.  
Management, Pre and Post Operative Physiotherapy, Complication.

**Unit-II Tumors**

- i) Tumors of cranial bones
- ii) Meningiomas
- iii) Tumors in spinal cord
- iv) Intra Cranial Tumors

**Unit-III Other condition related to raised intra cranial pressure**

- a) Hydrocephallus
- b) Intracranial abscess
- c) Central oedema

Pathophysiology, classification effects of Mass lesion,  
Symptoms and Sign, Examination Management Pre & Post  
Operative Rehabilitation protocol.

**Unit-IV Vascular disease of the Brain**

- a) Aneurysms    b) Thrombosi

**Unit-V Decompression Surgery of Spinal cord**

- a) Disc operation (Cervical, Lumbar)
- b) Stenosis
- c) Oedema, Abscess
- d) Lumber Puncture

**Unit VI Periheral Nerves**

- a) De-compression
- b) Nerve Suture
- c) Nerve Grafting

**MPO:304**  
**THIRD SEMESTER**  
**Physiotherapy in pediatric neurology**

**Unit-1: General Developmental sequence of Normal Child:** Weight, height and circumference measurements related to age in normal child developmental milestones, Neonatal reflexes, factors influencing growth & development, various periods of growths post natal growth patterns, types of body built, physical examination of a child.

**Unit-II: Nutrition and Immunization:** Normal nutritional requirement of a child infant feeding prevention of some nutritional disorders nutritional deficiency diseases. Immunization (salk and sabin DPT and against some common viral diseases)

**Unit-III: Cerebral Palsy:** Types aetiology, clinical features, management and rehabilitation of various types of cerebral palsies.

**Unit-IV: Neurological infection of Childhood:** Poliomyelitis, spina bifida hydrocephalus, encephalitis aetiology, clinical features & rehabilitation, peripheral nerve injuries in early child hood.

**Unit-V: Muscular Disorders:** Types of muscular dystrophies and myopathies of childhood, The floppy infant syndrome

**Unit-VI: Seizures ,Epilepsy of child hood.**

## PRACTICALS

Related to assessments, investigations and physiotherapy management of all the above conditions.

### PRACTICAL

Course No.	Subject	Title	Teaching Hours /Week	
			L – T – P	Credits
MPN 401	Practical (neurology, clinical\ viva voce)	PC		

Related to assessments, investigations and physiotherapy management of all the above conditions.

Students will be judged on one elective and one non-elective case. They will be expected to assess, diagnose and plan effective treatment plan for both cases

Course No.	Subject	Title	Teaching Hours /Week	
			L – T – P	Credits
MPN 402	Seminar\Case presentations	PC		

### Seminar\Case presentations

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

**MANAV BAHRTI UNIVERSITY**  
**MPN:401**  
**FOURTH SEMESTER**

Course No.	Subject	Title	Teaching Hours /Week	
			L – T – P	Credits
<b>MPN 307</b>	<b>DISSERTATION PROJECT WORK ( Based on clinical\ case presentation including viva voce)</b>	<b>PC</b>		

As part of their requirement for the Master Degree the student is required to undertake a research study under the guidance of Guide and Co-guide. Research study must be selected only from the chosen specialization i.e. Musculoskeletal Conditions or Sports Injuries or Neurological Conditions or Cardio thoracic Conditions and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voce by examining committee.

Course No.	Subject	Title	Teaching Hours /Week	
			L – T – P	Credits
<b>MPN 308</b>	<b>SEMINAR</b>	<b>PC</b>		