SYLLABUS

for Courses affiliated to the

Kerala University of Health Sciences

Thrissur 680596

MASTER OF PHYSIOTHERAPY (MPT)

IN

PAEDIATRICS

Course Code: 306

(2024-25 Academic year onwards)

2024

2. COURSE CONTENT

2.1 Title of course:

MASTER OF PHYSIOTHERAPY IN PEDIATRICS

2.2 Objectives of course

The Master of Physiotherapy Program is directed towards rendering training in Pediatric Physiotherapy so as to enhance individual competence in order to fulfill requirement and to meet the global standards of Physiotherapy education and practice. Specific aims are:

1. To gain in knowledge of the human body related Basic Medical and Physiotherapeutic sciences relevant to PaediatricPhysiotherapy.
2. To gain in knowledge of movement dysfunction of human body and evidence based Physiotherapeutic management for movement dysfunction
3. To develop skills in Physiotherapy assessment pertaining to Paediatric by relevant current physiotherapeutic concepts.
4. To plan and implement appropriate Physiotherapeutic intervention for all clinical conditions related to Paediatrics in acute and chronic phases, critical care, indoor and outdoor institutional care and independent practice.
5. To develop skills as a self-directed learner, recognize continuous education needs, select and use appropriate learning resources.
6. To develop ability to teach post graduate and undergraduate Physiotherapy students
7. To demonstrate managerial, administrative skills and legislation applicable to compensation for functional disability and appropriate certification
8. Acquainting a student with concept of quality of care at the institutional as well as the community levels.

2.2 Medium of instruction:

Medium of instruction and examinations shall be in English.

2.3 Course outline

The Masters Degree in Physiotherapy is a two year program consisting of classroom teaching, self directed academic learning activities, a research project and clinical postings. In the first year theoretical basis of fundamental Physiotherapy subjects are refreshed. In the second year, the students learn on the clinical conditions, physiotherapy assessment and advanced techniques in musculoskeletal disorders and sports. During these two years, the students will be posted in musculoskeletal disorders and sports departments. The learning program includes seminars, journal reviews, case presentations, case discussions and classroom teaching. Some of the clinical postings are provided at other reputed centers in the country in order to offer a wider spectrum of experience. The students are encouraged to attend conference and workshop to enhance their knowledge during their entire course of the study. University examinations are held at the end of second year. To fulfill their course completion, the students are required to complete and submit their dissertation on the research project.

2.4 Duration

The duration of the course shall be two years.

2.5 Syllabus

PAPER I APPLIED BASIC SCIENCES

This paper consists of 4 Modules:

I Bio Statistics and Research Methodology

II. Biomechanics and Pathomechanics

III. Ergonomics

IV. Nutrition and Exercise Physiology

MODULE I

BIO STATISTICS, RESEARCH METHODOLOGY

PART I. Research Methods

1. Research fundamentals

- Research – Definition, concept, purpose, approaches

- Theory in Physiotherapy research
- History of physiotherapy research
- Present scenario
- Research in Physiotherapy

- Research ethics

2. **Research design**
   - Research problems, questions and hypotheses
   - Research paradigms
   - Design overview
   - Research validity
   - Selection and assignment of subjects

3. **Writing a research proposal/critiquing a research article**
   - Defining a problem
   - Review of literature
   - Formulating a question and operational definition
   - Inclusion and Exclusion criteria
   - Forming groups
   - Data collection & analysis
   - Results,Interpretation, Conclusion, Discussion
   - Informed consent
   - Limitations

4. **Experimental designs**
   - Group designs
   - Single system design

5. **Non experimental design**
   - Overview of non experimental research
   - Qualitative research
   - Epidemiology
   - Outcome research
   - Survey research

Part II Measurement and Analysis

1. Measurement

- Measurement theory
- Methodological research
- Measurement tools for Physiotherapy research

2. Data Analysis

- Statistical reasoning
- Statistical analysis of differences: a) The basic

b) Advanced and special techniques

- Statistical analysis of relationship: a) The basics

b) Advanced and special techniques

Part III Locating and Evaluating the Literature

Part IV Implementing Research

1. Implementing the projects
2. Publishing and presenting research

Module II Biomechanics and Pathomechanics

Part I Foundational concepts in Bio and Pathomechanics

Unit:

1. Basic concepts in biomechanics
2. Biomechanics of tissues and structures of the musculoskeletal system
    - Bone
    - Articular cartilage
    - Tendons and ligaments
    - Peripheral nerves
    - Skeletal muscle
3. Functional adaptation of bone under pathological conditions

4. Mechanics of joint and muscle action
5. Body balance and equilibrium

Part II Biomechanics and Pathomechanics of joints

Unit:

1. Upper extremity
2. Lower extremity
3. Vertebral column
4. Thorax and chest wall
5. Temporo mandibular joint

Part III Biomechanics of integrated function

Unit:

1. Gait
2. Posture
3. Arm as a whole

Module III Ergonomics

Unit

1. History of ergonomics
2. Worker care spectrum
3. Functional assessment
4. Weighted capabilities
5. Participation level
6. Postural examination
7. Job analysis

8. Work hardening programme
9. Exit assessment
10. Pre-employment screening
    - Job analysis
    - Job task analysis
    - Job site analysis
11. Work capacity analysis
12. Role of Physiotherapy in industrial set up
13. Workers functional capacity assessment
14. Industrial therapy
15. Educational programme for prevention of injury
16. Adult education
17. Injury prevention and ergonomics

Module IV Nutrition and Exercise physiology

Part I Basic Exercise Physiology

Unit

1. Introduction to exercise physiology
2. Nutrition and Performance
3. Energy transfer
4. Measurement of human energy expenditure
5. Systems of energy delivery and utilization
    - Pulmonary system
    - Cardiovascular system
    - Musculoskeletal
    - Nervous System
    - Endocrine system

Part II Applied Exercise Physiology

Unit

1. Aerobic power training
2. Anaerobic power training
3. Special aids in performance and conditioning
4. Exercise at different altitudes
5. Exercise at various climatic conditions

6. Sport diving
7. Obesity and weight control
8. Exercise and aging
9. Clinical exercise physiology

PAPER II PHYSIOTHERAPEUTICS

This paper consists of 4 Modules:

- **Manual therapy**
- **Exercise therapy**
- **Electrotherapy**
- **Electrophysiology**

Module I Manual Therapy

Part I Foundational concepts in Manual therapy

Unit

1. History of manual therapy
2. Biomechanical principles in manual therapy
    - Concave-Convex rule
    - Close pack and Loose pack Positions
    - Resting positions
    - Joint status
    - Barrier concepts
    - Fryette's Laws
    - Articular neurology
3. Pain

Part II Joints Mobilization Techniques

(Terminology, Principles, Indications, Contra-indications, Assessment and method of application of the following techniques)

Unit

1. Kalten born
2. Maitland
3. Mulligan
4. McKenzie
5. Cyriax
6. Butler neural mobilization

Part III Soft Tissue Techniques and Recent Advances in Manual Therapy

(Terminology, Principles, Indications, Contra indications, Assessment and method of Application of the following techniques)

Unit

1. Myofascial release techniques
2. Muscle energy techniques
3. Trigger point release
4. High velocity thrust techniques
5. Positional release techniques
6. Instrument-Assisted Soft Tissue Mobilization (IASTM)
7. Active Release Techniques (ART)

Module II Exercise Therapy

Part I Foundational Concepts

Unit

1. Application of Disablement and Enablement models in therapeutic exercise
2. Principles of self management and exercise instruction
3. Prevention, health and wellness

Part II Applied Science of Exercise and Techniques

Unit

1. Range of motion
2. Stretching
3. Resisted exercise
4. Principles of aerobic exercise
5. Exercise for balance and posture
6. Aquatic exercises
7. Training with functional devices

Part III Evidenced Based Clinical Applications of Exercise and Techniques

Module III Electrotherapy

Part I Foundational Concepts in Electrotherapy

Unit

1. Bioscience of therapeutic electrical currents
    - Basic physics
    - Basic principles of electricity
    - Types of current
    - Classification of therapeutic electrical currents
    - Parameters of therapeutic electrical currents

2. Bioscience of therapeutic thermal modalities
    - Thermal physics
    - Bio physics
    - Basic principles of thermal agents
    - Classification of thermal agents
    - Parameters of thermal agents
3. Physiology
    - Electrical properties of tissues
    - Skin
    - Tissue repair and healing
    - Sensory and motor nerves
    - Pain
    - Circulatory system and edema
4. Physiological response to electrical stimuli
5. Physiological response to thermal stimuli
6. Clinical effects of electrical and thermal modalities
    - Soft tissue
    - Joints
    - Neuronal activity
    - Muscle performance
    - Visceral tissues
    - Abnormal tissues (Hematomas and malignant tumors)
7. Current concepts in electrotherapy

Part II. Thermal Modalities Unit

1. Shortwave diathermy
2. Microwave diathermy
3. Infrared radiation
4. Ultrasound
5. Cryotherapy

Part III. Photo Chemical Agents Unit

1. Laser
2. Ultra violet radiation

Part IV. Electrical Stimulation Modalities Unit

1. Faradic current
2. Galvanic current
3. Neuromuscular electrical stimulation
4. Transcutaneous electrical nerve stimulation
5. Interferential therapy
6. Functional electrical stimulation
7. High voltage pulsed galvanic stimulation
8. Didynamic currents
9. Russian currents
10. Micro current therapy
11. Low intensity alternating current
12. Rebox
13. Ionotoporosis

Part V. Mechanical Modalities Unit

1. Traction
2. Compression
3. Hydrotherapy

Part VI. Recent Advances in Electrotherapy

Unit

1. Shock wave therapy
2. Combination therapy
3. Long wave diathermy
4. Magneto therapy
5. Pulsed Electromagnetic Field Therapy (PEMF)

Part VII. Evidence Based Clinical Application of Electrotherapeutics

Unit

1. Pain
2. Muscle strengthening and prevention of atrophy
3. Muscle spasm
4. Central nervous system lesions
5. Peripheral nervous system lesions
6. Edema and peripheral vascular dysfunctions
7. Wound healing
8. Pelvic floor dysfunctions
9. Obesity

Module IV Electrophysiology

Part I Foundational Concept

Unit

1. Historical perspective
2. Terminology
    - Electro diagnosis
    - Electro neuromyography (ENMG)
3. Effectiveness of electrical stimuli

Part II Basic Physiology of Nerve and Muscles

Unit

1. Membrane physiology
2. Muscle physiology

3. Nerve physiology
4. Physiological variables affecting electrophysiological tests

Part III Instrumentation

Unit

1. Components of electro diagnostic apparatus
2. Technical variables

Part IV Principles of Electro Physiological Techniques

Unit

1. **Traditional methods**
    - Faradic galvanic test
    - Strength duration test
    - Chronaxie test
    - Rheobase test
    - Reaction of regeneration test
    - Nerve excitability test
2. **Recent Methods**
    - Principles of NCS and EMG

Part V Evidence Based Application of Electrophysiological studies in Physiotherapy Unit

1. Kinesiological electromyography
2. EMG biofeedback
3. Application of traditional and contemporary techniques in Physiotherapy
4. Common parameters used in Physiotherapy research

Paper III PAEDIATRIC PHYSIOTHERAPY

This paper consists of 3 Modules:

- **Paediatric Anatomy, Physiology and Clinical conditions**
- **Physical and functional assessment**
- **Physiotherapy interventions**

Module I Paediatric Anatomy, Physiology and Clinical conditions
Part I Fundamentals in Pediatrics
Unit

1. **Foetal development**

FOETAL DEVELOPMENT Basic Embryology – Development of organ systems

2. Nervous system

- Overview of growth and development
- Basic and applied neuroanatomy
- Neurophysiology

3. Musculoskeletal System
• Overview of growth and development
• Musculoskeletal tissue systems - Connective tissue, muscles, bones and alignment of skeletal system.

4. Cardio Pulmonary system
• Overview of growth and development
• Respiratory muscle physiology in normal and diseased

Part II Clinical Conditions
Unit
1. Neurological conditions

- Cerebral palsy
- Neural tube defects
- High-risk infants
- Brachial plexus injury
- Brain injuries
- Spinal cord injury
- Developmental coordination disorders
- Gullain barre syndrome
- Spinal muscular atrophy
- Infectious diseases of brain
- Hydrocephalus
- Acute hemiplegia of childhood
- Paraplegia and quadriplegia
- Ataxia
- Acute bacterial meningitis
- Tuberculous meningitis
- Encephalitis and encephalopathies

2. Musculoskeletal conditions

- Orthopedic conditions
- Juvenile rheumatoid arthritis
- Muscular dystrophy
- Poliomyelitis
- Congenital muscular torticollis
- Arthrogryposis multiplex congenita
- Osteogenesis imperfecta
- Sports injuries in children
- Limb deficiencies and amputations
- Flat foot
- Clubfoot
- Perthes Disease
- Infantile idiopathic scoliosis
- Fractures in Pediatrics

3. Cardiopulmonary conditions

- Conditions requiring mechanical ventilation
- Pulmonary conditions - Asthma, Cystic Fibrosis, Infant Respiratory Distress Acute lower respiratory tract infections Tuberculosis Bronchial asthma Lung abscess Bronchiectasis vi. Acute respiratory distress syndrome (ARDS)
- Syndrome, Bronchopulmonary Dysplasia, Musculoskeletal System
- Impairments, Neuromuscular System Impairments
- Cardiac conditions - Cardiovascular structural deficits
- Cardiac and thoracic surgeries
- Acyanotic congenital heart defects
- Cyanotic heart disease
- Rheumatic fever and rheumatic heart disease

4. Genetic syndromes

- Genetics and development
- Chromosomal Disorders
- Single Gene Disorders

5. Pediatric oncology

- Etiology, types, signs & symptoms, physiotherapy management

6. Burns

- Classification and pathophysiology, Physiotherapy management

7. Physiotherapy for

- Pediatric language, communication, behavioural problems
- Pediatric surgeries
- Poly trauma (Road Traffic Accident)
- Childhood obesity
- Pediatric Pain
- Developmental Disorders (Arthrogryposis Osteogenesis Imperfecta Developmental Dysplasia of the Hip)
- Autism spectrum disorders
- Child abuse and neglect

8. Physiotherapy in assistive and adaptive technology in children

9. Exercise training for children

10. School based interventions

11. Physiotherapy in promoting activity and participation in children

12. Family and Community based intervention in pediatrics

Module II Physical and functional Assessment

Unit

I. Introduction to Physiotherapy Assessment

1. Purpose and need for Physiotherapy assessment
2. Historical perspective
3. Physiotherapy verses medical model of practice
4. Various categories for movement dysfunction
5. Preferred practice patterns in Physiotherapy.
6. Musculoskeletal
7. Neuromuscular
8. Cardiovascular/pulmonary
9. Integumentary
10. Today's health care model

11. EXAMINATION AND EVALUATION
    - i. Motor Control
    - ii. Neonate
    - iii. High risk infant
    - iv. Low birth weight & very low birth weight child
    - v. Preterm infant.

12. OUTCOMES AND SCALES

- Theoretical foundation of Newborn / developmental surveillance and screening
- Basis of test development target population psychometric properties of the commonly used developmental scales:
- Tests and Scales of milestones, motor, behavioural, activities of daily living (ADL), mobility, functional capabilities, neurobehavioural, Intelligence, and other screening tools for Infant and child,
- Neuropsychological and cognitive

13. ANTHROPOMETRIC ASSESSMENT

14. ASSESSMENT AND EVALUATION OF BALANCE AND FITNESS

II. Influence of Psychological Factors on Rehabilitation

- Psychological adaptation
- Personality and coping styles
- Common defense reactions to disability
- Anxiety
- Acute stress disorder and post traumatic stress disorder
- Depression
- Substance abuse
- Agitation and violence
- Hypersexuality
- Psychosocial wellness
- Wellness in rehabilitation
- Integrating psychosocial factors into rehabilitation
- Suggestions for rehabilitative interventions
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III..Influence of Values on Patient Care; Foundation for Physiotherapy assessment

- Process of assessment
- Values and valuing
- Code of ethics
- The values of patient as a factor in care
- The influence of the values on the primary goal of patient care
- Value – Laden situation in rehabilitation

IV. Examination of Functional Status and Activity Level

- A conceptual framework
- Examination of function
- Response formats

- Interpreting test results
- Selected instruments assessing physical function
- Multidimensional functional assessment instruments

II. Examination of Environment

- Purpose
- Examination strategies
- Patient – Home environment relationship: Overview of access, usability and safety Adaptive equipment
- Assistive technology Examination of the workplace Community access Documentation
- Funding for environmental modifications Legislation

III. Guideline for Physiotherapy Documentation

- Introduction
- Documenting the examination
- Documenting the evaluation
- Documenting the plan of care
- Application of documentation skills

IV. Disablement and Enablement Concepts for Physiotherapy Research and Practice

- Traditional model
- Consequences of disease model
- NAGI model
- International Classification of Impairments Disability and Handicap Model (ICIDH – 1
- National Center for Medical Rehabilitation Research Model 1 &2 (NCMRR)
- Components of Health
- International Classification of Functioning, Disability and Health (ICF / ICIDH - 2)

V. ICF Coding

- History and development of the ICF
- The ICF and the WHO family of international classifications
- Components of the ICF
- ICF coding
- Benefits of Using ICF

VI. Evidence Based Practice

- Principles of evidence-based Physiotherapy practice
- Elements of evidence
- Appraising the evidence
- Evidence in practice

X. Assessment of Peaediatric conditions

1. Detail assessment procedures related to the elective conditions

   Overview of pediatric neurological, musculoskeletal and cardiopulmonary

   Assessments with emphasis on early assessment and diagnosis

2. Principles of Laboratory investigations and other tests - Computerized Tomography Scan, Magnetic Resonance Imaging, Electromyography, Nerve Conduction Study, Evoked Potentials, Muscle Biopsy, Thoracic Imaging, Pulmonary Function Tests, and Exercise Testing.
3. ASSESSMENT OF Dyslexia and autistic child Cultural, family and environment of the child Child abuse and child neglect Pediatric burns Sports injuries in children Pediatric gait
4. Disability evaluation of the child
5. Recent advances in the assessment and scales in pediatric

Module III Physiotherapy Interventions
Part I Fundamental Concepts
Unit

1. Motor control

- Theories, variables, motor skill acquisition in children

2. Motor Learning

- Theories, motor learning constructs, motor learning and teaching strategies

3. The child's development of functional movement

- Motor development theories
- Developmental processes and principles
- Stages of motor development

4. Reflexes and Reactions

- Survival and vestigial reflexes
- Attitudinal postural reflexes
- Righting reactions
- Balance reactions

5. Ethical and Legal Framework of pediatric Physical therapy practice

6. Models of team interaction and service delivery in pediatric Physical Therapy practice

Part II Advanced Approaches used in Pediatric Physical Therapy
Unit
1. Special approaches

- Neurodevelopment therapy
- Sensorimotor approach
- Sensory integration therapy
- Proprioceptive neuromuscular facilitation
- Electromyography biofeedback
- Constraint-induced movement therapy
- Myofascial release
- Mobilization and manipulations
- Muscle energy technique
- Advanced airway clearance techniques
- Suit and Robotic therapy
- Roods approach
- Vojta concept
- Pediatric manual therapy
- Conductive education
- Adjunctive therapy
- Systems/based task/oriented approach
- Functional Electrical Stimulation
- Body Weight Support Treadmill Training
- Mirror therapy, and Virtual reality
- Aquatic therapy
- Lung expansion therapy and ventilator
- Bronchial hygiene therapy/postural drainage
- Humidification, Oxygen therapy, Nebulization

2. Early intervention services

- Elements of early intervention
- Effectiveness and implications for pediatric Physical Therapy practice
- Family centered Care
- Role of Physical therapist

Part II Physical Therapy management

1. Management of Pediatric Neurological, Musculoskeletal and Cardiopulmonary conditions using advanced Physical Therapy interventions
2. Role of Physical therapist in Neonatal and Pediatric Intensive care units
3. Cardiopulmonary resuscitation in children
4. Sports injuries in children:

Components of physical performance and sports performance Physiotherapy management for sports injuries

5. Genetic syndromes

- Physical therapy management for various genetic syndromes resulting in neurological,
- Musculoskeletal and cardiopulmonary impairments.

6. Pediatric oncology

- Physical therapy interventions for different types of cancers, bone marrow
- Transplantation and terminal disease

7. Burns

- Physical therapy management in emergent, acute, skin graft, rehabilitation and Reconstructive phases
- Splinting, pressure garments and inserts

8. Assistive technology

- Role of assistive devices and application of recent technologies
- Determining a child's equipment needs and equipment selection
- Commonly used equipment

9. Physical Modalities in Pediatric Rehabilitation

The concept of health care counselling shall be incorporated in all relevant areas

2.7 Total number of hours

Total number of hours will be 3240 hours during the four years of study.

2.8 Branches if any with definition

2.9 Teaching learning methods

Teaching learning methods will include class room lectures, practical and laboratory demonstrations, and bed side clinical demonstrations by qualified faculty and self directed learning by the students through assignments, seminar and case presentations and project works under the faculty guidance.

2.10 Content of each subject in each year

As in 2.6 above

2.11 No: of hours per subject

Paper	Teaching and Learning Methods	Weekly class hours	Total hours
Paper I: Applied Basic Sciences	Lectures	2	180
Subjects: 1. Bio Statistics and Research Methodology 2. Biomechanics and Pathomechanics 3. Ergonomics 4. Nutrition and Exercise Physiology Paper II: Physiotherapeutics Subjects: 1. Manual therapy 2. Exercise therapy 3. Electro therapy 4. Electrophysiology Paper III Pediatrics Physiotherapy Subjects: 1. Anatomy and Physiology 2. Clinical condition 3. Physiotherapy assessment 4. Foundational concepts and condition management 5. Special techniques	Seminars	2	180
	Practicals and Demonstrations	4	360
	Clinical Discussions	2	180
	Clinical Case Presentations	2	180
	Journal Club	2	180
	Class room teaching	1	90
	Library	3	270
	Clinical Training	15	1350
Synopsis & Dissertation work		3	210
Community Camps, Field Visits, Participation in Workshops & Conferences			60
TOTAL HOURS		36	3240

2.12 Practical training

Practical training should be imparted under laboratory conditions for the basic science subjects with emphasis on carrying out the experiments and tests through demonstration by relevant faculty and repeated practice by the students. For physiotherapy assessment and treatment techniques these should be first demonstrated on human models and the students should practice on human models repeatedly until proficiency is gained. Later the techniques should be demonstrated on patients during bed side clinics and the students are encouraged to carry out the techniques on patients under supervision of faculty.

2.13 Records

In all subjects with practical components meticulous records should be kept regarding the topic of the practical training, procedure, materials and methods used, results and outcomes. The records should be submitted for inspection during practical or viva examination.

2.14 Dissertation:

As per Dissertation Regulations of KUHS

2.15 Specialty training if any

2.16 Project work to be done if any

Not applicable

2.17 **Any other requirements [CME, Paper Publishing etc.]**

All students should attend at least two CME program each year preferably conducted in their own institution and two other conferences/workshops.

2.18 Prescribed/recommended textbooks for each subject Bio statistics, Research methodology

1. Rehabilitation Research: Principles and Applications by Elizabeth Domholdt (Elsevier Science Health Science Div, 2004)

Biomechanics and Pathomechanics

1. Basic biomechanics of the musculoskeletal system by Margareta Nordin and Victor H. Frankle, 2nd edition (Lea and Febiger)
2. Kinesiology of the Human Body: Under Normal and pathological condition by Arthur Steindler, 5th edition (Charles C Thomas, 1977)
3. Joint Structure & Function :A comprehensive analysis by Cynthia C Norkin, Pamela K Levangie (Jaypee Brothers, 2006)
4. Brunnstrom's Clinical Kinesiology by Laura K. Smith & Don Lehmkuh, 5th edition (F A Davis, 1996)
5. The Physiology of the Joints by Kapandji & Matthew J Kendel (Churchill Livingstone, 2008)
6. Clinical Biomechanics of the Spine by Augustus A White & Manohar M Panjabi, 2nd Edition (Lippincott Williams & Wilkins; 1990)
7. Kinesiology :The mechanics and Pathomechanics of Human Movement by Carol Oatis (Lippincott Williams & Wilkins; 2008)
   Kinesiology: Application to pathological motion by Soderberg, 2nd Edition (Wiliams & Wilkins, 1997)

Ergonomics

1. Industrial Therapy by Glenda L. Key, 1st Edition (Mosby)

Nutrition and Exercise physiology

1. Exercise Physiology by Mc Ardle, Katch & Katch (Lippincott Williams and Wilkins, 2000)
2. Exercise Physiology: Exercise, Performance, and Clinical Applications by Robert A. Roberts and Scott O Roberts William C Brown, 1997)
3. Clinical Exercise Testing and Prescription Theory and Applications by Scott O. Roberts, Peter Hanson (C RC Press, 1997)

Manual Therapy

1. Grieve's modern manual therapy: The vertebral column By Jeffrey Boyling and Grad Dip Man Ther (Churchill Livingston)
2. Concern manual therapy books

Exercise Therapy

1. Therapeutic Exercise: Treatment Planning for Progression by Francis E. Huber, Christly. Wells (W.B. Saunders Company, 2006)
2. Therapeutic Exercise: Foundations and Techniques by Carolyn Kisner and Lynn Allen Colby (W.B. Saunders Company, 2007)
3. Therapeutic Exercise, Moving Towards Function by Carrie M. Hall and Lori Thein Brody (Lippincott Williams & Wilkins, 2004)

Electrotherapy

1. Integrating physical agents in rehabilitation by Bernadette Hecox and John Sanko, 2nd edition (Pearson prentice hall 2006)
2. Physicals agents in rehabilitation: from research to practical by Michell H. Cameron, 2nd edition (Saunders and Elsevier, 2003)
3. Therapeutic Modalities for Allied Health Professionals by William E. Prentice and Frank Underwood (McGraw-Hill, 1998)

Electrophysiology

1. Electromyography in clinical practice by Michael J. Aminoff, 3rd edition (Churchill Livingstone)
2. Clinical neurophysiology by UK Misra and Kalita, 2nd edition (Churchill Livingstone)
3. Electro diagnosis in diseases of nerve and muscle: Principles and practice by Jun Kimura (Oxford university press)
4. The ABC of EMG: A practical introduction to Kinesiological electromyography by Peter Conrad (Noroxon Inc. USA 2005)
5. Integrating physical agents in rehabilitation by Bernadette Hecox and John Sanko,2nd edition (Pearson prentice hall 2006)

Paediatrics

1. Pediatric Physical Therapy, Jan Stephen Tecklin, 3rd (1999) and 4th (2008) editions, Lippincott Williams & Wilkins.
2. Physical Therapy for Children, Suzann K.Campbell, 3rd edition, 2006, Saunders Elsevier.
3. Physiotherapy for Children, Teresa Pountney, 2007, Butterworth Heinemann Elsevier.
4. Meeting the Physical Therapy Needs of Children, Susan K.Effgen, 2005, F.A.Davis Company, Philadelphia.

Physical and functional assessment

1. American physical therapy association: Guide to physical therapy practice, 2nd edition 2001.
2. Physical rehabilitation (4& 5th edition) by Susan B O Sullivan and Thomas J Schmitz. (Jaypee publication)
3. International Classification of Functioning, disability and health: Short version. (IT'S Publication)
4. Professionalism in physical therapy: History, Practice and Development by Laura Lee Swisher and Catherine G.Page, (Elsevier publication 2005)
5. Effective Documentation for Physical Therapy Professionals, by Eric Shamus and Debra (McGraw Hill company2004)
6. Physical therapy Documentation: From examination to outcome by Mia Erickson, Ralph Utzman (Slack incorporated 2008)
7. Writing SOAP Notes with Patient / Client management Formats by Ginge Kettenbach, Ph. D., PT, 3rd Edition, 2004 ,F.A. DAVIS COMPANY, Philadelphia
8. Practical Evidence-Based Physiotherapy Rob Herbert, Gro Jamtvedt, Judy Mead, Kare Birger Hagen Elsevier Butter worth Heinemann; Oxford UK (2005)
9. Guide to Evidence-Based Physical Therapy Practice by Dianne V. Jewell, PT, PhD, Virginia Commonwealth University, Virginia
10. Pediatric Physical Examination, Karen G.Dunder Stadt, 2006, MOSBY Elsevier.
11. Clinics in Physical Therapy Assessment in Early Infancy, Edited by Irmaj. Wilhelm, 1993, Churchill Livingstone.

Physiotherapy Interventions

1. Pediatric Physical Therapy, Jan Stephen Tecklin, 3" (1999) and 4* (2008) editions, Lippincott Williams & Wilkins.
2. Physical Therapy for Children, Suzann K.Campbell, 3ª edition, 2006, Saunders Elsevier.
3. Physiotherapy for Children, Teresa Pountney, 2007, Butterworth Heinemann Elsevier.
4. Meeting the Physical Therapy Needs of Children, Susan K.Effgen, 2005, F.A.Davis Company, Philadelphia.
5. Physiotherapy in Pediatrics, Roberta B. Shepherd, 3rd edition, 1995, Butterworth Heinemann
6. Neurologic Intervention for Physical Therapist Assistant, Martin Kessler, 1st & 2nd Edition, 2008, W.B.Saunders Company Ltd.
7. Physiotherapy and the growing child, Yvonne R Borns & Julie MacDonald, 1996, W.B.Saunders Company Ltd.
8. Pediatric Rehabilitation, Gabriella E. Molnar, 3rd edition, 1999. Hanly & Belfus, Philadelphia.

9. Treatment of Cerebra I Palsy & Motor Delay, Sophie Levett, 4th edition, 2004. Blackwell Publishing.

10. Pediatric Therapy, A Systems Approach, Susan Miller Porr, 1999, F.A.Davis Company.

11. Reflex and Vestibular Aspects of Motor Control, Motor Development and Motor Learning, R.Barnes, Carolyn A Crutch field, 1990, Stokesville Publishing Company.

12. Neurological Rehabilitation, Darcy A. Umphred, 4th & 5th edition, 2007, 2001, MOSBY Elsevier

13. Physical Rehabilitation, Susan B.O Sullivan, 4th & 5th editions, 2007, Jaypee Brothers.

14. Cash's Textbook of Neurology for Physiotherapists, Patricia A. Downie, 4th edition, 1992, Jaypee Brothers.

15. Cardiovascular & Pulmonary Physical Therapy evidence & practice, Elizabeth (Dean &Donna frownfelter, 3th (1996) & 4th (2006) editions, MOSBY Elsevier

2.19 Reference books

Same as 2.18

2.20 Journals NCAHCP accepted journals i.e. those included in:

i. Medline

ii. PubMed Central

iii. Embase

iv. Scopus

v. Science Citation Index

vi. Science Citation Index Expanded

vii.Directory of Open Access Journals (DOAJ)

Scopus Indexed Journals in Physiotherapy

1. ACSM's Health and Fitness Journal.

2. Acute Pain

3. Advances in Medical Sciences

4. American Journal of Physical Therapy and Rehabilitation

5. Archives of Osteoporosis

6. Biology of Sport

7. Canadian Journal of Respiratory Therapy

8. Clinical Journal of Sports Medicine

9. Clinical Rehabilitation

10. European Journal of Pain Supplements

11. European Journal of Sport Science

12. European Review of Aging and Physical Activity.

13. Exercise and Sport Sciences Reviews

14. Family and Community Health

15. Foot and Ankle Clinics

16. Foot and Ankle International

17. International Journal of Adolescence and Youth

18. International Journal of Diabetes in Developing Countries

19. International Journal of Physiotherapy and Rehabilitation

20.Journal of Exercise Science and Fitness

21. Journal of Men's Health.

22.Journal of Musculoskeletal Research

23.Journal of Strength and Conditioning Research

24.Journal of Stroke and Cerebrovascular Disease

25.Medicine and Science in Sports and Exercise

26.Neurorehabilitation and Neural Repair.

27.Obesity and Weight Management

28.Obesity Research and Clinical Practice

29.Online Journal of Health and Allied Sciences

30.Pain Research and Management

31. Physical and Occupational Health in Geriatrics

32.Physiotherapy Singapore

33.Sports Biomechanics (International Society of Biomechanics in Sports)

34.Sports Medicine and Arthroscopy Review

35.Strength and Conditioning Journal

36.The Foot

37.The Journal of Head Trauma Rehabilitation

38.The Open Pain Journal

Indexed Journals for Thesis Publications

Research papers should be published in journals indexed in any of the following recognized databases to ensure the credibility and visibility of the research:

A. Internationally Recognized Indexing Databases

a. PubMed

b. Scopus

c. Web of Science

d. Google Scholar

e. IEEE Xplore

f. Medline

g. Embase

h. ProQuest

a. CINAHL

j. BIOSIS Previews

k. DOAJ (Directory of Open Access Journals)

l. Index Copernicus

B. Nationally and Regionally Recognized Indexing Database

a. Indian Citation Index

b. J Gate

c. MedIND

d. UGC (University Grants Commission)

e. Indian Science Abstracts

f. CAB Abstracts

g. EBSCO

h. CAS (Chemical Abstracts Service)

2.20

2.21 Logbook

Every student shall maintain a record of skills (Log book) he/she has acquired during each year of training period certified by the various heads of the department where he/she has undergone training. The Head of the department shall scrutinize the log book once in every three months. At the end of each year, the candidate should summarize the contents and get the log book certified by the Head of the Institution

3 EXAMINATIONS

2.1 Eligibility to appear for exams

There shall be 80% attendance in theory and practical/clinical separately to appear for the University examination. The candidate must secure the minimum marks of 50% in internal assessment in theory and practical in a particular subject in order to be eligible to appear in the university examination of the subject.

2.2 Schedule of Regular/Supplementary exams

There will be two examinations in a year (regular and supplementary), to be conducted as per notification issued by university from time to time.
Supplementary examination shall be conducted by the university for the benefit of unsuccessful candidates. The supplementary examination shall be conducted within six months from the date of publication of results of regular examination.

2.3 Scheme of examination showing maximum marks and minimum marks

SUBJECT	THEORY		THEORY INTERNAL		PRACTICAL		PRACTICAL INTERNAL		VIVA		TOTAL	
	Max Marks	Min. Marks	Max Marks	Min. Marks	Max Marks	Min. Marks	Max Marks	Min. Marks	Max Marks	Min. Marks	Max Marks	Min. Marks
Paper I Applied Basic Sciences	100	50	50	25	***	***	***	***	***	***	150	75
Paper II Physiotherapeutics	100	50	50	25	100	50	50	25	50	25	350	175
Paper III Pediatric Physiotherapy	100	50	50	25	100	50	50	25	50	25	350	175
Dissertation	APPROVED/NOT APPROVED								100	50	100	50

2.4 Papers in each year

As in 3.2

2.5 Details of theory exams

Question paper pattern for MPT theory examination

Subjects having maximum marks = 100		
Type of question	**Number of questions**	**Marks for each question**
Structured Essays	**2**	**20**
Brief structured essay	**10**	**6**

BROAD GUIDELINES

Paper		Subjects	Distribution of marks	Total marks
Paper I Applied Basic Sciences	1	Bio Statistics and Research Methodology	30	100
	2	Biomechanics and Pathomechanics	30	
	3	Ergonomics	10	
	4	Nutrition and Exercise Physiology	30	
Paper II Physiotherapeutics	1	Manual therapy	25	100
	2	Exercise therapy	25	
	3	Electro therapy	25	
	4	Electrophysiology	25	
Paper III(Speciality) Pediatric Physiotherapy	1.	Anatomy and Physiology	15	100
	2.	Pediatric Conditions	15	
	3.	Physical and functional diagnosis	30	
	4.	Physiotherapy interventions	40	

Structured Essay should be explanatory and brief structured Essay should be descriptive.

2.6 Model question paper for each subject with question paper pattern

MASTER OF PHYSIOTHERAPY (MPT) DEGREE FINAL EXAMINATION

PAPER I – APPLIED BASIC SCIENCES

Q.P. Code:

Time: Three Hours **Maximum: 100 marks**

Answer ALL questions in the same order

I. Long Essay (2 x 20 = 40 marks)

1. Explain in detail about the functional adaptation of bone under pathological conditions.
2. Discuss about exercise in different altitudes and various climatic conditions.

II. Short notes: (10 x 6 = 60 marks)

1. Back care for physiotherapist in clinics
2. Job analysis
3. Energy expenditure during walking and running
4. Ergonomic modifications for a software professional
5. DOMS
6. Plyometrics
7. Pre-competition meal
8. Hallux valgus
9. Methods of sampling
10. Hypothesis testing

MASTER OF PHYSIOTHERAPY (MPT) DEGREE FINAL EXAMINATION

PAPER II – PHYSIOTHERAPEUTICS

Q.P. Code:

Time: Three Hours **Maximum: 100 marks**

Answer ALL questions in the same order

I. Long Essay (2 x 20 = 40 marks)

1. Describe the types of Mckenzie's syndromes, use of repeated movements in Mckenzie's method of spinal examination and explain the treatment principles for derangement syndrome
2. Explain in detail the neurophysiological principles and treatment principles of proprioceptive neuromuscular facilitation techniques. Describe about various proprioceptive neuromuscular facilitation techniques to improve stability

II. Short notes (10 x 6 = 60 marks)

1. Neural mobilization
2. EMG changes in peripheral neuropathies
3. Principles of Muscle Energy Techniques
4. Concave- convex rule and its importance in manipulation
5. Russian currents
6. Iontophoresis
7. Pain assessment
8. Functional Electrical Stimulation
9. Skin fold measurement
10. Close pack and loose pack position

MASTER OF PHYSIOTHERAPY (MPT) DEGREE FINAL EXAMINATION

PAPER III – Paediatric Physiotherapy

Q.P. Code:

Time: Three Hours **Maximum: 100 marks**

Answer ALL questions

I. Long Essay (2 x 20 = 40 marks)

1. Discuss in detail about the PT management of 8 years old spastic diplegic cerebral palsy
2. What are the causes of brachial plexus injury in children? Describe the clinical features, complications and management of the same.

II. Short notes (10 x 6 = 60 marks)

1. Commando creeping
2. Down's syndrom
3. Leukemia
4. Postural reflexes
5. Grading of spasticity in children
6. Spina Bifida
7. Osteogenesis imperfecta
8. Immunisation schedule
9. Limb shortening
10. First day assessment of a new born

2.7 Internal assessment component

a. There shall be a minimum of 3 periodic assessments, for theory and practical including viva separately, of which the final one shall be in the KUHS pattern and is mandatory.

b. Average of the marks of the KUHS pattern examination and the best out of the remaining periodical assessments shall be taken as internal assessment mark of the candidate

c. The class average of internal assessments mark of theory and practical should not exceed 75% of Maximum marks

d. The class average of internal assessment for an examination shall be calculated based on the total number of candidates in a particular batch appearing for that internal assessment examination.

e. The candidate must secure the minimum marks of 50% for internal assessment in theory, practical and viva voce in a particular subject order to be eligible to appear in the university examination of the subject.

2.8 Details of practical/clinical practicum exams

PRACTICAL 1 - PHYSIOTHERAPEUTICS

(Practical exam is emphasized only on Exercise, Electrotherapy and Manual Therapy)

- One long case - 60 marks
- One short case - 40 marks
- Viva - 50 marks

PRACTICAL 2 – Musculoskeletal and Sports Physiotherapy

(Practical exam is emphasized only on Physiotherapy assessment and Interventions)

- One long case - 60 marks
- One short case - 40 marks
- Viva - 50 marks

2.9 Number of examiners (Internal & External) and their qualifications

There will be two examiners for each subject where practical/ or viva to be conducted. One examiner (INTERNAL EXAMINER) is preferably from the same institution or as decided by the KUHS and the other examiner will be from another university

(EXTERNAL EXAMINER). The examiners should have at least 5 years of teaching experience after post graduation.

2.10 Details of viva:

Wherever viva is prescribed the same will be conducted by the internal and external examiners appointed for practical examinations.

4 INTERNSHIP

Not applicable

5 ANNEXURES

5.1 **Check Lists for Monitoring:** Log Book, Seminar, Assessment etc. to be formulated by the curriculum committee of the concerned Institution


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