DEPARTMENT OF PHYSIOTHERAPY
PAD DR D. Y. PATIL UNIVERSITY
NERUL, NAVI MUMBAI

CURRICULUM FOR THE MASTERS DEGREE IN PHYSIOTHERAPY [SPECIALITY]
M. P.T. [Sp]

Title – This course shall offer FIVE specialties & the respective Degree shall be called as follows –

1. Master of Musculo-skeletal Physiotherapy ----------M.P.T(Musculoskeletal Conditions)
2. Master of Neuro Physiotherapy----------M.P.T.(Neurological Conditions)
3. Master of Cardio Vascular & Respiratory Physiotherapy----M.P.T. (Cardio vascular & Respiratory Conditions)
4. Master of Community Physiotherapy----------M.P.T.(Community health)
5. Master of Sports Physiotherapy----------M.P.T.(Sports)

Duration – This course is of total 80 weeks over a period of two academic years. It is conducted in two Parts i.e. - M.P.T part I & M.P.T. part II. M.P.T. Part – I having duration of 39 weeks in one academic year & M.P.T. Part- II having 41 weeks in next academic year respectively. University examination shall be held at the end of Part - I & II respectively. –

Total Transcript hours ----------=3520 hours

6 ½ hours / full day = 39 hours / week x 39 weeks = 1521 hours in M.P.T. part-I + 1599 hours in M.P.T. part –II = 3120 hours + additional clinical 200 hours/ year for "On Call / Sunday/ Holiday Duty".

M.P.T. Part – I – Duration- 39 weeks [1721 hours = 1521+200]

1) Didactic/ clinical training / lab-5 hrs / week = 195 hrs
2) Regular Clinical posting – 30 hrs/ week x 39 week = 1170 hrs + On Call duty 200 hrs= 1370 hrs / year
3) Scientific Inquiry – 156 hrs [includes projects / review of literature/ seminars/ case presentation etc.

M.P.T. Part – II – Duration- 41 weeks [1799 hours = 1599+200]

1) Didactic/ clinical training / lab-3 hrs / week = 123 hrs
2) # Regular Clinical posting – 24 hrs/ week x 41 week = 984 hrs [# the student shall be permitted to complete any one clinical assignment out side the institute in need be, with the consent of the Guide & the H.O.D.] + On Call duty 200 hrs= 1184 hrs / year
3) Dissertation & Scientific Inquiry – 492 hrs.
   Dissertation should be submitted 6 months prior to the MPT Part II University examination.

Course Description -

Part –I – This course is common to all the students. This course includes an update of the Basic Sciences such as Biomechanics & Applied Physiotherapy, Biophysics etc for improving abilities in functional diagnosis and clinical reasoning. This course also includes Allied Subjects such as Management, Ethics & Teaching Technology. The candidate has to study 5 Cases for presentation at the time of practical examination.
Part –II – This course includes study of any one Specialty selected from above & an independent research project/ dissertation, preferably based on the Specialty.
[Please see the syllabus for further details]

Medium of Instruction – will be in English

Eligibility- Candidate holding a Degree in Physiotherapy from a recognized university in India or abroad. The candidate should be a member of Indian Association of Physiotherapists.
He / She shall be belonging to at least 10+2+3 ½ years education pattern.

Admission –
The course shall commence in the second half of the academic year. The Candidate will select the Speciality as per the choice / merit at the time of admission at the M.P.T. Part- I. Candidate will be get the transcript only after the completion of the entire course. Transcript for only M.P.T. Part-I will not be issued to any candidate.

A. In case there is any vacancy created during its first term of M.P.T Part – I, such vacancy shall be filled at the beginning of the second term, by selecting the candidate from the waiting list.
B. One PG teacher shall register not more than 3 students per academic year as a guide.

Attendance -
The candidate shall put up minimum attendance requirement as per the University byelaws with satisfactory performance in the didactic / practical/* Clinical training, & attendance requirement as per the University byelaws with satisfactory performance in Clinical posting in Each assignment which will be a pre-requisite [to be duly certified by the Guide & H.O.D.] for the admission at the respective university examination a] A candidate who does not fulfill the required attendance or/ & satisfactory performance in the didactic/ practical/* Clinical training or clinical posting, shall repeat the term/s till he/she fulfils the prescribed requirements.

Stipend -
It is recommended to pay stipend to the candidate on par with the Postgraduate candidate of other medical fraternity.

Hostel facility –
It will be Mandatory, in case the candidate is assigned for a Residency post.

SYLLABUS --------M.P.T [Part – I]

Manual Medicine & Applied Physiotherapy

Objectives –

At the end of the course, the candidate will-

A. Acquire the knowledge & skill of various approaches of Manual therapy for Joints of the limbs/spine.
B. Be able to integrate the Manual Therapies to rehabilitate the Mechanical Neuro – Muscular Problems
C. Be able to impart knowledge & clinical training to undergraduate students in Manual therapy

Syllabus –

1. Physiological and accessory movements, Biophysics of contractile and non contractile tissues, Response to mechanical loading.
2. Principles of Articular Neurophysiology and its Clinical Applications.
3. History of Manual Therapy. Overview of various Manual Therapy approaches for all the skeletal joints.
4. Clinical reasoning and differential clinical diagnosis based on various approaches such as Maitland, Kaltenborne, Cyriax, Mulligan, Meckenzie etc.
5. Principles of different soft tissue mobilizations like Myofacial Techniques, Neural Tissue Mobilization, Muscle Energy Technique etc.
6. Practical application of various Manual Therapy modes given in no. 4 & 5 above.
7. Therapeutic Exercise as an adjunct to manual therapy.

Advanced Electro Therapeutics

Objectives -

At the end of the course, the candidate will –

A. Acquire the update knowledge of Production / biophysics, the Physiological & therapeutic effects of various Electrical Currents, Thermal Agents, Ultrasound & Electro-Magnetic Radiations & Potential Risk Factors on prolonged exposure.
B. Acquire the knowledge about various Pharmaco Therapeutic agents to be used in combination with various Electrotherapeutic modes, with appropriate clinical decision & reasoning in the management of Pain, Tissue healing / Wound care and skin conditions.
C. Be able to train the undergraduate students in this subject at pre-clinical level.

Syllabus -

1. Recent concept of Physiological and Therapeutic Effects of Low, Medium and High Frequency Currents.
2. Cellular response to environmental and man made Electro magnetic field, Risk factors of prolonged exposure, Safety measures.
3. Advanced Electrotherapeutics in the management of Pain including neuropathic, psychosomatic pain.
4. Principles of combinations of drugs with Therapeutic Currents, Ultrasound.

5. Advanced Electro Therapeutics in Tissue healing, Wound care, Management of Scars keloids, Muscle Plasticity & Integumentary Conditions.
6. Biofeedback – Principles and Applications.

Electro-Physiology and Electrodiagnosis

Objectives- At the end of the course, the candidate will –

A. Be able to interpret the E.M.G. and Nerve Conduction Studies with appropriate clinical reasoning.
B. Acquire the sound knowledge of use of E.M. G. machine for the simple Electrodiagnostic studies of motor unit and methodology of Sensory and Motor Conduction and Reflex Study.
C. Expertise in the skill of using various electrical currents for the purpose of Electrodiagnostic & be able to interpret the same with appropriate clinical reasoning.
D. Be able to train the undergraduate students at Preclinical & Clinical level.

Syllabus -

1. Physiology of Resting Membrane Potential, Action Potential, Propagation of action Potential
2. Classification – a) Muscle fiber b) Nerve fiber c) Motor unit
3. Synapse and Synaptic Transmission, Transmission at Neuro Muscular Junction
4. Propagation of nerve impulses, Physiology of Muscle Contraction
5. Electrical excitability of muscle and nerve and propagation of nerve impulse.
6. Muscle plasticity in response to electrical stimulation.
7. Pain modulation – Afferent pain transmission and role of central nervous system
8. Reflex – Classification and Properties.
9. Sensations – Path ways and Classification.
10. Type of Nerve injury and Wallerian Degeneration.
11. Electro Diagnosis with Therapeutic Currents – S.D. curve, Faradic Galvanic Test, Tests for Sensory & Pain Threshold & Pain tolerance.
12. Electromyography – a) Instrumentation, Electrodes b) E.M.G.- Normal and Abnormal.
13. Nerve Conduction - a) Sensory/Motor b) “F” Wave c) “H” Reflex d) Blink Reflex
14. Decremental Studies for Neuro Muscular Junction Disorders.

Biomechanics & Bio-engineering

Objectives- At the end of the course, the candidate will –

A. Acquire the updated knowledge of the Patho-mechanics of the Human Movement
B. Be able to apply the principles of Biomechanics in functional analysis of movement, Ergonomic Analysis / advice and Prostheses / Orthotics
C. Be able to prescribe, check out & train in the application of lower limb prostheses, and Spinal / lower extremity Orthosis used as mobility aids
D. Be able to prescribe the Ergonomic alterations at the Work Place and Industry.
E. Be able to fabricate, temporary hand splints & functional splints for Gait training.
F. Acquire skill in disability evaluation & will be able to CERTIFY the same.

G. Be able to impart knowledge & train the students in this subject at the undergraduate level.

Syllabus –

1. Forces, Equilibrium, Levers- laws –mechanical advantage
2. Applied mechanics in the evaluation procedures
3. Material properties of bones and soft tissues.
4. Internal & External forces during Posture & Activity.
5. Kinetics / Kinematics of extremity & spinal joints including T.M. Joint, Posture, Gait, Jogging, Running, Climbing up and down & A.D.L., Methods of kinetic and kinematic Investigations, Applied mechanics in Physiological and Pathological deviations.
6. Biomechanics of Thoracic cage, Biomechanics of Respiration & Circulation.
7. Analysis of functional hazards related to Environment / Industry and Clinical reasoning for the appropriate Ergonomic advise.
8. Applied mechanics in the application of Prostheses, Orthoses & Mobility aids – Materials, designs and biomechanical compatibility.
9. Requirement and Prescription criteria in Orthotic, Prosthetic application, with reference to Biomechanical and ergonomic consideration for energy efficiency and safe function.
10. Check out procedures in Prosthetic & Orthotic Fabrication of temporary splints for Face, Hand & Lower Limb for support, prevention of deformities & functional training.

Neuro – Development & Principles of Neuro-physiological approaches

Objectives- At the end of the course, the candidate will –

A. Acquire updated knowledge of development of nervous system with emphasis on sensory-motor behavior with special reference to Locomotion
B. Be able to understand various aspects of Physiological aging of the nervous system.
C. Be able to identify the abnormalities in the development of nervous system
D. Be able to examine assess & analyze dysfunction of the nervous system with special reference to locomotion.
E. Describe concepts of various Neuro-physiological approaches of Physio Therapy management.
F. Describe concepts of Motor Control, Motor Learning and Relearning with special emphasis on locomotion. Recent concept regarding functions of nervous system.

Syllabus –

1. Applied Neuro Anatomy and Neuro Physiology – Neuron, synapse and factors exerting an influence on motoneuron pool, production of voluntary movement, reflexes & reactions.
2. Neurodevelopment –a) Sensory-Motor integration with emphasis to locomotion b) Cognition & Social behavior.
3. Abnormalities of Neurodevelopment.
4. Assessment movement a) Tone b) Coordination c) Abnormal movements
5. Integration of assessment data & analysis & application of Principles of Management.
6. Prioritizing Short & Long term goals in management

7. Strategies to improve Motor function.
8. Assessment of Neurogenic Hand and Foot
9. Neuro-Physiology of aging & its effects on Movement, Posture and Locomotion.

Exercise Physiology, Fitness & Health Promotion

Objectives- At the end of the course, the candidate will –

A. Acquire updated knowledge of Physiology of Physical Exercise and will be able to interpret the Physiological effects of the vital parameters of simple laboratory tests such as "Stress Test"
B. Acquire the skill of using Bicycle-Ergometry & Treadmill for the purpose of General Fitness & Exercise tolerance for Healthy persons.
C. Be able to prescribe & train for general fitness and health promotion for children, pregnant and lactating females, obese and elderly subjects.
D. Be able to impart knowledge for training the undergraduate students.

Syllabus –

1. Assessment of Cardio-Vascular and Respiratory Conditions - Principles of assessment, Tests for Cardio-Respiratory fitness. Interpretation of Radiological and Routine Biochemical Investigations Differential Diagnosis. Cardio-Vascular and Respiratory Dynamics including Neural and Hormonal Control
2. Role of Aerobic and Anaerobic mechanism during exercises.
3. Acute effects of High, Burst and Short duration exercises.
4. Acute effect of Steady level exercise on following parameters – Blood flow, Heart Rate, Blood Pressure, Pulse Rate, Respiration Rate, Acid Base Balance, Body Temperature, Fluid-Electrolyte Balance and Substrate Utilization.
5. Exercise Testing, Planning & Prescription, Aerobic and Anaerobic Exercise Training
6. Conditioning effects of various levels of Sub-Maximal Exercises.
7. Conditioning exercises for Strength / Endurance / Flexibility.
8. Fatigue – Types, Relevance with Exercise Tolerance tests & Training
9. Principles of health promotion for Growing Children, Healthy Adults, Pregnant /Lactating females, Elderly, Sports person
10. Obesity –exercises for weight reduction
11. Body temperature regulation

Nutrition & Diet

Objectives - At the end of the course, the candidate will –

A. Acquire the updated knowledge of requirement of ideal nutrition for general fitness & health promotion, in children, pregnant and lactating females, and sportsmen in field games / athletes and in aging population.

B. Be able to prescribe appropriate diet during weight reduction programme & later, for maintenance / prevention of obesity.

Syllabus –

1. Nutrition – aerobic & anaerobic metabolism & various components of Food & Energy Values, Hormonal influence, O2/CO2 Transmission, Acid-Base balance, Electrolyte Balance.
2. Energy update – expenditure during rest, confinement during illness and various levels of Physical Exercises, factors influencing energy uptake and substrate utilization. Diet – for Growing Age, Pregnancy, Lactation, Acute Illness, Convalescent Period, High level of Physical Activity, Aging & Sports.
3. Body composition – Obesity – prescription of Diet & its modification during weight reduction programme.

Professional Issues, Ethics and Constitution

Objectives - At the end of the course, the candidate will acquire the knowledge of

A. Ethical Codes of Physiotherapy practice, Moral and Legal aspects of Physiotherapy practice
B. Constitution and Function of Indian Association of Physiotherapists (IAP).
C. Role of World Health Organization (WHO) and World Confederation of Physiotherapists (WCPT)

Syllabus-

1. Concept of Morality, Ethics and Legality.
2. Rules of Professional conduct, Medico Legal and Moral Implications.
3. Communication skills, Client interest and Satisfaction.
4. Inter Disciplinary Relation, Co-partnership, Mutual Respect, Confidence and Communication, Responsibilities of the Physiotherapists, Status of Physiotherapist in Health Care.
5. Role of Professional in Socio Personal and Socio Economical context
6. Need of Council Act for regulation of Professional Practice, Self-Regulatory role of Professional Association.
7. Constitution and Functions of IAP.
8. Persons with Disability Act
9. Role of WCPT, Various branches and special interest group of WCPT.

Administration, Management & Professional Practice

Objectives:- At the end of the course, the candidate will-

A. Acquire the managerial & Management skills in Planning, implementation and administration in clinical practice [service / self employment] & academic activities including the skill of Documentation and use of information technology in professional practice.
B. Be able to impart the knowledge to the undergraduate students.

Syllabus:-

1. Management - Concept of Theories of Management & their application to Physio Therapy practice with quality assurance at various levels of health delivery system, teaching institutions, & self employment – Managerial strategies of planning & Organization of Structure, Delivery, funding of service delivery, information technology, time management& career development.
2. Administration & Marketing – personal Poliices –Communication & Contract. Administration principles based on Goal & Function at large Hospital / Domiciliary ser up / Private Clinic / Academic Institution
3. Methods of maintaining records – Budget planning
4. Performance analysis – Physical structure, reporting system, Man P Status, Functions, Quality & Quantity of Services, Turn over – Cost benefit, Contribution.

Community Health

Objectives: At the end of the course, the candidate will –

A. Acquire the In-depth understanding of the concept of Community Based Rehabilitation.
B. Be able to assist in planning & organizing camps at Community level
C. Be able to import services & training at the Community level effectively with minimum resources.

Syllabus:-

1) Definition of Community, Concepts of Community, Community Based / Institutional Based Rehabilitation.
2) WHO definition of Health & Disease.
3) Health Care Delivery System – 3 tier.
4) Disability- types, evaluation & prevention, PWD Act (2001), Modes of Disability, Attitudes towards disabled.
5) Health Promotion for All, peripubertal age group, women, aged, obese/overweight individuals, cardiovascular & pulmonary conditions, musculoskeletal conditions, neurological conditions, metabolic conditions & sports person.
6) Woman & Child care.
7) Geriatrics
8) Industrial Health.

Teaching Technology

Objectives - At the end of the course, the candidate will –

A. Acquire the knowledge of concepts of Educational Objectives, various methods of teaching & learning, various evaluation methods & Principles of curriculum planning.
B. Acquire the skill in communication, teaching skills in classroom, laboratory & clinical teaching including bed-side teaching.

Syllabus-

1. Role of an educator
2. The environment – Physical surroundings, colleagues. The necessities for ideal environment.

3. Process of learning– principles of learning (CHRIST), Principles of adult learning, learning and motivation, student teacher relationships.
4. Educational Objectives.
5. Teaching learning methods and aids – lecture as a teaching tool, Micro and small group teaching, bed side teaching for clinical skills, teaching learning aids.
6. Skill development- Clinical skills, Communication skills, Counseling skills
7. Evaluation – Mechanics of paper setting, M.C.Qs., validation of M.C.Q.s, M.C.Q. bank, S.A.Qs , L.A.Qs, Viva, Objective Structure Clinical Examination(O.S.C.E.), Objective Structure Practical Examination(O.S.P.E.)
8. Curriculum planning – Integrated teaching, Problem based learning, Evidence based medicine.
9. Continuing Medical Education.

Research Methodology & Bio-statistics

Objectives - At the end of the course, the candidate will acquire the knowledge of

A. Objectives and Types of Research, Criteria of Research.
B. Basic concepts of research, Design problems & sampling techniques of research
C. The knowledge of various types of study design & planning for the same
D. The skill of planning for a Research Study
E. The skill of various methods of Data Analyses.

Syllabus-

1. Meaning of Research, Objectives, Motivation and Types of Research.
2. Research process and Criteria of Research
3. Basic concepts of Research - a) Definition & Scope b) Research Design, c) Research Problems d) Sampling Techniques
4. Measurements and Scaling Techniques, Methods of Data Collection.
5. Types of studies a) Case-control studies b) Cross sectional studies c) Cohort studies d) Prospective & retrospective studies e) Longitudinal studies f) Correlation Studies. g) Clinical studies.
6. Types of Data, Measures of Average & dispersion, Correlation & Regression, Test of significance – Parametric tests & Non parametric tests.
7. Role of Computer in Research and Ethical Concepts

SCHEME OF EXAMINATION - MPT PART I

MPT Part I examination will be held at the end of first academic year.

Theory

There will be **2 papers of 100 marks** each.

Paper I will be based on Subjects - Manual Medicine & Applied Physiotherapy, Advanced Electrotherapeutics, Electrophysiology & Electrodiagnosis, Biomechanics & Bioengineering , Teaching Technology and Research Methodology & Biostatistics.

Paper II will be based on Subjects - Neurodevelopment & Principles of Neurophysiological Approaches, Exercise Physiology, Fitness & Health promotion, Nutrition & Diet, Community Health, Professional Issues, Ethics & Constitution and Administration, Management & Professional Practice.

MPT Part 1 Examination

Theory

Paper I – Applied Physiotherapy I	100 Marks
Paper II – Applied Physiotherapy II	100 Marks

Pattern of Examination for Theory

Q1) Long answer question	25 Marks
Q2) Long answer question	25 Marks
Q3) Short answer question (any 5 out of 6) 10 marks each	50 Marks
Total marks	**100 Marks**

Practicals

Case 1 - Based on Surgical conditions	50 Marks
Case 2 – Based on Medical conditions	50 Marks
Spots – 10 of 5 Marks each Based on Electrodiagnosis, Orthosis/Prosthesis, Pulmonary Function Test, E.C.G., X-ray Chest/Extremities and Spine, ABG, etc.	50 Marks
Microteaching -	25 Marks
Case Studies – Total 5 (3 Based on Specialty, 2 Based on General) (Presentation of the case at the time of examination – 15 marks & presentation of the cases throughout the year – 10 marks)	25 Marks
TOTAL	**200 Marks**