# MALLA REDDY VISHWAVIDYAPEETH

## SCHOOL OF ALLIED & PUBLIC HEALTH SCIENCES & TECHNOLOGY

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**Program**

## MASTER OF PHYSIOTHERAPY (M.P.T)

2025 – 26

## 5.19. SCHEME OF STUDY MASTER OF PHYSIOTHERAPY (M.P.T.)

### 5.19.1. First Year M.P.T Examination Scheme

| S. No. | Subject | Internal Assessment Marks | | University Examination Marks | | | Total Marks | Theory hours | Practical hours | Total Hours | Credits Theory | Credits Practical | Credits Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Theory | Viva | Practical | | | | | | | |
| 1 | M.P.T -101 Laws, Ethics, Administratio n Educational methodology (LEM) | 20 | | 80 | | | 100 | 90 | | 90 | 6 | | 6 |
| 2 | M.P.T-102 Research methodology and biostatistics, EBP (RMB) | 20 | | 80 | | | 100 | 90 | | 90 | 6 | | 6 |
| 3 | M.P.T - 103 Biomechanics & Therapeu-Tics (BCT) | 20 | | 80 | | | 100 | 90 | | 90 | 6 | | 6 |
| 4 | M.P.T -104 *Physical & Functional Diagnosis in the speciality.* Speciality paper-1 | 20 | 20 | 100 | 20 | 40 | 200 | 120 | 120 | 240 | 8 | 4 | 12 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | M.P.T-105 Skills acquisition and refinement (SAR-I) | (Teaching Assignment, Seminars, journal club & Case Studies etc.) | | | | | | | 240 | 240 | | 8 | 8 |
| 6 | M.P.T-106 Clinical training (CT-I) | | | | | | | | 540 | 540 | | 18 | 18 |
| 7 | M.P.T-107 Dissertation (DSS-I) | | | | | | | | 240 | 240 | | 8 | 8 |
| | Grand Total | | | | | | 500 | 390 | 1140 | 1530 | 26 | 38 | 64 |

i. N.B.-The [NUE] Subjects will on college level and students needs to pass the college level examination before appearing for the University Examination, But the marks will be counted with University Marks and will be added in the Scheme and Marks Sheet given by University.

## SCHEME OF STUDY MASTER OF PHYSIOTHERAPY (M.P.T.)

### 5.19.2 2ND Year M.P.T Examination

| S. No. | Subject | Internal Assessment Marks | | University Examination Marks | | | Total Marks | Theory hours | Practical hours | Total Hours | Credits Theory | Credits Practical | Credits Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Theory | Viva | Practical | | | | | | | |
| 1 | M.P.T-201 Exercise Physiology (EP) | 20 | | 80 | | | 100 | 90 | | 90 | 6 | 0 | 6 |
| 2 | M.P.T-202 *Specialty Paper 2* | 20 | 20 | 80 | 20 | 40 | 200 | 120 | 120 | 240 | 8 | 4 | 12 |
| 3 | M.P.T-203 *Specialty paper 3( Recent advances in the specialty)* | 20 | 20 | 80 | 20 | 40 | 200 | 120 | 120 | 240 | 8 | 4 | 12 |
| 4 | M.P.T-204 *Dissertation [spread over a period of 18 months] (DSS-II)* | | | | 100 | | 100 | | 720 | 720 | | | 24 |
| 5 | M.P.T-205 Skills acquisition and refinement (SAR-II) | (Teaching Assignment, Seminars, journal club & Case Studies etc.) | | | | | | | 240 | 240 | | 8 | 8 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | M.P.T-206 Clinical training (CT-II) | | | | | | | | 540 | 540 | | 18 | 18 |
| | Grand Total | | | | | | 600 | 330 | 1740 | 2070 | 22 | 58 | 80 |

*N.B.-*

i. Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

The [NUE] Subjects will on college level and students needs to pass the college level examination before appearing for the University Examination, But the marks will be counted with University Marks and will be added in the Scheme and Marks Sheet given by university.

## 5.20. M.P.T. Curriculum

### *5.20.1. COURSE CODE -M.P.T-101*

COURSE TITLE - **Laws, Ethics & Administration and Educational Methodology: (LEM)**

**Course Contents: M.P.T LEM Theory (L)**

***SECTION -A: ETHICS AND LAW***

LEM 1.1. Principles of ethics History and evolution of ethics - Helsinki declaration; Nuremberg Code; Principles of ethics and its importance - Autonomy, Beneficence, Non-maleficence, Justice

LEM 1.2. Professionalism

LEM 1.3. Ethics in professional practice Principles of practice in respective profession. Privacy, confidentiality, shared decision making, informed consent, equality and equity, justice

LEM 1.4. ICMR Guidelines General principles, Responsible conduct of research, Risk benefit assessment

LEM 1.5. Informed Consent Process Components of informed consent document, Procedure in obtaining informed consent, Special situations, waivers, and proxy consent

LEM 1.6. Roles and Responsibilities of IEC Ethical Review process, Classification of projects for review, Roles and responsibilities of members, Communications with investigators and authorities

LEM 1.7. Ethics in Special and Vulnerable Populations Types of Vulnerability and vulnerable population, Challenges for research in vulnerable population, Guidelines for research in special and vulnerable population

LEM 1.8. Conflict of Interest Definition and Types of Conflict of Interest, Identifying, mitigating and managing Conflict of Interest, Conflicts of interest in international collaborations

LEM 1.9. Publication Ethics Importance of publishing, Authorship guidelines according to ICMJE, Plagiarism

LEM 1.10. Laws governing Physiotherapy practice: NCAHP Act, Consumer Protection Act, Rights of persons with disability act Ethical issues in practice of Physiotherapy-Clinical,

Research and Academics

**SECTION -B: Management and administration in Physiotherapy**

LEM 2.1. Principles and applications of Management and Administration to Physio Therapy practice:

LEM 2.2. Management PROCESS: planning, organizing, staffing, finance, marketing, controlling, directing.

LEM 2.3. Quality assurance: Total Quality Management: basis of quality management, quality assurance program in hospitals, medical audit and international quality system.

LEM 2.4. COMMUNICATION: Process of Communication Barriers to Communication Types of Communication Written vs. Oral Communication Elements of good communication

LEM 2.5. Hospital as an organization: functions and types of hospitals MANAGEMENT IN HOSPITAL Setting of a physiotherapy service unit

**SECTION-C: Management of Teaching Institution and Educational Methodology In Physiotherapy**

LEM 3.1. Education: definition, aims and objectives of education, Agencies of education, Formal and informal education, brief introduction to the philosophies of education, taxonomy of educational objectives, essentials of Physiotherapy education, NEP

LEM 3.2. Basics of Adult Learning Theories including Learning Styles and Motivation

LEM 3.3. Concept of teaching – learning - nature of learning, type and stages of learning, factors affecting learning, laws of learning, learning style teaching learning process, role of teacher in teaching learning process, Adult learning

LEM 3.4. Teaching skills, Teaching Methods in Classroom Setting, clinical teaching methods, planning of teaching: lesson planning and unit planning Teaching aids and educational technology

LEM 3.5. Formulating Intended Learning Outcomes Including Tyler’s principles, Bloom's Taxonomy, Miller's Pyramid, Clinical Competence, and Dreyfus' Model of Skill Acquisition

LEM 3.6. Entrepreneurship in Physiotherapy Practice: Need, Advantages and Opportunities.

**RECOMMENDED BOOKS FOR LEM**


1. Beauchamp and Childress, Principles of Biomedical Ethics, Fourth Edition. Oxford.
2. Patricia A Marshall. Ethical challenges in study design and informed consent for health research in resource poor settings. World Health Organization. 2007.
3. Natio4n2a6l Ethical guidelines for Biomedical and Health Research involving human participants. Indian Council of Medical Research. 2017.
4. ABC of Learning and Teaching in Medicine. Editor(s): Peter Cantillon, Diana Wood, Sarah Yardley. Ed: 3
5. Understanding Medical Education: Evidence, Theory, and Practice, Editor(s): Tim Swanwick Kirsty Forrest Bridget C. O'Brien. Ed 3
6. Principles of Medical Education. Editor(s): Tejinder Singh, Piyush Gupta, Daljit Singh. Jaypee Brothers. 2012. New Delhi.

*5.20.2. COURSE CODE -M.P.T-102*

**COURSE TITLE - Research methodology and Biostatistics and Evidence based practice (RMB) Course Contents: M.P.T RMB Theory (L)**

***SECTION-A: RESEARCH METHODOLOGY***

RMB 1.1. Introduction to research

RMB 1.2. Types of research

RMB 1.3. Defining a research question

RMB 1.4. Qualitative study designs

RMB 1.5. Quantitative study

RMB 1.6. Type I and type II bias

RMB 1.7. Study design: types

RMB 1.8. Case study, Case series, longitudinal cohort, Pre post design, Time series design, repeated measures design, Randomized control design.

RMB 1.9. Sampling design, calculating minimum sample size based on design

RMB 1.10. Measurement: Properties of measurement: reliability, validity, responsiveness, MCID.

RMB 1.11. Outcome measures: Use of outcome measures in rehabilitation research

RMB 1.12. Research Methods: Designing methodology, Reporting results, Type I and Type II bias.

RMB 1.13. Communicating research.

RMB 1.14. Evaluating published research: looking at the evidence

RMB 1.15. Introduction to evidence-based practice, evaluating evidence.

RMB 1.16. Asking clinical questions

RMB 1.17. Translating of evidence into practice: strategies

RMB 1.18. Use of clinical practice guidelines, clinical pathways, prediction rules to inform practice.

***SECTION-B: BIOSTATISTICS***

RMB 2.1. Descriptive Statistics and measurement variability

RMB 2.2. Inferential Statistics

RMB 2.3. Comparison of group means: T-test

RMB 2.4. Analysis of variance

RMB 2.5. Multiple comparison tests

RMB 2.6. Parametric and Non parametric tests

RMB 2.7. Correlations

RMB 2.8. Regression

RMB 2.9. Analysis of frequencies: Chi square

RMB 2.10. Statistical measure of validity and reliability

RMB 2.11. Factorial Design analysis

RMB 2.12. Power analysis – Determining sample size, Epidemiological Measures – Rate, Ratio, Proportion, Incidence and prevalence, Relative risk, Risk ratio, Odds ratio

RMB 2.13. Application of various statistical software.

***SECTION-C: SCIENTIFIC WRITING***

RMB 3.1. Definition and kinds of scientific documents – Research paper, Review paper, Book, Reviews, Thesis, Conference and project reports (for the scientific community and for funding agencies).

RMB 3.2. Publication – Role of author, Guide, Co-authors.

RMB 3.3. Structure, Style and contents; Style manuals (APA, MLA); Citation styles: Footnotes, References; Evaluation of research

**RECOMMENDED BOOKS FOR RMB**


1. Bailey, N.T.J. -Statistical methods in Biology. The English universities press, London
2. Bajpai, S.R.- Methods of Social Survey and Research, Kitab Ghar, Kanpur.
3. Colton - Statistics in medicine, Little Brown Company, Boston
4. Gupta, S.P -Statistical methods. Sultan Chand and Sons Publishers , New Delhi.

5. Goulden C.H.- Methods of Statistical Analysis. Asia Publishing House , New Delhi.

6. Mohsin S.M.- Research Methods in Behavioral Sciences: Orient Publications. New Delhi.

7. Mahajan - Methods in Biostatistics, Jay Pee Brothers.Medical Publishers (P) Ltd. New Delhi.

8. Hicks- Research for Physiotherapists, Churchill Livingstone, London.

9. Meenakshi. - First Course in Methodology of Research. Kalia Prakashan, Patiala.

10. Kumar , R.- Research Methodology. Pearson Education , Australia.

11. Snedecor,G.W -Statistical Methods, Allied Pacific Pvt. Ltd., London

12. Singh, I.- Elementary Statistics for Medical Workers. Jaypee Brothers Medical Publishers (P) Ltd. New Delhi.

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

***5.20.3.***

***COURSE CODE -M.P.T-103***

***COURSE TITLE -BIOMECHANICS & THERAPEUTICS (BCT)***

Course Contents: M.P.T BCT Theory (L)

**SECTION A – Concepts of Biomechanics:**

BCT 1.1. Introduction to Kinesiology and Biomechanics. Biomechanics of Tissues and structures of the musculoskeletal system

BCT 1.2. Principle of Biomechanics

BCT 1.3. Nature and importance of Biomechanics in Physiotherapy.

BCT 1.4. Methods of kinetics and kinematics investigation

BCT 1.5. Introduction to biomechanical analysis of human motion.

BCT 1.6. Analytical tools and techniques –

1. Isokinetic Dynamometer,
2. Kinesiological EMG,
3. Electronic Goniometer,
4. Force Platform,
5. Videography.

BCT 1.7. Upper Extremity: Shoulder and Shoulder girdle, Elbow joint, Wrist joint and Hand.

BCT 1.8. Lower Extremity: Pelvic Girdle, Hip joint, Knee joint, Ankle & Foot

BCT 1.9. Spine

BCT 1.10. Gait

BCT 1.11. Gait Analysis: Kinetic & Kinematic Analysis.

BCT 1.12. Pathological Gait: Kinetic & Kinematic Analysis

BCT 1.13. Ergonomic approach to lifting and handling, workspace and environment. Patient positioning, body mechanics and Transfer techniques

**SECTION-B: Physiotherapy techniques**

BCT 2.1. Principle of therapeutic exercises

BCT 2.2. Definition, details of effects and uses of following exercises.

BCT 2.3. Dynamic Exercises

BCT 2.4. Plyometric Exercises

BCT 2.5. Isokinetic Exercises

BCT 2.6. Kinetic chain exercises

BCT 2.7. Balance and coordination exercises

BCT 2.8. Biophysics of contractile and non-contractile tissues, Response to mechanical loading

BCT 2.9. Clinical reasoning and differential clinical diagnosis based on various approaches such as Maitland, Kaltenborne, Cyriax, Mulligan, Mckenzie etc.

BCT 2.10. Proprioceptive neuromuscular Facilitation.

BCT 2.11. Hydrotherapy Techniques

BCT 2.12. Functional assessment and re-education

BCT 2.13. Yoga: Introduction, Historical background and Origin of Yoga, Meaning and Concept of Yoga and its relationship with Physical Education and Sports, **Yoga in Global Scenario**, **Pranayama:** Meaning, Types and its importance. **Asanas:** Asanas- meaning, types, principles, Techniques of asanas and effects of asanas on various systems of the body - circulatory, respiratory and digestive system.

BCT 2.14. Electro diagnosis: introduction to methods of electro diagnosis SD CURVE

BCT 2.15. Electromyography: technique of EMG, interpretation of normal and abnormal responses

BCT 2.16. Nerve conduction studies: MNCV, SNCV, variables affecting nerve conduction, measurement of NCV of nerves of upper limb and lower limb, interpretations of normal and abnormal responses.

BCT 2.17. Evoked potentials, H-reflex, P wave, repetitive nerve stimulation, VEP, BAEP, SSEP, SSR.

BCT 2.18. Review of Principles underlying the application of following modalities with reference to their Production, biophysical and therapeutic effects, indications

and contraindications and the specific uses of:

1. Superficial heating modalities
2. Deep heating modalities
3. Ultrasound
4. Cryotherapy

BCT 2.19. Review of Principles underlying the application of following modalities with reference to their Production, biophysical and therapeutic effects, indications and contraindications and the specific uses of Physiotherapy

BCT 2.20. Low Frequency Current: Diadynamic Current, Iontophoresis

BCT 2.21. High Voltage, Pulsed Galvanic Stimulation, TENS, IFT, Russian Currents. LASER

BCT 2.22. Advanced Electro Therapeutics in Tissue healing, Wound care, Management of Scars, keloids, Muscle Plasticity & Integumentary Conditions.

BCT 2.23. BIO-FEED BACK

**RECOMMENDED BOOKS FOR BCT**


1. James G. Hay – The Biomechanics of Sports Techniques, Prentice Hall.
2. Brunnstrom - Clinical Kinesiology, F.A. Davis.
3. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion, Brown & Benchmark.
4. Kreighbaum E., Barthels K.: Biomechanics – A Qualitative approach for studying human Motion, MacMillan.
5. Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
6. White and Punjabi - Biomechanics of Spine - Lippincott.
7. Norkin & Levangie: Joint Structure and Function - A Comprehensive Analysis - F.A.
8. Davis.

9. Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.

10. Northrip et al: Analysis of Sports Motion: Anatomic and Biomechanics perspectives,

11. W.C. Brown Co., IOWA.

12. Leveac B.F.: Basic Biomechanics in Sports and Orthopedic Therapy, C.V. Mosby.

13. De Boer & Groot: Biomechanics of Sports, CRL Press, Florida.

14. Basmajian - Muscle alive - Williams & Wilkins.

15. Nordin & Frankel - Basic Biomechanics of Muscular Skeletal Systm - Williams & Wilkins.

16. Bartlet - Introduction to Sports biomechanics - F & FN Spon Madras.

### 5.20.1. Locomotor disability Assessment content:

*DISABILITY (PERMANENT PHYSICAL IMPAIRMENT) ASSESSMENT AND CERTIFICATION GUIDELINES & GAZETTE NOTIFICATION:*

**Detail study of Government Gazette to be done:** (The Gazette of India is regularly updated, and its publications can change over time. Refer the recent Gazette publications issued by the Government of India, from the official website)

PWD Act 1995 and Rights of person with Disability Act 2016, **to study in detail.**

### 5.20.2. BLS and ACLS Training:

Course Title: Basics of Emergency Care and Life Support Skills (ECLS): Theory (L) Practical (P)

**ECLS 1.0. Subject Description and instruction to teacher**

Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an auto- mated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. The purpose of this course is to equip the students with the skill to save the life of a person in different emergency situation as first responder. The training should be provided using Mannequins and dummies and Videos presentations and Role plays should be also used to impart knowledge and skill besides the lecture - demonstrations.

**ECLS 1.0.1. Course Outcomes:**

After completion of this course the student shall be able to

1. Perform Opening and maintaining and patent airway: assessment and knowledge of airway maneuvers and adjuncts
2. Ventilate patients: Assessment and management of breathing with Mouth to mouth and mouth to mask
3. Administer basic life support skills including cardiopulmonary resuscitation
4. Provide first aid of simple and multiple system trauma such as • Controlling hemorrhage • Managing Burns and wounds • Response to effects of weapons of mass destruction • manually stabilizing injured extremities

5. Provide first aid to patients with medical emergencies like heart attack and stroke • Identifying signs of Stroke and heart attack and safe transfer after first aid without delay in transfer. • Manage general medical complaints seizures and animal bites (snake /dog bite)
6. Reassure patients and bystanders by working in a confident, efficient manner • Avoid mishandling and undue haste while working expeditiously to accomplish the task
7. Manage safe patient transport Entailing-Extrication of the victim, helmet removal and spine protection during transport.
8. Explain Roles, responsibilities and limitation of first responder.

**Course Contents:**

***SECTION -A UNIT 1***

ECLS 1.1. Emergent conditions and magnitude, Concept of golden hour, Duties and responsibilities of first responder

ECLS 1.2. Ethical issues and Gather information from observation, experience and reasoning. Identification of rapidly changing situations and adapt accordingly. Planning and organization of work. Scene safety. Dealing with emotional reactions family members and bystanders

ECLS 1.3. Well-being of first responder Personal protection

1. Steps to be taken against airborne and blood-borne pathogens
2. Personal protective equipment necessary for each of the following situations: Hazardous materials Rescue Operations Violent Scenes Crime scenes
3. Electricity, Water and ice
4. Exposure to blood-borne pathogens Exposure to airborne pathogens

***UNIT 2***

ECLS 2.1. Airway

1. Signs of inadequate breathing
2. Mechanism of injury to opening the airway
3. Steps in the head-tilt chin-lift

4. Steps in the jaw thrust
5. Taking out foreign body
6. Ensuring patent airway during seizures and vomiting.

ECLS 2.2. Ventilation

1. Of a patient with a mask or barrier device
2. Steps in providing mouth-to-mouth and mouth-to-stoma ventilation

ECLS 2.3. Circulation

1. Evaluate the cardiac status of the patient
2. Determine the need for and take necessary action to proper circulation
3. Steps for control of bleeding: Pressure bandage and tourniquet ECLS 2.4. Clearing a foreign body airway obstruction

ECLS 2.5. CPR

1. Implications of cardiac arrest
2. Cardiopulmonary resuscitation (CPR)
    i. How it works
    ii. Steps
    iii. When to stop CPR
3. Brief overview of AED Automated external defibrillator (only demonstration –no hands on)

***SECTION -B UNIT 3***

ECLS 3.1. Bleeding and Soft Tissue Injuries

1. Difference between arterial and venous bleeding
2. Stopping external bleeding
3. Identification of Internal bleeding
4. types and Functions of dressings and bandages

5. How to help a victim of burn injury

ECLS 3.2. Injuries to Muscles and Bones

1. Suspecting bony/spinal injury
2. Splinting –materials used
3. Importance of splinting

***UNIT 4***

ECLS 4.1 Medical Emergencies

ECLS 4.2 Identification of the patient steps in providing first aid to a patient with

i. A general medical complaint –
ii. Seizures
iii. Chest-pain
iv. Shortness of breath
v. Exposure to heat
vi. Including other medical complaints like allergy, diarrhea, fainting, low blood sugar, stroke
vii. Drowning
viii. Poisoning

ECLS 4.3 Transportation Importance of timely and proper transportation methods of transportation of victim from site of injury to ambulance. Importance of spine protection methods of spine protection during transportation

ECLS 4.4 Disaster preparedness -. Preparedness and risk reduction Incident command and institutional mechanisms Resource management

**PRACTICALS**

Student should practice on Mannequins and dummies and should be able to

ECLS (P) 5.1. Provide Airway & Ventilation

ECLS (P) 5.2. Perform Basic Life Support: CPR

ECLS (P) 5.3. Perform Initial management of Thermal injury, electric injury

ECLS (P) 5.4. Perform stabilizing injured extremity and wound management

ECLS (P) 5.5. Demonstrate bandaging techniques to various body parts

ECLS (P) 5.6. Demonstrate Extrication, Helmet removal and spine protection

ECLS (P) 5.7. Demonstrate Stretcher use

**Recommended text books for ECLS**

Indian red cross : INDIAN FIRST AID MANUAL 2016 (7th edition) available at https://www.indianredcross.org/publications/FA-manual.pdf

### 5.20.4. Disaster Management:

**Course Title: Disaster Management (DM): Theory (L)**

**DM 1.0 Subject Description and instruction to teacher**: The commission's goal is to emphasize the vital role physical therapists (physios) play in disaster management and contribute to national and global preparedness. To achieve this, it's essential to raise awareness among physiotherapists about national and international organizations and emphasize the crucial role physical therapists play in disaster management, particularly within Emergency Medical Teams. Also it may be noted that the acts, policies, gazettes are regularly updated, and its publications can change over time. The teachers and students should thus refer the recent publications issued on the official website

**DM 1.0.1. Course Outcomes**: After completion of this course the student shall be able to

1. Understand the crucial role physical therapists play in disaster management, particularly within Emergency Medical Teams.
2. Should be able to identify national and international organizations that play a vital role in disaster management
3. Should be able to identify the legal framework for disaster management in India and disaster prone areas.
4. Provide essential information to other physical therapists interested in disaster response work and to make them aware of national and international agencies already active in the field.
5. Promote global preparedness and support physical therapists in making a meaningful difference in disaster response and recovery efforts

Course Content: Disaster Management (DM): Theory (L)

**DM 1.1.** Definition of disaster and the hazards associated with disaster, Vulnerable groups in Disaster

**DM 1.2.** Definition of Advocacy, disability advocacy, Contingency planning wrt to disaster management, Hazard, Risk, Vulnerable groups

**DM 1.3.** History of involvement of Physiotherapists in rehabilitation efforts during emergencies

**DM 1.4.** National organizations who are involved in disaster preparedness and management strategies:

1. The legal framework for disaster management in India: Key takeaways of Disaster Management Act 2005, National Policy on Disaster Management 2009 and National

Disaster Management Plan 2018

2. Different types of disasters managed in India, Epidemiologic surveillance and disease control, main goal of the National Disaster Management Authority, areas in India are most prone to disasters, Institutional structure for disaster management in India at various levels, Central Ministry that coordinates disaster management and leader of NDMA in India
3. Disaster Management Act of 2005 key take aways and its significance, Phases of Disaster management, Long term prevention measures, role of various stake holders in disaster management, role of community involvement in disaster management, challenges faced in disaster management in India
4. Prime minister's 10 point agenda and Community based and Technology driven approaches: Key policies and strategies

**DM 1.5.** International organisations who facilitate contributions of physiotherapists in disaster preparedness and management strategies. Role of physiotherapists in:

1. Disaster management within their own countries, benefits of rehabilitation provided following disasters
2. Prevention of a disaster
3. Preparedness for disaster with respect to essential locally appropriate preparedness for a disaster,
4. Identifying and connecting professional associations, health service providers and training institutions.
5. Developing international humanitarian response
6. Response to disaster: Required skills and knowledge and required actions and secure resources with respect to assessment, coordination, psycho-social support and advocacy
7. Recovery: with respect to planning of medical management and local capacity building and physiotherapy rehabilitation, advocacy

**DM 1.6.** The type and distribution of injuries caused by disasters, the type of hazards, common injuries that can lead to long-lasting or permanent disability.

**DM 1.7.** Clinical Practice in Response phase along with documentation (conservative and surgical), record management, data and research, informed consent and confidentiality, regulations and scope of practice, hand hygiene and infection control, communication, referral, discharge planning with respect to international management strategies.

**DM 1.8.** International Disaster Management Rehabilitation Response Plans and role of Physiotherapists with respect to: Systems in Place, Identifying Personnel, Facilities and Resources, Advocacy and Partnerships, Training and Capacity Building

**DM 1.9.** Elements to be considered "essential" components in any disaster education or training programme for health professionals as defined by Global Response Framework,

**DM 1.10.** The World Health Organization (WHO) : the lead UN agency in the health cluster and its emergency response framework and Humanitarian principles

**Recommended websites for references**: Disaster management

National Disaster Management Plan, 2016. A publication of the National Disaster Management Authority, Government of India. May 2016, New Delhi at www.mha.gov.in

www.wcpt.org/disaster-management.

### 5.20.5. Exercise Physiology

Details presented on next page

### Dissertation

Each candidate will have to carry out of a dissertation on Speciality related subject of MPT. Ethical approval certificate from **Registered Institutional Ethical committee** and Clinical Trial Registration is mandatory for intervetional Dissertation study topic. The dissertation to be guided by Guide of the speciality of faculty of physiotherapy of the department under whom the student is persuing MPT. The dissertation will be evaluated by the External/Internal Examiners. The final dissertation duly approved by the External/Internal examiners will be submitted to the Dean/Principals office with the result. The dean/ Principal's office will send the dissertation to the library for record.

### 5.20.9. Practical / clinical examination

Compulsary rotatory Clinical Posting as per the Speciality and Clinical Assessment during Clinical posting is mandator

## 2ND YEAR M.P.T

## 5.20.7. COURSE CODE -M.P.T-201

**COURSE TITLE -EXERCISE PHYSIOLOGY (EP) Theory (L) Practical (P)**

**EP 1.0. Subject description Course outcomes**

1. CO1: Comprehend the basic knowledge of sources of energy, aerobic and anaerobic synthesis of ATP along with the understanding of utilization of substrates in relation to the intensity and duration of exercise
2. CO2: Appreciate the measurement of energy cost of exercise and importance of energy transfer and energy expenditure at rest and during various physical activities
3. CO3: Understand the role of various macro and micro nutrients as well as their caloric requirements along with the basic classification, functions and utilization of nutrients.
4. CO4: Acquire about importance of diet for various competitions, nutrient supplements for performance and to design caloric requirements for various sports and age groups.
5. CO5: Critically evaluate the central and peripheral mechanism that regulates the cardiovascular and respiratory systems in exercise along with the physiological responses and adaptations of these systems to exercise and training.
6. CO6: Identify the regulation and significance of acid base balance following exercise
7. CO7: Understand the responses of various hormones with respect to exercise

***SECTION -A***

**EP 1.1. Bioenergetics of exercise:** High energy phosphates, Anaerobic and aerobic ATP synthesis, Bioenergetics Control, exercise intensity & substrate utilization, protecting CHO stores, muscle adaptation to endurance training, processes that potentially limit the rate of fat oxidation, regulation of substrate utilization,

training - induced increase in FFA oxidization:

EP 1.2. Basal metabolic and resting metabolic rates and factors affecting them, Classification of Physical Activities by energy expenditure. Concept of MET measurement of energy cost of exercise

EP 1.3. **Nutrition metabolism** of Carbohydrate, fats, proteins, vitamin, mineral and water

EP 1.4. **Nutrition in exercise** optimum nutrition for exercise, nutrition for physical performance, pre game meal carbohydrate loading, food for various athletic events, fluid and energy replacement in prolonged exercise

EP 1.5. **Respiratory responses to exercise:** Ventilation at Rest and during Exercise, Ventilation and the Anaerobic Threshold, static and dynamic lung volume. Gas diffusion, Oxygen and carbon dioxide transport second wind, stich by side control of pulmonary ventilation during exercise adaptive changes in the respiratory systems due to regular physical activities.

**EP 1.6. Cardiovascular responses to exercise-** Cardiovascular system and exercise, acute vascular effects of exercise, Circulatory responses to various types of exercise regulation of cardiovascular system during exercise, Pattern of redistribution of blood flow during exercise, adaptive responses of cardiovascular system to aerobic and anaerobic training. Athlete heart

**EP 1.7. Exercise and Acid Base Balance:** Acid and Bases, Buffers, pH, Respiratory Regulation of pH, Alkali Reserve, The kidneys and Acid base balance, Alkalosis and Acidosis, Acid base balance following heavy exercise.

**EP 1.8. Hormonal responses to exercise with respect to** Growth Hormone (GH), Thyroid and Parathyroid Hormones. Antidiuretic Hormone (ADH) and Aldosterone, Insulin and Glucagons, The catecholamine; epinephrine and norepinephrine. The sex hormones. The glucocorticoids (Cortisol) and Adreno Corticotropic Hormones (ACTH). Prostaglandins and Endorphins.

***SECTION -B***

EP 2.1. Training and conditioning

Physiological basis of physical training, training principles, interval training,

continues running concept of anaerobic threshold and vo2 max, physiological effects of various physical training methods- aerobic and anaerobic training, strength training factors influencing training effects – intensity, frequency, duration, detraining, process of recovery, post exercise oxygen consumption factors affecting recovery process, overtraining

EP 2.2. Body temperature regulation during exercise

Mechanism of regulation of body temperature, Body temperature responses during exercise, Physiological responses to exercise in the heat, Acclimatization to exercise in the heat, Effects of age and gender on body temperature regulation during exercise, Physical activity and heat illness [heat exhaustion, dehydration exhaustion heat cramps & heat stroke] Prevention of Heat Disorders

EP 2.3. Exercise in the Cold

Effects of exposure to cold and severe cold, Wind chill, Temperature receptors, Role of hypothalamus, shivering, Frost Bite and other problems, Clothing and Environment

EP 2.4. Exercise at Altitude

Exercise at altitude immediate physiological responses at high altitude, physiological basis of altitude training, phases of altitude training and specific training effects, altitude acclimatization, oxygen dissociation curve at altitude, disorders associated with altitude training

EP 2.5. Exercise and body fluids

Measurement and regulation of body fluids, Body fluid responses and adaptations to exercise, Effects of dehydration and fluid replenishment on physiological responses to exercise and performance Fluid/carbohydrate replacement beverages

EP 2.6. Physical activity, body composition, energy balance and weight control

Significance and measurement of body composition, Body composition during growth and aging, Body composition and physical performance, Effect of diet and exercise on body composition, Physical activity, energy balance, nutrient balance and weight control, Physical activity, fat distribution and the metabolic

syndrome , Healthy weight loss, Ways and methods of weight reduction , fluid maintenance, disordered eating, nutritional ergogenic aids, diet supplements in athletes and others involved in physical activity.

EP 2.7. Exercise and Diabetes Mellitus

Exercise in insulin, requiring diabetes and non-insulin dependent diabetes mellitus, Effect of physical training on glucose tolerance and insulin sensitivity, Management of diabetes by diet and insulin

**BOOKS SUGGESTED FOR EP**


1. Essentials of Exercise Physiology: McArdle, WD, Katch, FI, and Katch, VL. Lippincott Williams and Wilkins.
2. Fundamentals of Exercise Physiology: For Fitness Performance and Health, Robergs RA, and Roberts, S.O. McGraw Hill
3. Exercise Physiology: Powers, SK and Howley ET; Mc Graw Hill
4. Physiology of Sport and Exercise: Wilmore, JH and Costil, DL. Human Kinetics
5. Exercise Physiology- Human Bioenergetics and its Application: Brooks, GA, Fahey, TD, White, TP. Mayfield Publishing Company
6. Komi, P. (Ed.) Strength and power in sport. Blackwell Scientific Publications.
7. Levick, J.R. An introduction to Cardiovascular Physiology. 2nd ed. Butterworth Heinemann
8. McArdle, WD, Katch, FI & Katch, VL Exercise Physiology. Lippincott, Williams & Wilkins.
9. Shephard and Astrand Endurance in sport. Blackwell Scientific Publications.
10. Willmore, JH & Costill, DL Physiology of Sport and Exercise. 2nd ed. Human Kinetics.
11. Guyton, A.C. Textbook of Medical Physiology. Philadelphia: Saunders
12. Nutrition for sport and exercise; Berning and steen

1) ***Master of Physiotherapy in Community Rehabilitation Sciences.***

MPT (R) 104: **Physiotherapy in Community Rehabilitation Sciences** (PRC)

MPT (R) 202: **Rehabilitation –Assessment, Evaluation and Assistive Technology** (RAEA)

MPT (R) 203: **Physiotherapy in Clinical Rehabilitation conditions** (PCR)

*REHABILITATION COURSE CODE: MPT (R)-104*

**Course Title:** MPT (R) 104: **Physiotherapy in Community Rehabilitation Sciences** (PRC)

**Section-A**

PRC 1.1. Definition, Concept, principles & Scope of Rehabilitation, Community, Healthcare delivery system, Health Administration, Institutional based rehabilitation and community based rehabilitation – its principles and differences, multi-disciplinary approach, role of national institutes, District rehabilitation centre and primary health centre. Physiotherapist as a Master Trainer in CBR & IBR.

PRC 1.2. Epidemiology of dysfunctions & advance skills of physical and functional assessment related to Community. Clinical decision-making skill in management of dysfunction

PRC 1.3. Evidence Based Practice & Recent advances in Community Health. Indian Health statistics

***SECTION-B***

PRC 2.1. Fitness and health promotion –

i. Principles of fitness for health promotion in community,

ii. Nutrition and Diet.

iii. Stress management through yoga and psycho- somatic approaches.

PRC 2.2. Natural calamity & disaster management – Role of P.T. in disaster management team.

PRC 2.3. I.C.F. [Impairment, Disability, Handicapped and its implications] Evaluation

of Disability & Compensation for Persons with disability Act – 1995 and related Government infrastructure.

PRC 2.4. Physiotherapy Ethics –

i. Code of conduct,

ii. Regulatory Agencies and Legal Issues.

iii. W.H.O.`s policies-about rural Healthcare –

iv. Role of P.T.-Principles of a team work of Medical person/P.T./O.T. audiologist/speech therapist /P.&O./vocational guide in C.B.R. of physically handicapped person,

PRC 2.5. Public health education methods and appropriate media – Public awareness to the various disabilities, communications, message generation and dissipation.

PRC 2.6. Role of Government & NGOs in CBR, inter-sectoral programs and co-ordination, Implementation of the Act.

PRC 2.7. Rights of persons with disability

**Specialty 2**

***COURSE CODE: MPT (R)-202***

**Course Title:** MPT (R) 202: **Rehabilitation –Assessment, Evaluation and Assistive Technology** (RAEA)

***SECTION- A:***

RAEA 1.1. Orthotics & Prosthetics: definition, classification, bio mechanical principles; assessment and evaluation, prescription & fabrication

RAEA 1.2. Designing & Training of UL, LL, trunk, neck Orthosis, footwear modifications in various conditions

RAEA 1.3. Designing & Training of UL, LL prosthesis in Amputees.

RAEA 1.4. Indications / Contraindications, psychological aspects of its application.

RAEA 1.5. Use of adaptive devices, design & construction e.g. canes, walkers, wheelchairs.

**SECTION- B: Industrial Health**

RAEA 2.1. Applied anatomy, physiology and biomechanics related to Industrial health.

RAEA 2.2. Clinical decision-making skill in assessment and management of dysfunction related to Industrial health.

RAEA 2.3. Industrial Physiotherapy- prevention of injuries, physiological restoration, rehabilitation in industrial injuries, work station adaptations/ modifications.

RAEA 2.4. Environmental stress in the industrial area --Accidents due to

1. Physical agents- e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation.
2. Chemical agents-Inhalation, local action, ingestion,
3. Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & evaluation of work place-mechanical stresses as per hierarchy –

    i. Sedentary table work –executives, clerk,

ii. Inappropriate seating arrangement- vehicle drivers

iii. Constant standing- watchman- Defence forces, surgeons,

iv. Over-exertion in labourers - common accidents

4. Psychological hazards- e.g.-executives, monotony & dissatisfaction in job, anxiety of work completion with quality,

i. Role of P.T. in Industrial setup & Stress management- relaxation modes.

ii. Physiotherapy role in industry – preventive, promotive, curative, intervention, ergonomic and rehabilitative services.

iii. Ergonomic considerations and health promotion in the industry

RAEA 2.5. Understanding, and anlysing occupation, job description, job demand analysis, task analysis, Employee fitness, job modification, Employment acts.

RAEA 2.6. Vocational Rehabilitation, evaluation & management.

*COURSE CODE: MPT (R)-203*

**Course Title:** MPT (R) 203: **Physiotherapy in Clinical Rehabilitation conditions** (PCR)

***SECTION-A***

PCR 1.1. Rehabilitation in musculoskeletal conditions, sport sciences and health promotion

PCR 1.2. Rehabilitation in cardio-pulmonary conditions, and health promotion

***SECTION -B***

PCR 2.1. Rehabilitation in neurological conditions, movement & psycho-somatic disorders, pediatric conditions

PCR 2.2. General fitness strategies- body mass composition, assessment, obesity and weight control