

Dolphin PG Institute of Biomedical and Natural Sciences
(An Autonomous Institute)

Department of Physiotherapy



MASTERS OF PHYSIOTHERAPY
(MPT)

(Semester System)

Academic Programme

With effect from Academic Session 2024-2025

Duration: 2 Years

PREAMBLE:

Physiotherapy or Physical Therapy (P.T.) is a Movement Science with an established theoretical and scientific base and widespread clinical applications in the Prevention, Restoration & Rehabilitation, Maintenance and Promotion of optimal physical function. Physiotherapists diagnose and manage movement dysfunction and enhance physical and functional abilities. This physical dysfunction may be the sequel of involvement of any of the systems like Musculoskeletal, Neurological, Cardiovascular, Respiratory or other body systems. These practitioners contribute to society and the profession through practice, teaching, administration, and the discovery and application of new knowledge about physiotherapy experiences of sufficient excellence and breadth by research to allow the acquisition and application of essential knowledge, skills, and behaviours as applied to the practice of physiotherapy. Learning experiences are provided under the guidance and supervision of competent faculty, in both, classroom as well as in clinic. The designed curriculum will prepare the entry-to-practice physiotherapist (PT), to be an autonomous, effective, safe and compassionate professional, who practices collaboratively in a variety of healthcare set ups such as neonatal to geriatric, from critical care to community fitness to sports training and is responsive to the current and future needs of the health care system

'Physiotherapist' is a qualified professional who has acquired all the above mentioned knowledge and skills for entry into practice after being awarded a bachelor degree in the subject of "Physiotherapy" from a recognised institute affiliated to the University conducting a fulltime course not less than four years and six months of internship.

Master of Physiotherapy (MPT) program offers advanced training and specialization in physiotherapy, equipping students with the knowledge and skills to excel in specialized areas of practice. Physiotherapy, also known as physical therapy, focuses on restoring movement, function, and quality of life in individuals affected by injury, illness, or disability. With a strong emphasis on evidence-based practice and clinical expertise, the MPT program prepares students to address complex healthcare needs and provide comprehensive care to diverse patient populations. Through advanced coursework, clinical rotations, and research opportunities, students will gain specialized knowledge and practical experience to excel as leaders in their chosen fields

Vision of the Department

To empower the next generation of physiotherapists through excellence in education and innovation, fostering a commitment to ethical practice, perseverance, and collaborative spirit, thereby enhancing the health and well-being of communities globally.

Mission of the Department

Our mission is to steadfastly deliver holistic and ethical development of students through comprehensive education. We focus on nurturing qualities of leadership, teamwork, self-agency, and ingenuity, both inside and beyond the classroom, in all the lives we touch.

NOMENCLATURE:

The course will be referred to as a Masters of Physiotherapy (MPT) with their specialities as:

1. MPT in Musculoskeletal Disorders.
2. MPT in Neurological Disorders.
3. MPT In Sports

MASTERS OF PHYSIOTHERAPY PROGRAMME OUTCOME

PO-1: *Complex problem-solving*: Masters of Physiotherapy post-graduates will have the ability to apply their knowledge of physiotherapy to analyse and resolve problems in various settings, as well as their respected discipline (Ortho, Neuro, Sports) using appropriate tools and techniques to demonstrate the ability to judge, analyze and solve patient sensitive situations.

PO-2: *Critical thinking*: Masters of Physiotherapy post-graduates will be able to analyze and evaluate information, identify and define problems, develop and implement solutions, analyze and translate the best current evidence base into sound clinical reasoning with critical thinking and promoting patient values.

PO-3: *Creativity*: Masters of Physiotherapy post-graduates will able to design solutions and Rehabilitation protocols and execute them by considering the environmental, societal and public safety aspects appropriately with involvement and lateral thinking.

PO-4: *Communication Skills*: Masters of Physiotherapy post-graduates will show effective, scientifically sound, clinically appropriate, and culturally sensitive communication skills during patient, caregivers, within-team, and within society interactions.

PO-5: *Analytical reasoning/ thinking*: Masters of Physiotherapy post-graduates will have the ability to apply their knowledge to analyse and technical skills to achieve competence in practice of holistic medicine to provide quality healthcare.

PO-6: *Research-related skills*: Masters of Physiotherapy post-graduates will get academic exposure through the various clinical postings and teaching learning tools to develop a sense of research to predict cause-and-effect relationships and to consider new ideas, and uses the knowledge to collect data and analyze accurately to complete research project for the partial fulfilment & development keen sense towards research & development of field.

PO-7: *Coordinating/ collaborating with others*: Masters of Physiotherapy post-graduates will be able to collaborate effectively with others, including peers, colleagues, and interdisciplinary teams, to show excellent team work skills to support health goals set by the interdisciplinary team and achieve common goals.

PO-8: *Leadership readiness/ qualities*: Masters of Physiotherapy post-graduates will have an ability to develop the quality of leadership which will help them to be a part of any

organization (Academia and Clinical) as well as create a positive energy in their work field to achieve any assigned target.

PO-9: *Learning how to learn Skills:* Masters of Physiotherapy post-graduates will have a curiosity-driven and self-directed approach to learning to acquire knowledge and skills with the use of recent advancement of field aimed at personal improvement and professional upliftment.

PO-10: *Multicultural competence and inclusive spirit:* Masters of Physiotherapy post-graduates will have acquisition of knowledge of the values and beliefs of multiple cultures and a global perspective to honour diversity.

PO-11: *Value inculcation:* Masters of Physiotherapy post-graduates will be aware of the global and national issues related to physiotherapy, as well as their roles and responsibilities as Indian and global citizens and able to perform and excel within the legal societal framework and practice following the ethical values of the profession.

PO-12: *Autonomy, responsibility, and accountability:* Masters of Physiotherapy post-graduates will able to apply knowledge, understanding, and/or skills with an appropriate degree of independence relevant to the level of the qualification and can work independently, and identify appropriate resources required for a task and positively lead and influence the rehabilitation team.

PO-13: *Environmental awareness and action:* Masters of Physiotherapy post-graduates should have a strong ethical and environmental awareness and the ability to apply ethical reasoning in decision-making, including consideration of social, cultural, and environmental impacts.

PO-14: *Community engagement and service:* Masters of Physiotherapy post-graduates should be able to demonstrate the capability to participate in community-engaged services and activities for promoting the well-being of society through the scientific approach, advocating health and wellness in society, understanding societal health goals and demonstrating cultural competence.

PO-15: *Empathy:* Masters of Physiotherapy post-graduates will be able to demonstrate the ability to give regard to points of view of another individual or group, and to identify and understand other people's emotions to efficiently work as a healthcare professional.

ELIGIBILITY CRITERIA

1. He/she has passed the Bachelor of Physiotherapy recognized by any Indian University with pass marks (50%). Candidates are also required to complete a six-month internship after BPT degree.
2. Candidates who have studied abroad and have passed equivalent qualification as determined by the Association of Indian Universities will form the guideline to determine the eligibility and must have passed with 50% aggregate. For pursuing MPT a candidate

with locomotor disability should have disability less than 50% and for visual and speech and hearing disability a candidate should have disability percentage less than 40 %.

3. He/she has to furnish at the time of submission of application form, a certificate of physical fitness from a registered medical practitioner and two references from persons other than relatives testifying to satisfactory general character.
4. During subsequent counseling the seat will be allotted as per the merit of the candidate depending on the availability of seats on that particular day

OBJECTIVES:

1. To detect & evaluate anatomical, patho-physiological and psychosomatic impairments resulting in physical dysfunction in various age groups, occupations & arrive at appropriate diagnosis with evidence-based practice.
2. Able to be a prominent member of the multidisciplinary physiotherapy team and treat all the conditions which need physiotherapeutic procedures.
3. Able to provide adequate knowledge about the treatment procedures and its benefit.
4. Able to undertake independent research in the field of physiotherapy. He / She will be able to prepare project proposal with selected research design and interpret the evaluated outcome measures (using sound data processing techniques and statistical methods). He/she will be able to practice in his / her specialty area with advanced knowledge and skills.
5. To ensure quality assurance & motivate the client & her/his family for desirable client compliance.
6. To practice professional autonomy & ethical principles with referral as well as first contact clients in conformity with ethical code for Physiotherapists.
7. Learn multidisciplinary practice skills.
8. To be able to select strategies for cure & care; adopt restorative & rehabilitative measures for maximum possible independence of a client at home, work place & in the community independently.
9. On successful completion of M.P.T programme, the Physiotherapist professional will be able to take up physiotherapy teaching assignments independently for undergraduate teaching programme.
10. Able to improve the health status of society through high-quality patient care and specialty practice.

SCOPE OF PROGRAMME:

Following Job Prospective Are There:

1. Consultant Physiotherapist in Multi-specialty Hospitals, Health Care Centres, NGOs
2. Assistant professor in education institutes
3. Corporate Physiotherapist in MNCs
4. Entrepreneurs in Rehabilitation Centres/ Organizations
5. PhD scholar in India and overseas
6. Jobs in various prestigious public organizations.
7. Sports Physiotherapists along with Sports Associations, Sports Team, individually hired physiotherapists by elite athletes
8. Health Care Physiotherapy Instructor in Modern Gymnasiums.
9. Ergonomic Care Advisor
10. Physiotherapist in Special Schools for Physically Challenged Children or old age homes.

PROGRAM STRUCTURE:

Broad categories of courses to be studied over the entire duration of the Master of Physiotherapy (MPT) Program are as follows:

Course Category	
FC	Foundation Course
CC	Core Course
VAC	Value Added Course
AECC	Ability Enhancement Compulsory Course
SEC	Skill Enhancement Course

SCHEME OF EXAMINATION:

- There shall be an examination at the end of semester.
- Each subject shall carry 100 marks out of which 40marks will be internal assessment and 60 marks for the annual examination.
- The marks of the internal assessment will be given by the teacher In charge / HOD on the basis of the performance of the candidate throughout the year and any other assessment like seminars.
- Eligibility for appearing in final examination: Candidates are supposed to take part in seminars, journal club, case Presentations and group discussions regularly.
- In order to pass in a subject a candidate has to secure 40% marks in theory and practical separately, aggregate of the year 50%.
- The successful candidates shall be classified as under on the basis of aggregate marks obtained in the final examinations.

- Practical: The practical exams will be held preferably before / after immediate theory exams. Where a training / field study is included in the syllabus (which is to be evaluated at Institute / University level), the same should be completed before the close of the final semester. All Institutes / Departments running the program will follow this strictly.
- In order to be declared as “Pass”, a candidate shall have to obtain a minimum of 40% of internal marks.

Minimum qualifying marks for Pass in final year.

Each Paper 40%. Aggregate 50%

- Divisions
 - a) First division 60% and above in aggregate.
 - b) Second division 50% and above but less than 60%
 - c) Distinction is to be mentioned if a candidate obtains a total of 75% or more in aggregate in single attempt (without the award of grace marks to pass in any paper).

5% marks if he fails in only one theory paper but obtains the minimum aggregate marks required for passing without considering the grace marks. Grace marks will not be awarded for internal assessment. If the 5% marks work out to be fraction / decimal, it will be rounded off to the next higher number (eg. 1.25 to be rounded off as 2 marks).

* Candidates are allowed in the Back Paper. Candidates who have already passed the papers. But wishing to improve their performance is also allowed to appear.

Where a candidate secures marks less than those obtained in the first attempt (applicable in case of improvement, not failure candidates) the better of the two marks will be considered for the purpose of the final results. Theory or Practical shall be considered as a paper.

Where a student fails in a project (if included in course of study) or fails to submit in the specified time, he / she shall be allowed to resubmit the same in the next year (when the related examination falls due next) on payment of the required back paper fee.

Supplementary Exam : Any candidate who fails in two or less than two courses can appear in the supplementary examination conducted by the University within six months of declaration of result. Practical for this purpose will be considered as a separate paper.

Any candidate failing in more than two papers would be considered as a failed shall have to reappear in the next examinations as Ex. – student

EXAMINATION PATTERN:

- * All the theory papers in each semester will carry 100 marks out of which 40 marks will be for internal assessment and 60 marks for final examination.
- * The practical examination will be of 100 marks. The practical & viva-voce in each subject will carry 40 marks as internal & 60 marks in final examination.
- * The final examination will be of 60 marks.
- * Equal distribution of marks / questions for each unit of a single subject.
- * The duration of final examination shall be 2 hrs

DISSERTATION

Each candidate will have to carry out of a dissertation on the related subject. The dissertation will be guided by one or two members of the faculty of physiotherapy of the department. 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 HOD office with the result.

Prior to dissertation, the topic needs to be approved in synopsis presentation. The synopsis shall be sent through the proper channel duly approved by the guide, HOD, Principal with in the first semester.

The examiners appointed by the university shall value the final dissertation at the end of 4th semester.

Course Details for M.P.T Program

1st SEMESTER

Sl.No.	Course code	Subject name	Course Category	Contact Hours/Week		Credits	TEACHING HRS
				T	P		
1.	MPT-101	REVIEW OF BASIC THERAPEUTICS	FC	3	-	3	45
2.	MPT-102	BIOMECHANICS & THERAPEUTICS-I	FC	3	-	3	45
3.	MPT-103	LAWS, ETHICS, ADMINISTRATION AND EDUCATION TECHNOLOGY	CC	3	-	3	45
4.	MPT-104	PRACTICAL/ SKILL ACQUISITION AND REFINEMENT	AEC		2	2	30
5.	MPT-105	CLINICAL TRAINING	SES		10	10	450
Total				09	12	22	665

2ND SEMESTER

Sl.No.	Course code	Subject name	Course Category	Contact Hours/Week		Credits	TEACHING HRS
				T	P		
1.	MPT-201	BIOMECHANICS & THERAPEUTICS-II	FC	3	-	3	45
2.	MPT-202	EXERCISE PHYSIOLOGY	CC	3	-	3	45
3.	MPT-203	RESEARCH METHODOLOGY AND BIOSTATISTICS	CC	3	-	3	45
4.	MPT-204	PRACTICAL/ SKILL ACQUISITION AND REFINEMENT	AEC		2	2	30
5.	MPT-205	CLINICAL TRAINING	SES		10	10	450
Total				09	12	22	665

MPT101: REVIEW OF BASIC THERAPEUTICS

Code No.	Course Outcome
MPT101.1	Able to describe basic laws and components of electric currents and its applications
MPT101.2	Discuss therapeutic and physiological effects of heat, cold and other therapeutic modalities and methods of application
MPT101.3	Demonstrate manual techniques and exercises for Physiotherapy management
MPT101.4	Formulation of exercise programmes for management of Musculoskeletal, neurological, cardiovascular and sports specific groups

Course Contents:

Unit –I: Electrophysiology & Electrotherapy

1. Gen. Review of low, medium & high frequency currents frequencies and associated modalities
2. Safety considerations in electrotherapy
3. Electrical properties of muscle and nerve and Instrumentation for neuromuscular electrical stimulation.
4. Review of Radiation therapy: UVR and IRR
5. Ultrasound, Phonophoresis and its advance application.
6. Diathermy and Cryotherapy
7. Microcurrents
8. Advances in PEME & MWD
9. Lasers: Production and types. Effects, application, indications & contraindications and recent advances.

Unit – II :Exercise Therapy

1. Assessment techniques, functional assesment and reeducation
2. Stretching
3. Strengthening and Re-education
4. Balance and co-ordination exercises
5. Relaxation and soft tissue manipulation
6. PNF
7. Hydrotherapy
8. Aerobic exercises

Reference Books:

Units	Text Books: -
Unit I	Clayton's Electro Therapy
	Electro therapy Explained – by Low &Reed
	Electro Therapy – by Kahn
Unit II	Electrotherapy – Sheila Kitchen
	Therapeutic Exercise Colby Kisner
	Principles of Exercise Therapy – Dena Gardiner
	Measurement of joint motion – C. J. Norkins

MPT102: BIOMECHANICS AND THERAPEUTICS-I

Code No.	Course Outcome
MPT102.1	Acquire the knowledge of kinetics and kinematics of various joint motions and posture.
MPT102.2	Prescribe ergonomically titrations and orthotics and prosthetics using biomechanical principles.
MPT 102.3	Application of advance therapeutics like PRT, MFR, EMG, & NCV.

Course Contents:

UNIT -1: Biomechanics & Clinical Kinesiology

1. Biomechanics of Tissues and structures of the musculoskeletal system and clinical application.
2. Normal and applied Biomechanics of cervical and thoracic Spine, Upper extremity
3. Clinical kinesiology of posture.

Unit – II: Bio-Engineering

1. Various types of orthotics & it uses (limbs & Spines).
2. Various types of prosthesis, patient's preparation and application

Unit – III: Advance Therapeutics

- Positional Release Technioques
- Myofascial Release
- EMG, NCV And Biofeedback

Reference Books:

Unit: 1

Units	Text Books:
Unit I	Electro therapy Explained – by Low & Reed
	Joint Structure and Function- Levangie Pamela K
Unit II	Electro therapy Explained – by Low & Reed
	Joint Structure and Function- Levangie Pamela K
	Basic Biomechanics of The Musculoskeletal System- Nordin Margareta
	Electro Therapy – by Kahn
	Orthotics & Prosthetics in Rehabilitation.- Lusardi, Jorge and Nielsen
Unit III	Joint Structure and Function- Levangie Pamela K
	Basic Biomechanics of The Musculoskeletal System- Nordin Margareta
	Electro Therapy – by Kahn
	Orthotics & Prosthetics in Rehabilitation.- Lusardi, Jorge and Nielsen
	The Myofacial Release Manual- Carol Manheim
	Positional Release Techniques- Leon Chaitow

MPT103: LAWS, ETHICS, ADMINISTRATION AND EDUCATION TECHNOLOGY

Code No.	Course Outcome
MPT103.1	Acquire the knowledge about ethics, laws, principles of practice in physiotherapy
MPT103.2	Apply the knowledge of management and administration in physiotherapy practice
MPT103.3	Analyze the concepts of education, teaching and learning in physiotherapy
MPT103.4	Develop a proper learning intended curriculum for physiotherapy profession.

Course Contents:

UNIT-1: ETHICS AND LAW IN PHYSIOTHERAPY

- Principles of ethics History and evolution of ethics. Autonomy, Beneficence, Non-maleficence,
- Professionalism. Ethics in professional practice. Principles of practice in Physiotherapy profession. Privacy, confidentiality, shared decision making, informed consent, equality and equity, justice
- ICMR Guidelines General principles, Responsible conduct of research, Risk benefit assessment. Conflict of Interest. Laws governing physiotherapy practice.

UNIT-II: ADMINISTRATION IN PHYSIOTHERAPY

- Principles and applications of Management and Administration to Physio Therapy practice
- Management process: planning, organizing, staffing, finance, marketing, controlling, directing.
- Quality assurance. Communication. Hospital as an organization: functions. Management of teaching Institution.
- Entrepreneurship in Physiotherapy Practice.

UNIT-III: EDUCATION TECHNOLOGY

- Education, Agencies of education, Formal and informal education, essentials of physiotherapy education, NEP.
- Basics of Adult Learning Theories and Motivation.
- Concept of teaching-learning process. Teaching skills and Teaching Methods. Teaching aids and educational technology
- Curriculum. factors affecting curriculum, Types of curriculum, Competency based education (CBE) and out- come based education (OBE). steps of curriculum development and curriculum evaluation
- Assessment and evaluation in teaching. Faculty development, continuing professional education.

Reference Books:

Units	Text Books
Unit I	Understanding Medical Education:Evidence
	Principles of Medical Education. Editor(s):TejinderSingh
	3. Reflections on Medical Law and Ethics in India. B Sandeepa Bhat
	4. Law of Medical Negligence and CompensationR K Bag
Unit II	Principles of Medical Education. Editor(s):TejinderSingh
	Reflections on Medical Law and Ethics in India. B Sandeepa Bhat
	4. Law of Medical Negligence and CompensationR K Bag
Unit III	Understanding Medical Education:Evidence
	Principles of Medical Education. Editor(s):TejinderSingh
	Reflections on Medical Law and Ethics in India. B Sandeepa Bhat
	Law of Medical Negligence and CompensationR K Bag
Unit IV	Reflections on Medical Law and Ethics in India. B Sandeepa Bhat
	Law of Medical Negligence and CompensationR K Bag
	Communication & Education Technology. Joginder vati

MPT104: PRACTICAL

Code No.	Course Outcome/Contents
	At the end of the course, the learner should be able to:
MPT102.1	Take appropriate patient history in the prescribed format.
MPT102.2	Select an appropriate outcome measure and correlate patient examination findings.
MPT102.3	Use appropriate Physiotherapeutic Technique/approaches to treat patients.
MPT102.4	Discuss the recent management approaches for common conditions and elaborate on best practice model for patient centered care

UNIT I: ELECTRODIAGNOSTIC AND THERAPEUTICS

1. Subjective assessment of patient
2. Objective assessment of patient
3. Special tests and diagnostic procedures
4. Practice of physiotherapy techniques:
 - EMG, NCV and Biofeedback
 - Ultrasound, Phonophoresis, Diathermy and Cryotherapy
 - Microcurrents
 - Advances in PEME & MWD
 - LASER

UNIT 2: EXERCISE THERAPY AND ADVANCE THERAPEUTICS

1. Subjective assessment of patient
2. Objective assessment of patient
3. Special tests and diagnostic procedures
4. Practice of physiotherapy techniques
 - Positional Release Techniques
 - Myofascial Release
 - Stretching
 - Strengthening and Re-education
 - Balance and co-ordination exercises
 - Relaxation and soft tissue manipulation
 - PNF
 - Hydrotherapy
 - Aerobic exercises
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MPT105: CLINICAL TRAINING

Code No.	Course Outcome/Contents
MPT105.1	Take appropriate patient history in the prescribed format.
MPT105.2	Select an appropriate out come measure and correlate patient examination findings.
MPT105.3	Use appropriate Physiotherapeutic Technique/approaches to treatpatients.
MPT105.4	Discuss the recent management approaches for common conditions and elaborate on best practice model for patient centered care

PRACTICAL EXPOSURE:

- Introduction to Screening for Referral In Physiotherapy
- Subjective assessment of patient
- Objective assessment of patient
- Special tests and diagnostic procedures
- Practice of physiotherapy techniques

CLINICAL TRAINING-

- Clinical training in any hospital set up.
- Case presentations and documentation of rehabilitation protocol

MPT201: BIOMECHANICS AND THERAPEUTICS-II

Code No.	Course Outcome
MPT201.1	Acquire the knowledge of kinetics and kinematics of various joint motions and Gait.
MPT201.2	Application of manual therapy exercises like Cyriax, Maitland, Mulligan.
MPT201.3	Apply protocol of advance therapeutic techniques like MET, NDT, Neurodynamic
MPT201.4	Prescribe ergonomically titrations and orthotics and prosthetics using biomechanical principles.

Course Contents:

UNIT -1: Biomechanics & Clinical Kinesiology

1. Normal and applied Biomechanics of Lumbar and sacral Spine, Lower extremity.
2. Biomechanics and patho-mechanics of gait.

Unit – II: Manual Therapy:

1. Cyriax Mobilization
2. Maitland Mobilization
3. Mulligan Mobilization

Unit-III: ADVANCE THERAPEUTICS

1. Muscle Energy technique
2. Neurological Approaches
3. Neurodynamic

Reference Books

Units	Text Books:-
Unit I	Muscle energy Technique- Sasha Chaitow, Sandy Fritz
	Joint Structure and Function- Levangie Pamela K
	The Mulligan Concept of Manual Therapy. Brian Mulligan
	Treatment by manipulation, message and injection. James Cyriax
Unit II	Muscle energy Technique- Sasha Chaitow, Sandy Fritz
	Joint Structure and Function- Levangie Pamela K
	The Mulligan Concept of Manual Therapy. Brian Mulligan
	Treatment by manipulation, message and injection. James Cyriax
Unit III	Joint Structure and Function- Levangie Pamela K
	The Mulligan Concept of Manual Therapy. Brian Mulligan
	Muscle energy Technique- Sasha Chaitow, Sandy Fritz

MPT202: EXERCISE PHYSIOLOGY

Code No.	Course Outcome/Contents
MPT202.1	Describe concepts of exercise Physiology
MPT202.2	Able to discuss Health benefits of a consistent exercise program and the health risks associated with inactivity
MPT202.3	Acquire the knowledge of physiological/systemic changes that occur during exercise
MPT202.4	. Assess and prescribe exercise protocol in special populations like Geriatrics, athletes, obese, pregnancy and in various systemic conditions like hypertension and respiratory conditions.

Course Contents:

Unit -1 Introduction to Exercise Physiology

1. History of Exercise Physiology, Basic concepts
2. Bioenergetics of exercise
3. Nutrition in exercise

Unit II-Energy Transfer

1. Human energy transfer during physical activity and its concepts.
2. Classification of Physical Activities by energy expenditure, Concept of MET, measurement of energy cost of exercise.
3. Basal metabolic and resting metabolic rates and factors affecting them

Unit III- The Physiologic Support Systems

1. Pulmonary system
2. Cardiovascular system
3. Neuromuscular system
4. Endocrine system

Unit IV- Exercise Training and Adaptations

1. Training the anaerobic and aerobic energy systems
2. Training muscles to become stronger
3. Factors affecting physiologic function

Reference Books:

Units	Text Books
Unit I	Exercise physiology.- McArdle, Katch and Katch
	Essentials of Exercise physiology- Shyamal Koley
Unit II	Exercise Physiology- Sandhya Tiwari
Unit III	Exercise physiology.- McArdle, Katch and Katch
	Essentials of Exercise physiology- Shyamal Koley
	Exercise Physiology- Sandhya Tiwari
Unit IV	Essentials of Exercise physiology- Shyamal Koley
	Exercise Physiology- Sandhya Tiwari

MPT203: RESEARCH METHODOLOGY AND BIOSTATISTICS

Code No.	Course Outcome
MPT203.1	Acquire knowledge of research, design and literature.
MPT203.2	Differentiate between types of research.
MPT203.3	Select an appropriate study design based on research question.
MPT203.4	Identify ethical issues in research, statistical significance and applied statistics
MPT203.5	Formulate a proper research writing and report writing technique

Course Contents:

Unit I: RESEARCH METHODOLOGY

1. Introduction to research
2. Types of research
3. Defining a research question
4. Qualitative study designs
 - a. Grounded theory and Phenomenological methods.
5. Use of Delphi process
6. Quantitative study
7. Type I and type II bias
8. Study design: types
 - a. Case study, Case series, longitudinal cohort, Pre post design, Time series design, repeated measures design, Randomized control design.
 1. Sampling design, calculating minimum sample size based on design
 2. Measurement: Properties of measurement: reliability, validity, responsiveness, MCID.
 3. Outcome measures: Use of outcome measures in rehabilitation research
 4. Research Methods: Designing methodology, Reporting results, Type I and Type II bias.
 5. Communicating research.
 6. Evaluating published research: looking at the evidence
 7. Introduction to evidence based practice, evaluating evidence,
 8. Asking clinical questions
 9. Translating of evidence into practice: strategies
 10. Use of clinical practice guidelines, clinical pathways, prediction rules to inform practice.

Unit II: APPLIED BIOSTATISTICS

1. Descriptive Statistics and measurement variability
2. Statistical inference
3. Comparison of group means: T-test
4. Analysis of variance

5. Multiple comparison tests
6. Non parametric tests
7. Correlations
8. Regression
9. Analysis of frequencies: Chi square
10. Statistical measure of reliability
11. Power analysis – Determining sample size
12. Epidemiological Measures – Rate, Ratio, Proportion, Incidence and prevalence, Relative risk, Risk ratio, Odds ratio

Unit III: SCIENTIFIC WRITING

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).
2. Publication – Role of author, Guide, Co-authors.
3. Structure, Style and contents; Style manuals (APA, MLA); Citation styles: Footnotes, References; Evaluation of research
4. Significance of Report writing; Different steps in Report writing; Mechanics and precautions of writing research reports Oral and poster presentation of research papers in conferences/symposia; Preparation of abstracts.
5. Structure of Thesis and Content – Preparing Abstracts.

Reference Books:

Units	Text Books
Unit I	Jyotikumar Biostatistics
	Research Methodology- Kothari
	Biostatistics -with Latest Mcqs - Negi, K.s
Unit II	Biostatistics -with Latest Mcqs - Negi, K.s
	Methods Of Biostatistics- Rao T Bhaskara
	Principles And Practice Of Biostatistics- Dixit J V
Unit III	Jyotikumar Biostatistics
	Research Methodology- Kothari

MPT204: PRACTICAL

Code No.	Course Outcome/Contents
	At the end of the course, the learner should be able to:
MPT102.1	Take appropriate patient history in the prescribed format.
MPT102.2	Select an appropriate outcome measure and correlate patient examination findings.
MPT102.3	Use appropriate Physiotherapeutic Technique/approaches to treat patients.
MPT102.4	Discuss the recent management approaches for common conditions and elaborate on best practice model for patient centered care

- Subjective assessment of patient
- Objective assessment of patient
- Special tests and diagnostic procedures
- Practice of physiotherapy techniques:

Unit – I: Manual Therapy:

4. Cyriax Mobilization
5. Maitland Mobilization
6. Mulligan Mobilization

Unit-II: ADVANCE THERAPEUTICS

4. Muscle Energy technique
5. Neurological Approaches
6. Neurodynamic

Reference Books

Text Books:-
Muscle energy Technique- Sasha Chaitow, Sandy Fritz
Joint Structure and Function- Levangie Pamela K
The Mulligan Concept of Manual Therapy. Brian Mulligan
Treatment by manipulation, message and injection. James Cyriax
Muscle energy Technique- Sasha Chaitow, Sandy Fritz
Joint Structure and Function- Levangie Pamela K
The Mulligan Concept of Manual Therapy. Brian Mulligan
Treatment by manipulation, message and injection. James Cyriax
Joint Structure and Function- Levangie Pamela K
The Mulligan Concept of Manual Therapy. Brian Mulligan
Muscle energy Technique- Sasha Chaitow, Sandy Fritz