

GURU KASHI UNIVERSITY



Master of Physiotherapy (M.P.T.)

in Musculoskeletal Sciences

Session: 2026-27

Faculty of Allied and Healthcare

**SCHEME OF STUDY: MASTER OF PHYSIOTHERAPY (M.P.T.) in
Musculoskeletal Sciences**

PROGRAMME LEARNING OUTCOMES

Master of Physiotherapy in Musculoskeletal Sciences M.P.T(MS)

A Postgraduate Degree in Physiotherapy is awarded to students who have demonstrated advanced competency-based learning outcomes corresponding to Level 6.5/7 of the National Higher Education Qualification Framework and NCAHP curriculum.

Element of the Descriptor	Programme Learning Outcomes relating to M.P.T
Knowledge and understanding	The graduates shall acquire advanced theoretical and clinical knowledge in their respective specialty areas, research methodology, evidence-based practice, advanced diagnostics, rehabilitation sciences, healthcare management, and contemporary physiotherapy interventions.
General, technical and professional skills required to perform and accomplish tasks	The graduates shall demonstrate advanced competency in specialized clinical assessment, rehabilitation planning, evidence-based intervention, critical clinical reasoning, teaching-learning methodologies, research implementation, healthcare leadership, and interdisciplinary collaboration.
Application of knowledge and skills	The graduates shall independently apply advanced physiotherapy knowledge and clinical expertise in specialty practice, rehabilitation research, patient management, academic training, and healthcare administration.
Generic learning outcomes	The graduates shall demonstrate advanced communication skills, leadership, mentorship, research aptitude, ethical professionalism, lifelong learning attitude, critical thinking, and innovation in healthcare practice.
Constitutional, humanistic, ethical, and moral values	The graduates shall practice with integrity, social accountability, professional ethics, inclusiveness, patient advocacy, empathy, and respect for human rights and dignity.
Employability and job-ready skills, and entrepreneurship	The graduates shall develop advanced employability skills for clinical specialization,

skills and capabilities/qualities and mindset	teaching, research, healthcare management, consultancy, entrepreneurship, and independent specialty practice.
Credit requirements	Successful completion of prescribed theory credits, clinical training, dissertation work, competency-based assessments, specialty practical examinations, and university evaluation requirements.
Entry requirements	Candidates possessing Bachelor of Physiotherapy (BPT) degree from a recognized institution and fulfilling eligibility requirements prescribed by the university/NCAHP guidelines.

First Year M.P.T Examination Scheme

Component	Learning Outcomes
Advanced Knowledge	Acquire advanced knowledge in ethics, administration, educational methodology, biomechanics, research methodology, evidence-based practice, and specialty-specific clinical sciences.
Clinical Competency	Demonstrate advanced clinical assessment, physical diagnosis, functional evaluation, and specialty-specific rehabilitation planning.
Research Competency	Develop competency in research methodology, literature review, scientific writing, biostatistics, and dissertation planning.
Professional Skills	Demonstrate advanced communication, leadership, teaching aptitude, ethical conduct, and interdisciplinary teamwork.

S.No .	Course Code	Course Title	L	T	P	No. of Credits	Internal Examination		External Examination		Total Marks
							Theor y	Practical	Theor y	Practical	
1.	M.P.T(MS)-101	Laws, Ethics, Administration & Educational Methodology (LEM)	6	0	0	6	50*	-	100	-	100
2.	M.P.T(MS)-102	Research methodology and biostatistics, EBP (RMB)	6	0	0	6	50*	-	100	-	100
3.	M.P.T(MS)-103	Biomechanics & Therapeutics (BCT)	6	0	0	6	50*	-	100	-	100
4.	M.P.T(MS)-104	Clinical, Physical and Functional diagnosis in Musculoskeletal physiotherapy (MCPFD)	8	0	8	12	50*	50*	100	-	100
5.	M.P.T(MS)-105	Skills Acquisition & Refinement (SAR-I)	0	0	16	8	-	50*	Non Creditable Marks		
6.	M.P.T(MS)-106	Clinical Training (CT-I)	0	0	46	23	-	50*	Non Creditable Marks		
7.	M.P.T(MS)-107	Dissertation (DSS-I)	0	0	6	3	-	50*	Non Creditable Marks		
	Grand Total		26	0	76	64	-	-	400		400

* Non Creditable Marks

The practical competencies of M.P.T(MS)-104, shall be assessed through the Comprehensive Final University Practical Examination conducted at the end of the programme as prescribed by NCAHP.

Second Year M.P.T Examination Scheme

Component	Learning Outcomes
Advanced Specialty Practice	Demonstrate advanced expertise in musculoskeletal rehabilitation, ergonomic assessment, sports injury rehabilitation, advanced therapeutic exercise, and evidence-based orthopedic physiotherapy.
Clinical Decision Making	Apply independent clinical reasoning, advanced rehabilitation planning, outcome measurement, and specialty-based patient management.
Research and Innovation	Conduct dissertation research and critically evaluate contemporary evidence in musculoskeletal physiotherapy.
Professional Development	Demonstrate leadership, teaching competency, clinical supervision skills, and lifelong learning attitude.

S.N o.	Course Code	Course Title	L	T	P	No. of Credits	Internal Examination		External Examination		Total Marks
							Theory	Practical	Theory	Practical	
1.	M.P.T(MS)-201	Exercise Physiology (EP)	6	0	0	6	50*	-	100	-	100
2.	M.P.T(MS)-202	Musculoskeletal Physiotherapy (MSK)	8	0	8	12	50*	50*	100	-	100
3.	M.P.T(MS)-203	Recent Advances and Evidence Based Practice in Musculoskeletal Physiotherapy (MRAEB)	8	0	8	12	50*	50*	100	-	100
4.	M.P.T(MS)-204	Dissertation (DSS-II)	0	0	44	22	-	50*	-	-	-
5.	M.P.T(MS)-205	Skills Acquisition & Refinement (SAR-II)	0	0	16	8	-	50*	Non Creditable Marks		
6.	M.P.T(MS)-	Clinical Training	0	0	40	20	-	50*	Non Creditable Marks		

	206	(CT-II)									
	Practical										
7.	Long case= 1	M.P.T(MS)-104 M.P.T(MS)-202 M.P.T(MS)-203 M.P.T(MS)-204								150	150
8.	Short case= 2									150	150
9.	OSCE /OSP E									100	100
10.	Disser tation									50	50
	Grand Total		22	0	116	80	-	-	300	450	750

The practical competencies of M.P.T(MS)-104, M.P.T(MS)-202, M.P.T(MS)-203 and M.P.T(MS)-204 shall be assessed through the Comprehensive Final University Practical Examination conducted at the end of the programme as prescribed by NCAHP.

First Year**COURSE CODE: M.P.T(MS)-101****COURSE TITLE: Laws, Ethics, Administration & Educational Methodology-Theory****Credits: 6****Total Hours: 90****LEM 1.0 Subject Description**

This course is designed to provide postgraduate physiotherapy students with comprehensive knowledge of professional ethics, legal responsibilities, healthcare administration, educational methodology, and entrepreneurship relevant to advanced physiotherapy practice. The course emphasizes ethical decision-making, professional conduct, research ethics, institutional governance, healthcare management principles, quality assurance, communication skills, and educational strategies required for clinical teaching and leadership roles. It also develops competencies in curriculum planning, adult learning principles, assessment strategies, and administration of physiotherapy services. The course prepares students to function effectively as clinicians, educators, researchers, managers, and healthcare leaders while adhering to legal and ethical standards prescribed by national and international regulatory bodies.

LEM 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Explain the historical evolution and principles of ethics applicable to healthcare professions. (K)
2. Demonstrate understanding of professional conduct and ethical responsibilities in physiotherapy practice. (KH)
3. Apply ethical principles in clinical practice, research, education, and administration. (P)

4. Discuss national and international ethical guidelines governing healthcare research. (KH)
5. Analyze informed consent procedures and ethical issues in vulnerable populations. (KH)
6. Explain the structure and functions of Institutional Ethics Committees. (K)
7. Evaluate ethical challenges and conflict-of-interest situations in professional practice. (KH)
8. Apply principles of healthcare management and administration to physiotherapy services. (P)
9. Demonstrate effective communication and leadership skills in healthcare settings. (SH)
10. Develop teaching-learning plans using contemporary educational methodologies. (P)
11. Formulate learning outcomes and assessment strategies for physiotherapy education. (P)
12. Explore entrepreneurship opportunities and professional development pathways in physiotherapy. (KH)

Competency Levels:

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

LEM 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Seminars
3. Group Discussions
4. Problem-Based Learning
5. Case-Based Learning
6. Self-Directed Learning
7. Journal Club Activities
8. Workshops
9. Role Play
10. Reflective Learning Exercises
11. Educational Technology Demonstrations
12. Assignments and Presentations

LEM 1.0.3 Assessment Methods

1. Multiple Choice Questions (MCQs)
2. Short Answer Questions

3. Long Answer Questions
4. Case-Based Discussions
5. Seminar Presentations
6. Assignments
7. Reflective Reports
8. Viva Voce
9. End Semester Examination

Unit I: Ethics and Professional Practice

Total Hours: 18

LEM 1.1 History and evolution of ethics

LEM 1.2 Helsinki Declaration and Nuremberg Code

LEM 1.3 Principles of ethics:

- Autonomy
- Beneficence
- Non-maleficence
- Justice

LEM 1.4 Professionalism in healthcare

LEM 1.5 Ethics in physiotherapy practice

LEM 1.6 Privacy, confidentiality and patient rights

LEM 1.7 Shared decision-making and informed consent

LEM 1.8 Equality, equity and justice in healthcare

Unit II: Research Ethics and Legal Framework

Total Hours: 18

LEM 2.1 ICMR ethical guidelines

LEM 2.2 Responsible conduct of research

LEM 2.3 Risk-benefit assessment

LEM 2.4 Informed consent process

LEM 2.5 Components of informed consent documentation

LEM 2.6 Special situations and proxy consent

LEM 2.7 Institutional Ethics Committee:

- Constitution
- Functions
- Review process

LEM 2.8 Research involving vulnerable populations

LEM 2.9 Conflict of interest:

- Definition
- Types
- Identification
- Management

LEM 2.10 Publication ethics and plagiarism

LEM 2.11 Authorship guidelines (ICMJE)

LEM 2.12 NCAHP Act

LEM 2.13 Consumer Protection Act

LEM 2.14 Rights of Persons with Disabilities Act

Unit III: Healthcare Administration and Management

Total Hours: 18

LEM 3.1 Principles of management

LEM 3.2 Healthcare administration

LEM 3.3 Planning and strategic management

LEM 3.4 Organizing and staffing

LEM 3.5 Financial management

LEM 3.6 Marketing of healthcare services

LEM 3.7 Leadership and supervision

LEM 3.8 Monitoring and controlling

LEM 3.9 Quality assurance in healthcare

LEM 3.10 Total Quality Management

LEM 3.11 Medical audit

LEM 3.12 Accreditation systems

LEM 3.13 International quality standards

LEM 3.14 Establishment and management of physiotherapy services

Unit IV: Communication and Educational Methodology

Total Hours: 18

LEM 4.1 Communication process

LEM 4.2 Types of communication

LEM 4.3 Written versus oral communication

LEM 4.4 Barriers to communication

LEM 4.5 Principles of effective communication

LEM 4.6 Education: concept, aims and objectives

LEM 4.7 Formal and informal education

LEM 4.8 Educational philosophies

LEM 4.9 Taxonomy of educational objectives

LEM 4.10 Adult learning theories

LEM 4.11 Learning styles and motivation

LEM 4.12 Teaching-learning process

LEM 4.13 Clinical teaching methods

LEM 4.14 Lesson planning and unit planning

LEM 4.15 Educational technology

LEM 4.16 Teaching aids

Unit V: Curriculum Planning and Entrepreneurship

Total Hours: 18

LEM 5.1 Intended Learning Outcomes

LEM 5.2 Tyler's Principles

LEM 5.3 Bloom's Taxonomy

LEM 5.4 Miller's Pyramid

LEM 5.5 Clinical Competence Framework

LEM 5.6 Dreyfus Model of Skill Acquisition

LEM 5.7 Assessment and evaluation methods

LEM 5.8 Curriculum planning

LEM 5.9 Programme evaluation

LEM 5.10 Entrepreneurship in physiotherapy

LEM 5.11 Opportunities in private practice

LEM 5.12 Healthcare consultancy

LEM 5.13 Startup development in rehabilitation services

LEM 5.14 Professional leadership and future trends

Recommended Books

1. Swisher LL, Page CG. Professionalism in Physical Therapy.
2. Purtilo RB, Jensen GM. Ethical Dimensions in Rehabilitation.
3. APTA Guide to Professional Conduct.
4. Basavanthappa BT. Nursing Administration.
5. Gupta SC. Fundamentals of Management.
6. Suresh K Sharma. Educational Technology and Teaching Strategies.
7. ICMR National Ethical Guidelines for Biomedical and Health Research.
8. NCAHP Act and Associated Regulations.
9. Consumer Protection Act of India.
10. UNESCO Handbook on Higher Education Teaching and Learning.

COURSE CODE: M.P.T(MS)-102

COURSE TITLE: Research Methodology, Biostatistics & EBP

Credits: 6

Total Hours: 90

RMB 1.0 Subject Description

This course is designed to develop advanced competencies in research methodology, biostatistics, scientific inquiry, evidence-based practice, and scholarly communication. It enables postgraduate physiotherapy students to formulate research questions, design appropriate research methodologies,

critically appraise scientific literature, analyze quantitative and qualitative data, interpret statistical findings, and translate research evidence into clinical practice. The course also focuses on scientific writing, publication ethics, thesis preparation, and dissemination of research findings. The knowledge and skills acquired through this course will facilitate evidence-informed clinical decision-making and contribute to the advancement of physiotherapy practice and research.

RMB 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Explain the principles and processes of scientific research. (K)
2. Formulate clinically relevant research questions and hypotheses. (KH)
3. Differentiate qualitative and quantitative research methodologies. (KH)
4. Select appropriate study designs for research problems. (P)
5. Apply principles of sampling and sample size estimation. (P)
6. Evaluate reliability, validity, responsiveness, and outcome measures.
(KH)
7. Critically appraise published research literature. (P)
8. Apply evidence-based practice principles in clinical decision-making. (P)
9. Perform statistical analyses using appropriate biostatistical techniques.
(SH)
10. Interpret research findings and statistical outcomes accurately. (P)

11. Prepare scientific manuscripts, reports, abstracts, and dissertations. (P)
12. Demonstrate competency in scientific communication and publication processes. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

RMB 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Seminars
3. Journal Club Discussions
4. Critical Appraisal Exercises
5. Research Proposal Development
6. Group Discussions
7. Computer-Assisted Statistical Analysis
8. Problem-Based Learning
9. Case-Based Learning
10. Workshops on Research and Scientific Writing

11. Self-Directed Learning
12. Literature Review Assignments

RMB 1.0.3 Assessment Methods

1. Multiple Choice Questions (MCQs)
2. Short Answer Questions
3. Long Answer Questions
4. Critical Appraisal Assignments
5. Research Proposal Preparation
6. Statistical Data Analysis Exercises
7. Seminar Presentations
8. Journal Review
9. Viva Voce
10. End Semester Examination

Unit I: Foundations of Research Methodology

Total Hours: 18

RMB 1.1 Introduction to research

RMB 1.2 Importance of research in physiotherapy

RMB 1.3 Types of research

RMB 1.4 Research process

RMB 1.5 Defining a research problem

RMB 1.6 Formulating research questions

RMB 1.7 Hypothesis formulation

RMB 1.8 Variables in research

RMB 1.9 Qualitative research designs

RMB 1.10 Quantitative research designs

RMB 1.11 Ethical considerations in research

RMB 1.12 Literature review and evidence synthesis

Unit II: Research Design and Measurement

Total Hours: 18

RMB 2.1 Study designs and classifications

RMB 2.2 Case study design

RMB 2.3 Case series

RMB 2.4 Cohort studies

RMB 2.5 Longitudinal studies

RMB 2.6 Pre-test and post-test designs

RMB 2.7 Time series designs

RMB 2.8 Repeated measures designs

RMB 2.9 Randomized controlled trials

RMB 2.10 Sampling techniques

RMB 2.11 Sample size calculation

RMB 2.12 Reliability and validity

RMB 2.13 Responsiveness and MCID

RMB 2.14 Outcome measures in rehabilitation research

Unit III: Evidence-Based Practice and Critical Appraisal

Total Hours: 18

RMB 3.1 Designing research methodology

RMB 3.2 Data collection methods

RMB 3.3 Reporting research findings

RMB 3.4 Sources of bias

RMB 3.5 Type I and Type II errors

RMB 3.6 Evaluating published literature

RMB 3.7 Levels of evidence

RMB 3.8 Principles of evidence-based practice

RMB 3.9 Asking clinical questions (PICO framework)

RMB 3.10 Searching scientific databases

RMB 3.11 Critical appraisal of evidence

RMB 3.12 Clinical practice guidelines

RMB 3.13 Clinical pathways

RMB 3.14 Clinical prediction rules

RMB 3.15 Translating evidence into clinical practice

Unit IV: Biostatistics

Total Hours: 18

RMB 4.1 Introduction to biostatistics

RMB 4.2 Descriptive statistics

RMB 4.3 Measures of central tendency

RMB 4.4 Measures of dispersion

RMB 4.5 Inferential statistics

RMB 4.6 Hypothesis testing

RMB 4.7 t-tests

RMB 4.8 Analysis of variance (ANOVA)

RMB 4.9 Multiple comparison tests

RMB 4.10 Parametric tests

RMB 4.11 Non-parametric tests

RMB 4.12 Correlation analysis

RMB 4.13 Regression analysis

RMB 4.14 Chi-square test

RMB 4.15 Statistical measures of validity and reliability

RMB 4.16 Factorial design analysis

RMB 4.17 Power analysis

RMB 4.18 Epidemiological measures:

- Rate
- Ratio
- Proportion
- Incidence
- Prevalence
- Relative Risk
- Odds Ratio

RMB 4.19 Application of statistical software

Unit V: Scientific Writing and Dissertation Preparation

Total Hours: 18

RMB 5.1 Scientific communication

RMB 5.2 Types of scientific documents

RMB 5.3 Research papers

RMB 5.4 Review articles

RMB 5.5 Conference papers

RMB 5.6 Thesis and dissertation writing

RMB 5.7 Project reports

RMB 5.8 Role of authors, guides, and co-authors

RMB 5.9 Structure of scientific manuscripts

RMB 5.10 Citation and referencing styles

RMB 5.11 APA style

RMB 5.12 MLA style

RMB 5.13 Abstract writing

RMB 5.14 Oral presentation of research

RMB 5.15 Poster presentation

RMB 5.16 Research report writing

RMB 5.17 Thesis structure and formatting

RMB 5.18 Dissertation planning and preparation

Recommended Books

1. Portney LG, Watkins MP. Foundations of Clinical Research: Applications to Practice.
2. Hicks CM. Research Methods for Clinical Therapists.
3. Domholdt E. Rehabilitation Research: Principles and Applications.
4. Jewell DV. Guide to Evidence-Based Physical Therapist Practice.
5. Mahajan BK. Methods in Biostatistics.

6. Daniel WW, Cross CL. Biostatistics: A Foundation for Analysis in the Health Sciences.
7. Katz DL. Clinical Epidemiology and Evidence-Based Medicine.
8. Greenhalgh T. How to Read a Paper: The Basics of Evidence-Based Medicine.
9. APA Publication Manual.
10. ICMJE Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work.

COURSE CODE: M.P.T(MS)-103

COURSE TITLE: Biomechanics & Therapeutics

Credits: 6

Total Hours: 90

BCT 1.0 Subject Description

This course provides advanced knowledge of biomechanics, kinesiology, movement analysis, therapeutic exercise, electrotherapeutic interventions, and evidence-based rehabilitation techniques applicable to musculoskeletal physiotherapy practice. The course emphasizes biomechanical principles governing human movement, kinetic and kinematic analysis, gait assessment, ergonomics, therapeutic exercise prescription, electrodiagnostic procedures, and advanced physiotherapy interventions. Students will develop competencies in clinical reasoning, movement dysfunction analysis, selection of therapeutic techniques, and application of advanced rehabilitation technologies to optimize functional outcomes in patients with musculoskeletal disorders.

BCT 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Explain advanced biomechanical principles governing human movement and function. (K)
2. Analyze kinetics and kinematics of normal and pathological movement patterns. (KH)
3. Interpret biomechanical assessment findings for clinical decision-making. (P)
4. Evaluate movement dysfunctions using advanced biomechanical tools. (SH)
5. Analyze gait and posture using quantitative and qualitative methods. (P)
6. Apply ergonomic principles in injury prevention and rehabilitation. (P)
7. Prescribe advanced therapeutic exercise programs based on biomechanical principles. (P)
8. Demonstrate proficiency in proprioceptive neuromuscular facilitation and functional re-education techniques. (SH)
9. Interpret electrodiagnostic investigations relevant to physiotherapy practice. (KH)
10. Apply electrotherapeutic modalities safely and effectively. (P)
11. Integrate evidence-based therapeutic interventions into musculoskeletal rehabilitation. (P)

12. Develop advanced clinical reasoning skills for differential diagnosis and treatment planning. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

BCT 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Laboratory Demonstrations
3. Practical Workshops
4. Clinical Case Discussions
5. Movement Analysis Sessions
6. Video-Based Gait Analysis
7. Problem-Based Learning
8. Journal Club Activities
9. Simulation-Based Learning
10. Skill Demonstrations
11. Self-Directed Learning

12. Clinical Presentations

BCT 1.0.3 Assessment Methods

1. Multiple Choice Questions
2. Short Answer Questions
3. Long Answer Questions
4. Practical Demonstrations
5. Case-Based Discussions
6. Clinical Problem Solving Exercises
7. Assignments
8. Seminar Presentations
9. Viva Voce
10. End Semester Examination

Unit I: Foundations of Biomechanics

Total Hours: 18

BCT 1.1 Introduction to kinesiology and biomechanics

BCT 1.2 Biomechanics of musculoskeletal tissues

BCT 1.3 Mechanical properties of connective tissues

BCT 1.4 Principles of biomechanics

BCT 1.5 Force systems and mechanical loading

BCT 1.6 Levers and torque

BCT 1.7 Center of gravity and stability

BCT 1.8 Nature and importance of biomechanics in physiotherapy

BCT 1.9 Kinetics and kinematics of human movement

BCT 1.10 Introduction to biomechanical analysis

Unit II: Biomechanical Analysis of Human Movement

Total Hours: 17

BCT 2.1 Methods of kinetic investigation

BCT 2.2 Methods of kinematic investigation

BCT 2.3 Instrumentation in biomechanics

BCT 2.4 Isokinetic dynamometry

BCT 2.5 Kinesiological electromyography

BCT 2.6 Electronic goniometry

BCT 2.7 Force platform analysis

BCT 2.8 Videography and motion analysis

BCT 2.9 Upper extremity biomechanics:

- Shoulder complex
- Elbow joint
- Wrist and hand

BCT 2.10 Lower extremity biomechanics:

- Pelvis
- Hip
- Knee

- Ankle and foot

BCT 2.11 Spinal biomechanics

Unit III: Gait, Ergonomics and Functional Movement

Total Hours: 18

BCT 3.1 Normal gait cycle

BCT 3.2 Kinetic analysis of gait

BCT 3.3 Kinematic analysis of gait

BCT 3.4 Pathological gait patterns

BCT 3.5 Gait deviations and compensatory mechanisms

BCT 3.6 Functional movement analysis

BCT 3.7 Ergonomic principles

BCT 3.8 Manual handling techniques

BCT 3.9 Safe lifting techniques

BCT 3.10 Workspace design and ergonomics

BCT 3.11 Patient positioning

BCT 3.12 Body mechanics

BCT 3.13 Transfer techniques

Unit IV: Therapeutic Exercise and Manual Therapy Approaches

Total Hours: 19

BCT 4.1 Principles of therapeutic exercise

BCT 4.2 Dynamic exercises

BCT 4.3 Plyometric exercises

BCT 4.4 Isokinetic exercises

BCT 4.5 Kinetic chain exercises

BCT 4.6 Balance and coordination training

- BCT 4.7 Response of tissues to mechanical loading
- BCT 4.8 Biophysics of contractile tissues
- BCT 4.9 Biophysics of non-contractile tissues
- BCT 4.10 Functional assessment and re-education
- BCT 4.11 Clinical reasoning in musculoskeletal practice
- BCT 4.12 Maitland concept
- BCT 4.13 Kaltenborn concept
- BCT 4.14 Cyriax approach
- BCT 4.15 Mulligan concept
- BCT 4.16 McKenzie approach
- BCT 4.17 Proprioceptive Neuromuscular Facilitation (PNF)
- BCT 4.18 Hydrotherapy techniques
- BCT 4.19 Yoga in rehabilitation:
- Historical background
 - Asanas
 - Pranayama
 - Therapeutic applications

Unit V: Electrodiagnosis and Advanced Therapeutics

Total Hours: 18

- BCT 5.1 Principles of electrodiagnosis
- BCT 5.2 Strength-Duration Curve
- BCT 5.3 Electromyography:
- Technique

- Interpretation

BCT 5.4 Nerve conduction studies:

- Motor nerve conduction velocity
- Sensory nerve conduction velocity

BCT 5.5 Factors affecting nerve conduction

BCT 5.6 Interpretation of electrodiagnostic findings

BCT 5.7 Evoked potentials

BCT 5.8 H-reflex and F-wave studies

BCT 5.9 Visual, auditory and somatosensory evoked potentials

BCT 5.10 Superficial heating modalities

BCT 5.11 Deep heating modalities

BCT 5.12 Ultrasound therapy

BCT 5.13 Cryotherapy

BCT 5.14 Low-frequency currents

BCT 5.15 Diadynamic currents

BCT 5.16 Iontophoresis

BCT 5.17 High-voltage pulsed stimulation

BCT 5.18 TENS

BCT 5.19 Interferential therapy

BCT 5.20 Russian currents

BCT 5.21 LASER therapy

BCT 5.22 Advanced electrotherapeutics in tissue healing

BCT 5.23 Wound management

BCT 5.24 Scar and keloid management

BCT 5.25 Biofeedback applications

Recommended Books

1. Nordin M, Frankel VH. Basic Biomechanics of the Musculoskeletal System.
2. Hamill J, Knutzen KM. Biomechanical Basis of Human Movement.
3. Neumann DA. Kinesiology of the Musculoskeletal System.
4. Magee DJ. Orthopedic Physical Assessment.
5. Kisner C, Colby LA. Therapeutic Exercise: Foundations and Techniques.
6. Hall CM, Brody LT. Therapeutic Exercise.
7. O'Sullivan SB, Schmitz TJ. Physical Rehabilitation.
8. Prentice WE. Therapeutic Modalities in Rehabilitation.
9. Robinson AJ, Snyder-Mackler L. Clinical Electrophysiology.
10. Cameron MH. Physical Agents in Rehabilitation.
11. Basmajian JV. Biofeedback Principles and Practice.
12. Lehmann JF. Therapeutic Heat and Cold.

COURSE CODE: M.P.T(MS)-104

COURSE TITLE: Physical & Functional Diagnosis in Musculoskeletal Sciences

Credits: 12

Total Hours: 240

MCPFD 1.0 Subject Description

This course is designed to develop advanced competencies in clinical examination, physical diagnosis, functional evaluation, differential diagnosis, and clinical decision-making in musculoskeletal physiotherapy. The course emphasizes interpretation of clinical signs and syM.P.Toms, diagnostic imaging, electrodiagnostic investigations, functional assessment, movement analysis, disability evaluation, and evidence-based diagnostic reasoning. Students will acquire specialized knowledge and practical skills necessary for comprehensive assessment, identification of impairments, activity limitations, participation restrictions, and formulation of physiotherapy diagnoses using contemporary clinical frameworks including the International Classification of Functioning, Disability and Health (ICF).

MCPFD 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Perform comprehensive clinical examination and assessment of musculoskeletal disorders. (P)
2. Interpret clinical signs, syM.P.Toms, and special tests relevant to orthopedic practice. (P)
3. Analyze laboratory investigations and diagnostic imaging findings. (KH)
4. Apply principles of differential diagnosis and clinical reasoning. (P)
5. Conduct functional assessments and outcome-based evaluations. (P)
6. Perform electrodiagnostic interpretation relevant to physiotherapy practice. (SH)

7. Evaluate disability, impairment, and participation restrictions using standardized frameworks. (P)
8. Assess posture, gait, fitness, and movement dysfunctions. (P)
9. Apply ICF-based assessment and diagnostic approaches. (P)
10. Identify red flags and conditions requiring medical referral. (P)
11. Develop physiotherapy diagnoses and evidence-based treatment plans. (P)
12. Demonstrate advanced clinical decision-making in musculoskeletal rehabilitation. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

MCPFD 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Clinical Demonstrations
3. Laboratory Sessions
4. Case-Based Learning
5. Problem-Based Learning

6. Clinical Grand Rounds
7. Practical Workshops
8. Objective Structured Clinical Examination Practice
9. Video-Based Assessment
10. Peer-Assisted Learning
11. Journal Club
12. Self-Directed Learning

MCPFD 1.0.3 Assessment Methods

1. MCQs
2. Short Answer Questions
3. Long Answer Questions
4. Objective Structured Clinical Examination (OSCE)
5. Practical Demonstrations
6. Case Presentations
7. Clinical Viva Voce
8. Assignment Submission
9. Logbook Evaluation

10. End Semester Examination

Course Code: M.P.T(MS)-104

Physical & Functional Diagnosis in Musculoskeletal Sciences – Theory

Credits: 8

Total Hours: 120

Unit I: Clinical Decision Making and Diagnostic Foundations

Total Hours: 24

MCPFD 1.1 Clinical decision-making models

MCPFD 1.2 Evidence-informed clinical reasoning

MCPFD 1.3 Team-based approach in rehabilitation

MCPFD 1.4 Foundations of physiotherapy diagnosis

MCPFD 1.5 Patient-centered assessment

MCPFD 1.6 Vital signs assessment and interpretation

MCPFD 1.7 Clinical significance of abnormal vital signs

MCPFD 1.8 Medical screening procedures

MCPFD 1.9 Identification of red flags

MCPFD 1.10 Referral criteria in physiotherapy practice

MCPFD 1.11 Health history taking

MCPFD 1.12 Documentation and clinical records

Unit II: Investigations and Imaging in Physiotherapy

Total Hours: 24

MCPFD 2.1 Laboratory investigations

MCPFD 2.2 Hematological investigations

MCPFD 2.3 Blood biochemistry

MCPFD 2.4 Arterial blood gas analysis

MCPFD 2.5 Pulmonary function testing

MCPFD 2.6 Principles of radiological imaging

MCPFD 2.7 X-ray interpretation

MCPFD 2.8 Computed tomography

MCPFD 2.9 Magnetic resonance imaging

MCPFD 2.10 Ultrasonography

MCPFD 2.11 Electrocardiography

MCPFD 2.12 Diagnostic imaging of musculoskeletal disorders

MCPFD 2.13 Imaging-based clinical decision making

MCPFD 2.14 Sports and doping-related investigations

Unit III: Physical Assessment and Functional Evaluation

Total Hours: 24

MCPFD 3.1 Range of motion assessment

MCPFD 3.2 Muscle strength assessment

MCPFD 3.3 Muscle endurance testing

MCPFD 3.4 Flexibility assessment

MCPFD 3.5 Sensory evaluation

MCPFD 3.6 Coordination assessment

MCPFD 3.7 Equilibrium and non-equilibrium tests

MCPFD 3.8 Functional assessment methods

MCPFD 3.9 Outcome measures

MCPFD 3.10 Reliability and validity of assessment tools

MCPFD 3.11 Cardiac efficiency testing

MCPFD 3.12 Fitness assessment

MCPFD 3.13 Aerobic fitness evaluation

MCPFD 3.14 Anaerobic fitness evaluation

MCPFD 3.15 Assessment of trigger points, tender points, and muscle spasm

Unit IV: Electrodiagnosis and Neurophysiological Assessment

Total Hours: 24

MCPFD 4.1 Principles of electrodiagnosis

MCPFD 4.2 Neuromuscular electrical assessment

MCPFD 4.3 Electrical properties of nerves and muscles

MCPFD 4.4 Pain physiology and modulation

MCPFD 4.5 Clinical electrophysiological testing

MCPFD 4.6 Nerve conduction studies

MCPFD 4.7 Repetitive nerve stimulation

MCPFD 4.8 Electromyography

MCPFD 4.9 Biofeedback

MCPFD 4.10 Late responses

MCPFD 4.11 Evoked potentials

MCPFD 4.12 Visual evoked potentials

MCPFD 4.13 Somatosensory evoked potentials

MCPFD 4.14 Brainstem auditory evoked potentials

MCPFD 4.15 Motor evoked potentials

Unit V: Functional Diagnosis and Differential Diagnosis

Total Hours: 24

MCPFD 5.1 Differential diagnosis in physiotherapy

MCPFD 5.2 ICF framework in rehabilitation

MCPFD 5.3 Functional impairment assessment

MCPFD 5.4 Activity limitation assessment

MCPFD 5.5 Participation restriction evaluation

MCPFD 5.6 Disability assessment

MCPFD 5.7 Functional outcome measures

MCPFD 5.8 Health status assessment

MCPFD 5.9 Selection of assessment instruments

MCPFD 5.10 Reliability and validity of functional assessments

MCPFD 5.11 Medical screening for referred pain

MCPFD 5.12 Identification of serious pathology

MCPFD 5.13 Physiotherapy diagnosis formulation

MCPFD 5.14 Clinical reasoning and treatment planning

Course Code: M.P.T(MS)-104

Course Title: Physical & Functional Diagnosis in Musculoskeletal Sciences – Practical

Credits: 4

Total Hours: 120

Practical Competencies

Section A: Clinical Examination Skills

1. Comprehensive patient history taking
2. Assessment of vital signs
3. Observation and postural analysis
4. Regional musculoskeletal examination
5. Joint integrity assessment
6. Soft tissue examination

7. Special orthopedic tests

8. Pain assessment

Section B: Physical Assessment Skills

9. Goniometric assessment

10. Manual muscle testing

11. Dynamometry

12. Flexibility assessment

13. Balance evaluation

14. Coordination assessment

15. Functional mobility assessment

16. Outcome measure administration

Section C: Functional Evaluation

17. Functional independence assessment

18. Disability evaluation

19. Gait analysis

20. Running analysis

21. Ergonomic assessment

22. Workplace evaluation

- 23. Cardiac efficiency testing
- 24. Fitness testing

Section D: Electrodiagnostic Interpretation

- 25. Strength-duration curve interpretation
- 26. Electromyography interpretation
- 27. Nerve conduction study interpretation
- 28. Evoked potential interpretation
- 29. Biofeedback applications

Section E: Diagnostic Imaging Interpretation

- 30. X-ray interpretation
- 31. CT scan interpretation
- 32. MRI interpretation
- 33. Ultrasonography interpretation
- 34. Clinical correlation of imaging findings

Section F: Clinical Reasoning and Diagnosis

- 35. Differential diagnosis exercises
- 36. Identification of red flags
- 37. ICF-based assessment

38. Physiotherapy diagnosis formulation
39. Case-based treatment planning
40. Clinical case presentation

Recommended Books

1. Magee DJ. Orthopedic Physical Assessment.
2. Dutton M. Dutton's Orthopaedic Examination, Evaluation and Intervention.
3. Petty NJ. Neuromusculoskeletal Examination and Assessment.
4. Goodman CC, Fuller KS. Pathology for the Physical Therapist.
5. O'Sullivan SB, Schmitz TJ. Physical Rehabilitation.
6. Hoppenfeld S. Physical Examination of the Spine and Extremities.
7. Clarkson HM. Musculoskeletal Assessment.
8. DeLisa JA. Physical Medicine and Rehabilitation.
9. Preston DC, Shapiro BE. Electromyography and Neuromuscular Disorders.
10. Brukner P, Khan K. Clinical Sports Medicine.
11. WHO. International Classification of Functioning, Disability and Health (ICF).

12. Starkey C. Orthopedic and Athletic Injury Examination Handbook.

COURSE CODE: M.P.T(MS)-105

COURSE TITLE: Skills Acquisition & Refinement (SAR-I)

Credits:8

Total Hours: 240

SAR-I 1.0 Subject Description

Skills Acquisition and Refinement (SAR-I) is designed to facilitate the transition of postgraduate students from foundational clinical competence to advanced specialty practice in Musculoskeletal Physiotherapy. The course emphasizes development of higher-order clinical skills, clinical reasoning, evidence-based decision-making, professional communication, advanced assessment procedures, therapeutic handling, and specialty-specific intervention techniques. Through supervised skill laboratories, case-based learning, simulation exercises, and competency assessments, students will progressively develop proficiency in advanced musculoskeletal physiotherapy practice.

SAR-I 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Demonstrate advanced musculoskeletal assessment skills. (P)
2. Perform orthopedic special tests accurately and safely. (P)
3. Apply evidence-based clinical reasoning in patient management. (P)
4. Demonstrate proficiency in manual therapy techniques. (SH)
5. Integrate therapeutic exercise principles into rehabilitation planning. (P)
6. Interpret clinical and diagnostic findings effectively. (P)
7. Apply ergonomic and occupational assessment principles. (P)

8. Demonstrate professional communication and patient education skills.

(P)

9. Formulate comprehensive physiotherapy diagnoses. (P)

10. Demonstrate competency in outcome measurement and documentation. (P)

Students must be engaged in

- Teaching Assignment, Seminars, journal club & Case Studies etc

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.

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 automated 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>

Assessment Methods

1. Objective Structured Clinical Examination (OSCE)

2. Direct Observation of Procedural Skills (DOPS)
3. Case Presentation
4. Clinical Viva Voce
5. Logbook Assessment
6. Reflective Portfolio
7. Skill Demonstration

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 organisations 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.

COURSE CODE: M.P.T(MS)-106

COURSE TITLE: Clinical Training (CT-I)-Practical

Credits: 23

Total Hours: 690

CT-I 1.0 Subject Description

Clinical Training-I provides structured supervised clinical exposure in Musculoskeletal Physiotherapy. Students are expected to integrate theoretical knowledge, clinical skills, professional behavior, and evidence-based practice while managing patients in diverse healthcare settings. The training focuses on patient assessment, diagnosis, treatment planning, intervention implementation, outcome evaluation, and interdisciplinary collaboration.

CT-I 1.0.1 Course Outcomes

At the completion of clinical training, the student will be able to:

1. Independently assess musculoskeletal patients. (P)
2. Formulate physiotherapy diagnoses. (P)
3. Develop individualized treatment plans. (P)
4. Implement evidence-based interventions. (P)
5. Monitor patient outcomes and modify treatment. (P)
6. Maintain professional documentation standards. (P)
7. Demonstrate ethical and professional conduct. (P)

8. Function effectively within multidisciplinary teams. (P)

Clinical Posting Areas

Musculoskeletal Outpatient Department (250 Hours)

1. Spine Disorders
2. Upper Limb Disorders
3. Lower Limb Disorders
4. Post-operative Rehabilitation
5. Chronic Pain Management

Inpatient Orthopedic Rehabilitation (120 Hours)

1. Joint Replacement Rehabilitation
2. Trauma Rehabilitation
3. Fracture Management
4. Post-surgical Physiotherapy

Sports Injury Rehabilitation Unit (100 Hours)

1. Acute Sports Injuries
2. Return-to-Play Assessment
3. Performance Enhancement
4. Injury Prevention Programs

Specialized Musculoskeletal Clinics (80 Hours)

1. Manual Therapy Clinics
2. Ergonomics Clinics
3. Occupational Health Services
4. Industrial Rehabilitation

Case Discussions and Clinical Conferences (70 Hours)

1. Journal Club
2. Grand Rounds
3. Case Presentations
4. Clinical Audits
5. Interdisciplinary Meetings

Clinical Requirements (70 Hours)

1. Minimum 50 complete case records
2. Minimum 20 detailed case presentations
3. Clinical logbook maintenance
4. Journal club participation
5. Clinical audit participation
6. Reflective practice records

Assessment Methods

1. Clinical Performance Evaluation
2. Logbook Assessment
3. Case Presentation
4. Clinical Viva
5. Professional Behavior Assessment
6. Supervisor Evaluation

COURSE CODE: M.P.T(MS)-107

COURSE TITLE: Dissertation (DSS-I)-Practical

Credits: 3

Total Hours: 90

DSS-I 1.0 Subject Description

The Dissertation component introduces students to independent scientific inquiry and research development. During DSS-I, students identify a research problem, conduct a comprehensive literature review, formulate research objectives, develop methodology, obtain ethical approval, and prepare a dissertation protocol.

DSS-I 1.0.1 Course Outcomes

At the completion of DSS-I, the student will be able to:

1. Identify clinically relevant research problems. (P)
2. Conduct comprehensive literature reviews. (P)
3. Formulate research questions and hypotheses. (P)

4. Design scientifically sound research protocols. (P)
5. Select appropriate outcome measures. (P)
6. Prepare ethics committee submissions. (P)
7. Develop data collection procedures. (P)
8. Present and defend research proposals. (P)

Dissertation Activities

Phase I: Topic Selection (10 Hours)

1. Identification of research area
2. Problem statement formulation
3. Research feasibility analysis

Phase II: Literature Review (30 Hours)

1. Database searching
2. Critical appraisal
3. Evidence synthesis
4. Gap identification

Phase III: Research Protocol Development (25 Hours)

1. Research objectives
2. Methodology design

3. Sample size estimation
4. Outcome measures selection
5. Statistical planning

Phase IV: Ethics and Proposal Submission (10 Hours)

1. Ethics application preparation
2. Informed consent preparation
3. Institutional approval process

Phase V: Protocol Presentation (15 Hours)

1. Synopsis preparation
2. Proposal defense
3. Expert review and modifications

Assessment Methods

1. Research Proposal Evaluation
2. Synopsis Presentation
3. Literature Review Assessment
4. Ethics Submission Review
5. Research Viva Voce

DSS-I Deliverables

1. Approved dissertation topic
2. Comprehensive literature review
3. Research protocol
4. Ethics committee submission
5. Synopsis presentation
6. Dissertation progress report

Second Year

COURSE CODE: M.P.T(MS)-201

COURSE TITLE: Exercise Physiology-Theory

Credits: 6

Total Hours: 90

EP 1.0 Subject Description

Exercise Physiology is an advanced course designed to provide postgraduate physiotherapy students with an in-depth understanding of physiological responses and adaptations to exercise in healthy individuals, athletes, and patients with various musculoskeletal conditions. The course emphasizes cellular, cardiovascular, respiratory, neuromuscular, endocrine, and metabolic adaptations to physical activity and exercise training. It also focuses on exercise testing, fitness assessment, fatigue mechanisms, environmental physiology, and exercise prescription. The knowledge gained through this course will facilitate evidence-based exercise programming and rehabilitation planning in musculoskeletal physiotherapy practice.

EP 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Explain physiological responses to acute and chronic exercise. (K)

2. Analyze cardiovascular and respiratory adaptations to exercise. (KH)
3. Interpret neuromuscular and metabolic responses during physical activity. (KH)
4. Evaluate energy systems involved in exercise performance. (P)
5. Assess physical fitness using standardized testing procedures. (P)
6. Explain mechanisms of fatigue and recovery. (KH)
7. Apply exercise physiology principles in rehabilitation and performance enhancement. (P)
8. Design evidence-based exercise programs for different populations. (P)
9. Evaluate environmental influences on exercise performance. (KH)
10. Interpret exercise testing results and prescribe appropriate interventions. (P)
11. Demonstrate competency in fitness assessment and exercise prescription. (SH)
12. Integrate exercise physiology principles into musculoskeletal rehabilitation. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

EP 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Seminars
3. Laboratory Demonstrations
4. Practical Exercise Testing Sessions
5. Case-Based Learning
6. Journal Club Discussions
7. Fitness Assessment Workshops
8. Problem-Based Learning
9. Self-Directed Learning
10. Research Article Reviews

EP 1.0.3 Assessment Methods

1. Multiple Choice Questions
2. Short Answer Questions
3. Long Answer Questions
4. Practical Demonstrations

5. Exercise Prescription Assignments

6. Case Presentations

7. Seminar Presentations

8. Viva Voce

9. End Semester Examination

Unit I: Fundamentals of Exercise Physiology

Total Hours: 18

EP 1.1 Introduction to exercise physiology

EP 1.2 Homeostasis and exercise

EP 1.3 Cellular physiology of exercise

EP 1.4 Skeletal muscle structure and function

EP 1.5 Muscle fiber types

EP 1.6 Neuromuscular adaptations to exercise

EP 1.7 Bioenergetics and energy transfer

EP 1.8 ATP production and utilization

EP 1.9 Aerobic and anaerobic metabolism

EP 1.10 Physiological basis of exercise performance

Unit II: Cardiovascular and Respiratory Responses to Exercise

Total Hours: 18

EP 2.1 Cardiovascular physiology during exercise

EP 2.2 Cardiac output and exercise

EP 2.3 Blood pressure regulation

EP 2.4 Peripheral circulation during exercise

EP 2.5 Respiratory physiology during exercise

EP 2.6 Pulmonary ventilation

EP 2.7 Gas exchange mechanisms

EP 2.8 Oxygen transport

EP 2.9 VO_2 Max

EP 2.10 Cardiovascular adaptations to training

EP 2.11 Respiratory adaptations to training

Unit III: Metabolic and Endocrine Responses to Exercise

Total Hours: 18

EP 3.1 Energy systems in exercise

EP 3.2 Carbohydrate metabolism

EP 3.3 Fat metabolism

EP 3.4 Protein metabolism

EP 3.5 Hormonal regulation during exercise

EP 3.6 Endocrine responses to training

EP 3.7 Fluid and electrolyte balance

EP 3.8 Thermoregulation

EP 3.9 Nutritional considerations in exercise

EP 3.10 Exercise and body composition

EP 3.11 Obesity and metabolic health

Unit IV: Exercise Testing, Fitness Assessment and Fatigue

Total Hours: 18

EP 4.1 Principles of exercise testing

EP 4.2 Aerobic fitness assessment

EP 4.3 Anaerobic fitness assessment

EP 4.4 Strength testing

EP 4.5 Endurance assessment

EP 4.6 Flexibility evaluation

EP 4.7 Functional capacity testing

EP 4.8 Physical activity assessment

EP 4.9 Exercise tolerance testing

EP 4.10 Mechanisms of fatigue

EP 4.11 Recovery physiology

EP 4.12 Overtraining syndrome

Unit V: Applied Exercise Physiology in Rehabilitation

Total Hours: 18

EP 5.1 Principles of exercise prescription

EP 5.2 Exercise programming

EP 5.3 Exercise progression

EP 5.4 Exercise physiology in musculoskeletal rehabilitation

EP 5.5 Exercise for chronic pain conditions

EP 5.6 Exercise and aging

EP 5.7 Exercise in occupational health

EP 5.8 Environmental physiology:

- Heat
- Cold
- Altitude

EP 5.9 Exercise for health promotion

EP 5.10 Physical activity guidelines

EP 5.11 Evidence-based exercise prescription

EP 5.12 Contemporary advances in exercise physiology

Recommended Books

1. Powers SK, Howley ET. Exercise Physiology: Theory and Application to Fitness and Performance.
2. McArdle WD, Katch FI, Katch VL. Exercise Physiology: Nutrition, Energy and Human Performance.
3. Kenney WL, Wilmore JH, Costill DL. Physiology of Sport and Exercise.
4. Brooks GA, Fahey TD, Baldwin KM. Exercise Physiology: Human Bioenergetics and Its Applications.
5. ACSM's Guidelines for Exercise Testing and Prescription.
6. Heyward VH. Advanced Fitness Assessment and Exercise Prescription.
7. Ehrman JK, Gordon PM, Visich PS, Keteyian SJ. Clinical Exercise Physiology.
8. Kisner C, Colby LA. Therapeutic Exercise: Foundations and Techniques.
9. Brukner P, Khan K. Clinical Sports Medicine.
10. ACSM Resource Manual for Guidelines for Exercise Testing and Prescription.

COURSE CODE: M.P.T(MS)-202

COURSE TITLE: Musculoskeletal Physiotherapy

Credits:12

Total Hours: 240

MSPT 1.0 Subject Description

This course is the core specialty subject of the Master of Physiotherapy in Musculoskeletal Sciences. It is designed to develop advanced knowledge and clinical competencies in the assessment, diagnosis, treatment, rehabilitation, and prevention of musculoskeletal disorders. The course emphasizes evidence-based management of spinal disorders, peripheral joint dysfunctions, soft tissue injuries, chronic pain conditions, occupational and sports-related musculoskeletal problems, post-surgical rehabilitation, and complex orthopedic conditions. Students will develop advanced clinical reasoning skills and expertise in contemporary musculoskeletal physiotherapy practice.

MSPT 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Demonstrate advanced clinical reasoning in musculoskeletal physiotherapy. (P)
2. Evaluate and manage spinal disorders using evidence-based approaches. (P)
3. Assess and rehabilitate peripheral joint dysfunctions. (P)
4. Design comprehensive rehabilitation programs for orthopedic conditions. (P)
5. Integrate manual therapy and therapeutic exercise interventions. (P)
6. Manage chronic musculoskeletal pain conditions. (P)
7. Apply advanced rehabilitation strategies following orthopedic surgery. (P)
8. Develop injury prevention and ergonomic intervention programs. (P)

9. Critically appraise evidence related to musculoskeletal rehabilitation.

(KH)

10. Demonstrate professional leadership in specialty physiotherapy practice. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

MSPT 1.0.2 Teaching Learning Methods

1. Interactive Lectures

2. Clinical Demonstrations

3. Case-Based Discussions

4. Problem-Based Learning

5. Journal Club

6. Clinical Conferences

7. Simulation-Based Learning

8. Practical Workshops

9. Small Group Discussions

10. Self-Directed Learning

MSPT 1.0.3 Assessment Methods

1. MCQs
2. SAQs and LAQs
3. Case Presentations
4. Clinical Viva Voce
5. Practical Demonstrations
6. Journal Reviews
7. Seminar Presentations
8. End Semester Examination

Course Code: M.P.T(MS)-202

Course Title: Musculoskeletal Physiotherapy – Theory

Credits: 8

Total Hours: 120

Unit I: Advanced Spinal Disorders and Rehabilitation

Total Hours: 24

MSPT 1.1 Cervical spine disorders

MSPT 1.2 Cervicogenic headache

MSPT 1.3 Cervical radiculopathy

MSPT 1.4 Whiplash-associated disorders

MSPT 1.5 Thoracic spine dysfunctions

MSPT 1.6 Lumbar spine disorders

MSPT 1.7 Lumbar radiculopathy

MSPT 1.8 Intervertebral disc disorders

MSPT 1.9 Spinal stenosis

MSPT 1.10 Spondylolisthesis

MSPT 1.11 Sacroiliac joint dysfunction

MSPT 1.12 Evidence-based rehabilitation of spinal disorders

Unit II: Upper Extremity Musculoskeletal Disorders

Total Hours: 24

MSPT 2.1 Shoulder impingement syndrome

MSPT 2.2 Rotator cuff pathology

MSPT 2.3 Frozen shoulder

MSPT 2.4 Shoulder instability

MSPT 2.5 Elbow tendinopathies

MSPT 2.6 Cubital tunnel syndrome

MSPT 2.7 Wrist and hand disorders

MSPT 2.8 Carpal tunnel syndrome

MSPT 2.9 De Quervain's tenosynovitis

MSPT 2.10 Post-traumatic upper limb rehabilitation

MSPT 2.11 Post-surgical rehabilitation of upper extremity

MSPT 2.12 Functional restoration programs

Unit III: Lower Extremity Musculoskeletal Disorders

Total Hours: 24

MSPT 3.1 Hip joint disorders

MSPT 3.2 Femoroacetabular impingement

MSPT 3.3 Knee ligament injuries

MSPT 3.4 Meniscal injuries

MSPT 3.5 Patellofemoral pain syndrome

MSPT 3.6 Osteoarthritis of knee and hip

MSPT 3.7 Ankle instability

MSPT 3.8 Achilles tendinopathy

MSPT 3.9 Plantar fasciopathy

MSPT 3.10 Running-related injuries

MSPT 3.11 Post-operative lower limb rehabilitation

MSPT 3.12 Return-to-function protocols

Unit IV: Soft Tissue, Pain and Occupational Disorders

Total Hours: 24

MSPT 4.1 Soft tissue injuries

MSPT 4.2 Tendinopathies

MSPT 4.3 Ligament injuries

MSPT 4.4 Myofascial pain syndrome

MSPT 4.5 Trigger point management

MSPT 4.6 Chronic musculoskeletal pain

MSPT 4.7 Central sensitization

MSPT 4.8 Fibromyalgia

MSPT 4.9 Repetitive strain injuries

MSPT 4.10 Work-related musculoskeletal disorders

MSPT 4.11 Ergonomic assessment

MSPT 4.12 Occupational rehabilitation

Unit V: Advanced Rehabilitation and Contemporary Practice

Total Hours: 24

MSPT 5.1 Functional rehabilitation

MSPT 5.2 Neuromuscular control training

MSPT 5.3 Motor learning in rehabilitation

MSPT 5.4 Core stabilization

MSPT 5.5 Movement system impairment approach

MSPT 5.6 Movement screening

MSPT 5.7 Outcome measures in musculoskeletal physiotherapy

MSPT 5.8 Injury prevention strategies

MSPT 5.9 Evidence-based clinical pathways

MSPT 5.10 Advanced exercise prescription

MSPT 5.11 Clinical practice guidelines

MSPT 5.12 Emerging trends in musculoskeletal physiotherapy

COURSE CODE: M.P.T(MS)-202

COURSE TITLE: Musculoskeletal Physiotherapy Practical

Credits: 4

Total Hours: 120

Practical Competencies

Section A: Spinal Rehabilitation

1. Cervical spine assessment and treatment
2. Thoracic spine assessment and treatment
3. Lumbar spine assessment and treatment
4. Neural tissue mobilization
5. McKenzie assessment and treatment
6. Movement control training

Section B: Upper Extremity Rehabilitation

7. Shoulder rehabilitation protocols
8. Rotator cuff rehabilitation
9. Elbow rehabilitation
10. Wrist and hand rehabilitation
11. Functional upper limb retraining

Section C: Lower Extremity Rehabilitation

12. Hip rehabilitation
13. Knee ligament rehabilitation
14. Meniscal rehabilitation
15. Patellofemoral rehabilitation
16. Ankle and foot rehabilitation
17. Gait retraining

Section D: Manual Therapy Skills

18. Joint mobilization techniques
19. Soft tissue mobilization
20. Myofascial release
21. Muscle energy techniques

- 22. Mulligan mobilization techniques
- 23. Functional mobilization

Section E: Exercise and Functional Rehabilitation

- 24. Therapeutic exercise prescription
- 25. Core stabilization
- 26. Balance training
- 27. Proprioceptive training
- 28. Functional movement retraining
- 29. Return-to-work rehabilitation
- 30. Return-to-sport rehabilitation

Section F: Clinical Competency

- 31. Case assessment
- 32. Differential diagnosis
- 33. Outcome measure application
- 34. Clinical reasoning exercises
- 35. Evidence-based treatment planning
- 36. Comprehensive case presentation

Recommended Books

1. Magee DJ. Orthopedic Physical Assessment.
2. Maitland GD, Hengeveld E. Maitland's Vertebral Manipulation.
3. Petty NJ. Neuromusculoskeletal Examination and Assessment.
4. Brukner P, Khan K. Clinical Sports Medicine.
5. Kisner C, Colby LA. Therapeutic Exercise.
6. Cook CE, Hegedus EJ. Orthopedic Physical Examination Tests.
7. Donatelli RA. Orthopedic Physical Therapy.
8. Shacklock M. Clinical Neurodynamics.
9. Boyling JD, Jull GA. Grieve's Modern Manual Therapy.
10. Hertling D, Kessler RM. Management of Common Musculoskeletal Disorders.

COURSE CODE: M.P.T(MS)-203

COURSE TITLE: Recent Advances and Evidence-Based Practice in Musculoskeletal Physiotherapy-Theory

Credits: 8

Total Hours: 120

RAEBP 1.0 Subject Description

This course is designed to provide postgraduate students with contemporary knowledge of emerging concepts, advanced technologies, evidence-based interventions, and recent developments in musculoskeletal physiotherapy. The course emphasizes critical appraisal of scientific literature, implementation of clinical practice guidelines, pain neuroscience education, regenerative rehabilitation, digital health technologies, tele-rehabilitation, movement system

approaches, and translational research. Students will develop the ability to integrate current evidence into clinical decision-making and deliver patient-centered musculoskeletal rehabilitation based on the highest level of scientific evidence.

RAEBP 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Critically evaluate contemporary evidence in musculoskeletal physiotherapy. (P)
2. Apply evidence-based practice principles in clinical decision-making. (P)
3. Interpret clinical practice guidelines and systematic reviews. (KH)
4. Integrate pain neuroscience concepts into rehabilitation programs. (P)
5. Analyze emerging rehabilitation technologies and their applications. (KH)
6. Evaluate regenerative rehabilitation approaches in musculoskeletal care. (KH)
7. Utilize digital health and tele-rehabilitation platforms effectively. (P)
8. Develop patient-centered rehabilitation strategies using current evidence. (P)
9. Critically appraise new assessment and intervention techniques. (P)
10. Demonstrate leadership in translating research evidence into clinical practice. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

RAEBP 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Journal Clubs
3. Evidence Appraisal Workshops
4. Case-Based Learning
5. Problem-Based Learning
6. Research Seminars
7. Clinical Practice Guideline Reviews
8. Student Presentations
9. Expert Lectures
10. Self-Directed Learning

RAEBP 1.0.3 Assessment Methods

1. MCQs
2. Short Answer Questions
3. Long Answer Questions

4. Journal Critique
5. Evidence Appraisal Assignment
6. Seminar Presentation
7. Case-Based Discussion
8. Viva Voce
9. End Semester Examination

Unit I: Foundations of Evidence-Based Musculoskeletal Practice

Total Hours: 24

RAEBP 1.1 Evidence-based practice principles

RAEBP 1.2 Levels of evidence

RAEBP 1.3 Clinical decision-making models

RAEBP 1.4 Clinical practice guidelines

RAEBP 1.5 Systematic reviews and meta-analysis

RAEBP 1.6 Critical appraisal of literature

RAEBP 1.7 Outcome measures in musculoskeletal rehabilitation

RAEBP 1.8 Knowledge translation in healthcare

RAEBP 1.9 Evidence implementation strategies

RAEBP 1.10 Contemporary musculoskeletal models of care

Unit II: Advances in Pain Science and Rehabilitation

Total Hours: 24

RAEBP 2.1 Pain neuroscience education

RAEBP 2.2 Biopsychosocial model of pain

RAEBP 2.3 Central sensitization

RAEBP 2.4 Chronic pain rehabilitation

RAEBP 2.5 Cognitive functional therapy

RAEBP 2.6 Graded exposure therapy

RAEBP 2.7 Behavioural approaches in rehabilitation

RAEBP 2.8 Self-management strategies

RAEBP 2.9 Patient empowerment approaches

RAEBP 2.10 Emerging pain management concepts

Unit III: Emerging Technologies in Musculoskeletal Rehabilitation

Total Hours: 24

RAEBP 3.1 Tele-rehabilitation

RAEBP 3.2 Digital physiotherapy

RAEBP 3.3 Mobile health applications

RAEBP 3.4 Wearable technologies

RAEBP 3.5 Virtual reality in rehabilitation

RAEBP 3.6 Augmented reality applications

RAEBP 3.7 Motion capture systems

RAEBP 3.8 Artificial intelligence in physiotherapy

RAEBP 3.9 Remote monitoring technologies

RAEBP 3.10 Future directions in digital rehabilitation

Unit IV: Regenerative and Advanced Rehabilitation Approaches

Total Hours: 24

RAEBP 4.1 Regenerative rehabilitation

RAEBP 4.2 Tissue healing science

RAEBP 4.3 Biological therapies

RAEBP 4.4 Tendon rehabilitation advances

RAEBP 4.5 Cartilage rehabilitation concepts

RAEBP 4.6 Bone healing and rehabilitation

RAEBP 4.7 Blood flow restriction training

RAEBP 4.8 Motor control rehabilitation

RAEBP 4.9 Neuromuscular training advancements

RAEBP 4.10 Contemporary exercise prescription

Unit V: Contemporary Musculoskeletal Practice

Total Hours: 24

RAEBP 5.1 Movement system impairment syndromes

RAEBP 5.2 Regional interdependence

RAEBP 5.3 Precision rehabilitation

RAEBP 5.4 Patient-reported outcome measures

RAEBP 5.5 Value-based healthcare

RAEBP 5.6 Clinical prediction rules

RAEBP 5.7 Return-to-sport decision making

RAEBP 5.8 Return-to-work frameworks

RAEBP 5.9 Advanced clinical reasoning

RAEBP 5.10 Future trends in musculoskeletal physiotherapy

COURSE CODE: M.P.T(MS)-203

COURSE TITLE: Recent Advances and Evidence-Based Practice in Musculoskeletal Physiotherapy – Practical

Credits: 4

Total Hours: 120

Practical Competencies

Section A: Evidence-Based Practice Skills

1. Literature searching
2. Critical appraisal of research articles
3. Interpretation of systematic reviews
4. Clinical guideline implementation
5. Evidence synthesis

Section B: Advanced Pain Rehabilitation

6. Pain neuroscience education delivery
7. Cognitive functional therapy applications
8. Chronic pain assessment
9. Behavioural rehabilitation strategies
10. Self-management programme design

Section C: Technology-Assisted Rehabilitation

11. Tele-rehabilitation consultation
12. Virtual rehabilitation platforms
13. Wearable device utilization
14. Digital outcome tracking
15. Remote patient monitoring

Section D: Advanced Rehabilitation Techniques

16. Blood flow restriction training
17. Neuromuscular rehabilitation
18. Motor control training
19. Functional movement retraining
20. Return-to-sport assessment

Section E: Clinical Application

21. Evidence-based case management
22. Clinical guideline-based treatment planning
23. Outcome measure selection
24. Advanced case presentation
25. Research-to-practice implementation

Recommended Books

1. Jette DU. Evidence-Based Practice in Physical Therapy.
2. Jewell DV. Guide to Evidence-Based Physical Therapist Practice.
3. Cook CE. Orthopedic Manual Therapy: An Evidence-Based Approach.
4. Butler DS, Moseley GL. Explain Pain.
5. Hutting N, Scholten-Peeters GGM. Musculoskeletal Physiotherapy and Evidence-Based Practice.

6. Brukner P, Khan K. Clinical Sports Medicine.
7. Latest Clinical Practice Guidelines from Orthopaedic and Sports Physical Therapy Associations.
8. Recent systematic reviews and consensus statements in musculoskeletal rehabilitation.

COURSE CODE: M.P.T(MS)-204

COURSE TITLE: Dissertation (DSS-II) -Practical

Credits: 22

Total Hours: 660

DSS-II 1.0 Subject Description

Dissertation (DSS-II) is the culmination of the postgraduate research experience and provides students with the opportunity to conduct independent, original, and clinically relevant research in the field of Musculoskeletal Physiotherapy. The course emphasizes implementation of the approved research protocol, data collection, statistical analysis, interpretation of findings, scientific writing, dissemination of results, and preparation of the dissertation thesis. The course aims to develop research competency, critical thinking, scientific communication skills, and evidence generation capabilities necessary for advanced physiotherapy practice, academics, and lifelong professional development.

DSS-II 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Conduct independent scientific research following approved protocols. (P)
2. Implement appropriate data collection procedures. (P)
3. Maintain research quality, validity, and ethical standards. (P)
4. Apply appropriate statistical methods for data analysis. (P)

5. Interpret research findings accurately and scientifically. (P)
6. Relate research outcomes to existing scientific evidence. (P)
7. Prepare a dissertation according to accepted academic standards. (P)
8. Present and defend research findings effectively. (P)
9. Demonstrate scientific writing and publication skills. (P)
10. Translate research findings into physiotherapy practice. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

DSS-II 1.0.2 Teaching Learning Methods

1. Research Supervision Meetings
2. Independent Research Activities
3. Journal Club Discussions
4. Research Progress Presentations
5. Statistical Workshops
6. Scientific Writing Sessions
7. Dissertation Review Meetings

8. Research Seminars
9. Peer Learning Activities
10. Self-Directed Learning

DSS-II 1.0.3 Assessment Methods

1. Research Progress Evaluation
2. Dissertation Review
3. Statistical Analysis Assessment
4. Scientific Writing Assessment
5. Research Presentation
6. Dissertation Submission
7. Dissertation Viva Voce
8. External Evaluation

Module I: Research Implementation

Total Hours: 120

DSS 2.1 Finalization of research protocol

DSS 2.2 Subject recruitment

DSS 2.3 Informed consent procedures

DSS 2.4 Pilot testing and standardization

DSS 2.5 Baseline assessment procedures

DSS 2.6 Data collection planning

DSS 2.7 Quality control procedures

DSS 2.8 Maintenance of research records

DSS 2.9 Monitoring protocol adherence

DSS 2.10 Research progress documentation

Module II: Data Collection and Management

Total Hours: 180

DSS 2.11 Participant screening

DSS 2.12 Participant enrollment

DSS 2.13 Clinical data collection

DSS 2.14 Outcome measure administration

DSS 2.15 Intervention monitoring

DSS 2.16 Follow-up assessment procedures

DSS 2.17 Data coding

DSS 2.18 Data entry procedures

DSS 2.19 Database management

DSS 2.20 Data verification and validation

Module III: Statistical Analysis

Total Hours: 120

DSS 2.21 Data cleaning

DSS 2.22 Data organization

DSS 2.23 Selection of statistical tests

DSS 2.24 Statistical software applications

DSS 2.25 Descriptive statistical analysis

DSS 2.26 Inferential statistical analysis

DSS 2.27 Interpretation of statistical findings

DSS 2.28 Graphical and tabular presentation

DSS 2.29 Result compilation

DSS 2.30 Statistical report preparation

Module IV: Dissertation Writing

Total Hours: 180

DSS 2.31 Preparation of dissertation chapters

DSS 2.32 Introduction chapter

DSS 2.33 Review of literature chapter

DSS 2.34 Methodology chapter

DSS 2.35 Results chapter

DSS 2.36 Discussion chapter

DSS 2.37 Conclusion and recommendations

DSS 2.38 Reference management

DSS 2.39 Formatting and editing

DSS 2.40 Dissertation compilation

Module V: Research Dissemination and Defense

Total Hours: 60

DSS 2.41 Preparation of manuscript for publication

DSS 2.42 Abstract preparation

DSS 2.43 Scientific poster preparation

DSS 2.44 Oral presentation skills

DSS 2.45 Dissertation presentation

DSS 2.46 Viva voce preparation

DSS 2.47 Defense of dissertation

DSS 2.48 Incorporation of corrections

DSS 2.49 Final submission

DSS 2.50 Research dissemination activities

Dissertation Requirements

1. Completion of approved research project.
2. Maintenance of dissertation logbook.
3. Submission of periodic progress reports.
4. Submission of dissertation thesis in university-prescribed format.
5. Presentation of dissertation before departmental committee.
6. Successful completion of dissertation viva voce.
7. Submission of manuscript suitable for publication in a peer-reviewed journal.

Recommended Books

1. Portney LG, Watkins MP. Foundations of Clinical Research: Applications to Practice.
2. Domholdt E. Rehabilitation Research: Principles and Applications.
3. Hicks CM. Research Methods for Clinical Therapists.
4. Greenhalgh T. How to Read a Paper.
5. Mahajan BK. Methods in Biostatistics.
6. APA Publication Manual.

7. ICMJE Recommendations for Scholarly Publications.

8. Latest CONSORT, STROBE, PRISMA and CARE Reporting Guidelines.

COURSE CODE: M.P.T(MS)-205

COURSE TITLE: Skills Acquisition & Refinement (SAR-II) -Practical

Credits: 8

Total Hours: 240

SAR-II 1.0 Subject Description

Skills Acquisition and Refinement-II is an advanced competency-based practical course designed to enhance specialty-specific clinical expertise in Musculoskeletal Physiotherapy. The course focuses on advanced assessment, differential diagnosis, manual therapy, movement analysis, evidence-based rehabilitation, patient-centered care, and clinical leadership. Students are expected to integrate theoretical knowledge, current evidence, and advanced practical skills for independent management of complex musculoskeletal conditions.

SAR-II 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Demonstrate advanced competency in musculoskeletal assessment. (P)
2. Apply evidence-based clinical reasoning in complex cases. (P)
3. Perform advanced manual therapy techniques safely and effectively. (P)
4. Design individualized rehabilitation programmes. (P)
5. Integrate pain neuroscience concepts into rehabilitation planning. (P)
6. Demonstrate expertise in movement analysis and correction. (P)
7. Utilize outcome measures for clinical decision-making. (P)

8. Apply advanced exercise prescription principles. (P)
9. Demonstrate professional leadership and mentorship skills. (P)
10. Independently manage complex musculoskeletal cases. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

SAR-II 1.0.2 Teaching Learning Methods

1. Clinical Skill Demonstrations
2. Case-Based Learning
3. Simulation-Based Training
4. Peer-Assisted Learning
5. Reflective Practice
6. Journal Club
7. Workshops
8. Clinical Conferences
9. Problem-Based Learning
10. Independent Learning

SAR-II 1.0.3 Assessment Methods

1. Objective Structured Clinical Examination (OSCE)
2. Direct Observation of Procedural Skills (DOPS)
3. Case-Based Assessment
4. Clinical Viva Voce
5. Portfolio Assessment
6. Reflective Logbook
7. Skill Demonstration

Students must be engaged in

- Teaching Assignment, Seminars, journal club & Case Studies with respect to their specialization

COURSE CODE: M.P.T(MS)-206

COURSE TITLE: Clinical Training (CT-II)

Credits: 20

Total Hours: 600

CT-II 1.0 Subject Description

Clinical Training-II is intended to provide advanced specialty exposure and independent clinical practice opportunities in Musculoskeletal Physiotherapy. The course emphasizes advanced patient management, interdisciplinary collaboration, evidence-based rehabilitation, outcome evaluation, clinical leadership, and professional development. Students are expected to demonstrate competency in the assessment and management of complex musculoskeletal disorders while maintaining professional and ethical standards.

CT-II 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Independently assess and manage complex musculoskeletal disorders.
(P)
2. Formulate advanced physiotherapy diagnoses. (P)
3. Develop evidence-based treatment plans. (P)
4. Demonstrate competency in advanced rehabilitation techniques. (P)
5. Monitor and evaluate treatment outcomes. (P)
6. Function effectively within multidisciplinary teams. (P)
7. Demonstrate leadership in clinical practice. (P)
8. Maintain professional documentation and ethical standards. (P)

CT-II 1.0.2 Clinical Posting Areas

Advanced Musculoskeletal OPD – 220 Hours

1. Spine Rehabilitation Clinic
2. Upper Limb Rehabilitation Clinic
3. Lower Limb Rehabilitation Clinic
4. Chronic Pain Clinic
5. Occupational Health Services

Orthopedic Rehabilitation Unit – 120 Hours

1. Joint Replacement Rehabilitation

2. Trauma Rehabilitation
3. Post-Surgical Rehabilitation
4. Complex Orthopedic Conditions

Sports Rehabilitation Unit – 100 Hours

1. Acute Sports Injury Management
2. Return-to-Sport Assessment
3. Athletic Conditioning
4. Injury Prevention Programmes

Specialty Clinics – 80 Hours

1. Manual Therapy Clinic
2. Ergonomic Assessment Clinic
3. Functional Rehabilitation Clinic
4. Community-Based Rehabilitation Services

Academic and Professional Activities – 80 Hours

1. Case Presentations
2. Journal Clubs
3. Clinical Conferences
4. Clinical Audits

5. Interdisciplinary Meetings

Clinical Requirements

1. Minimum 40 detailed case presentations.
2. Minimum 75 complete patient case records.
3. Participation in journal clubs and clinical audits.
4. Maintenance of clinical logbook.
5. Participation in departmental academic activities.
6. Submission of clinical competency portfolio.

Assessment Methods

1. Clinical Performance Evaluation
2. Case Presentation
3. Clinical Viva Voce
4. Logbook Assessment
5. Professional Behaviour Assessment
6. Supervisor Evaluation
7. Portfolio Assessment

