RAMAIAH UNIVERSITY OF APPLIED SCIENCES

M.S. Ramaiah University of Applied Sciences

Program Structure and Course Details

Of

Master of Physiotherapy

Batch 2022 onwards

Registrar
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

M.S. Ramaiah University of Applied Sciences

M.S. Ramaiah College of Physiotherapy

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560054

Approved by the Academic Council at its 26th Meeting held on 14th July 2022

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Programme Specifications

Master of Physiotherapy Programme

Programme:	Department:
Musculoskeletal Sciences	Musculoskeletal Physiotherapy

M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

University House, New BEL Road, MSR Nagar, Bangalore – 560 054
www.msruas.ac.in

Contents

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

University's Vision, Mission and Objectives

The M. S. Ramaiah University of Applied Sciences (MSRUAS) will focus on student-centric professional, education and motivates its staff and students to contribute significantly to the growth of technology, science, economy and society through their imaginative, creative and innovative pursuits. Hence, the University has articulated the following vision and objectives.

Vision

MSRUAS aspires to be the premier university of choice in Asia for student centric professional education and services with a strong focus on applied research whilst maintaining the highest academic and ethical standards in a creative and innovative environment

Mission

Our purpose is the creation and dissemination of knowledge. We are committed to creativity, innovation and excellence in our teaching and research. We value integrity, quality and teamwork in all our endeavours. We inspire critical thinking, personal development and a passion for lifelong learning. We serve the technical, scientific and economic needs of our Society.

Objectives

1. To disseminate knowledge and skills through instructions, teaching, training, seminars, workshops and symposia in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences to equip students and scholars to meet the needs of industries, business and society
2. To generate knowledge through research in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences to meet the challenges that arise in industry, business and society
3. To promote health, human well-being and provide holistic healthcare
4. To provide technical and scientific solutions to real life problems posed by industry, business and society in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences
5. To instil the spirit of entrepreneurship in our youth to help create more career opportunities in the society by incubating and nurturing technology product ideas and supporting technology backed business
6. To identify and nurture leadership skills in students and help in the development of our future leaders to enrich the society we live in
7. To develop partnership with universities, industries, businesses, research establishments, NGOs, international organizations, governmental organizations in India and abroad to enrich the experiences of faculties and students through research and developmental programmes

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Section 1

Programme Specifications: Master of Physiotherapy (Musculoskeletal Sciences)

Faculty	M.S. Ramaiah College of Physiotherapy
Department	Musculoskeletal Physiotherapy
Programme	Musculoskeletal Sciences
Dean of College	Prof. Savita Ravindra

1.1 **Title of The Award**

Master of Physiotherapy (Musculoskeletal Sciences)

1.2 **Mode of Study**

Full Time

1.3 **Awarding Institution /Body**

M.S. Ramaiah University of Applied Sciences

1.4 **Joint Award**

Not Applicable

1.5 **Teaching Institution**

M. S. Ramaiah College of Physiotherapy, M.S. Ramaiah University of Applied Sciences

1.6 **Programme Approved date by the Academic Council of the University**

14th July 2022

1.7 **Next Review Date:**

July 2024 / 2025

1.8 **Programme Approving Regulating Body and Date of Approval**

1.9 **Programme Accredited Body and Date of Accreditation**

1.10 **Grade Awarded by the Accreditation Body**

1.11 **Programme Accreditation Validity Duration**

1.12 **Programme Benchmark**

1.13 **Rationale for the Programme**

Registrar
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Ravindra
Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Musculoskeletal disorders are a leading contributor to disability worldwide and account for the greatest proportion of persistent pain across geographies and ages. People with musculoskeletal disorders face substantial limitations in their activities of daily living through their limitation in physical, mental and functional ability. In recent years musculoskeletal physiotherapists have established an important role within the integrated care continuum ranging from acute traumatic care to chronic outpatient care. A musculoskeletal physiotherapist is an integral member of the multidisciplinary team and plays a key role in planning and implementation of musculoskeletal rehabilitation methods thus enabling optimal health and well-being of the patient.

The graduates of Master of Physiotherapy program are prepared to meet the current and future needs of the society and can offer client-centred, evidence-informed professional care. This program trains students with physical therapy skills to meet the workplace demands of diverse and changing healthcare environments. In addition to clinical competencies, the students will be trained for autonomous practice, evidence informed decision-making and outcome evaluation which will enable them to exercise professional autonomy in par with global standards.

1.14. Programme Aims and Objectives

This course aims to develop and build upon each student's individual experience of the assessment and management of Orthopaedic and Musculoskeletal dysfunctions. The focus will be on the integration of concepts like movement analysis, evidence base practice, clinical reasoning and the principles underpinning assessment and management. At the end of the course the musculoskeletal physiotherapist will be able to comprehensively evaluate, critically analyse and arrive at a diagnosis for simple and complex musculoskeletal and orthopaedics disorders. The individual will be competent to use current evidence to treat and manage musculoskeletal dysfunctions across life span.

The aims and objectives are to:

1. Exercise professional autonomy based on sound knowledge, skills and discipline at par with global standards in prevention, management and rehabilitation of clients with musculoskeletal disorders.
2. Identify and analyse specific risks and dysfunction related to musculoskeletal conditions based on sound clinical reasoning.
3. Identify and address problems related to community health.
4. Work with integrity and autonomy in an interdisciplinary team.
5. Practice within the professional code of ethics and conduct, and maintain standards of practice.
6. Involve in undergraduate teaching with competence.
7. Conduct research activity and utilize findings for professional development and lifelong learning.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

1.15. **Programme Outcomes**

At the end of the Masters Programme the student will be able to:

PT 164 PO1: Demonstrate the ability to independently plan and conduct a structured, comprehensive patient-centred physiotherapy assessment and formulate a functional diagnosis

PT 164 PO2: Demonstrate the ability to use clinical reasoning and critical thinking to establish patient-centred goals and prescribe an individualized plan based on established standards of practice

PT 164 PO3: Demonstrate evidence-based interventional skills in managing health conditions across lifespan in different settings using reflective practice

PT 164 PO4: Conduct research work under supervision and communicate the findings

PT 164 PO5: Display entrepreneurial, pedagogical and leadership skills in a team across various healthcare and academic settings

1.16. **Programme Structure**

The postgraduate program is designed as a program, wherein at the end of two years, a programme-end examination will be conducted by the University. The programme will consist of four courses and the student will have to pass all the courses collectively. In addition, the programme will have an ongoing assessment of performance and the student will be required to complete a set of defined prerequisites in order to be eligible for appearing in the programme ending examination.

The following are the courses a student is required to complete to appear in the programme ending examination

S. No.	Course Title	Course Code
1	Fundamentals in Physiotherapy Practice, Pedagogy and Research	PT F 5 01 A
2	Foundations of Musculoskeletal Sciences	PT C 5 07 A
3	Assessment Approaches & Diagnosis in Musculoskeletal Physiotherapy	PT C 5 08 A
4	Physiotherapy Interventions in Musculoskeletal Disorders	PT C 5 09 A

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Students' enrolled in the MPT programme shall also undertake the following electives:

Programme Electives – These electives are mandatory for the MPT Programme.

- Professional Ethics
- Basic Life Support
- Basic course in Biomedical Research

Open Electives – These electives a candidate has to take up a minimum of 1 elective.

- Advanced Life Support
- Medico legal aspects in patient care
- Quality management in Healthcare
- Financial Literacy

*Outline of all the electives is provided in the **Annexure 1**

1.17. Course Delivery Structure

The courses will be delivered from Monday to Saturday of the week. The calendar of events of the programme and the courses shall be available at the beginning of the programme. A detailed time-table will be available to the students at the beginning of each month.

1.18. Teaching Learning Methods

The Teaching and Learning Methods will include but not limited to:

2. Lectures
3. Seminars
4. Group discussions
5. Self-directed Learning
6. Journal review meetings
7. Demonstrations and Skill Labs
8. Case Discussion and Presentation
9. Patient Care in various settings
10. Field visits
11. Inter disciplinary meetings and discussions
12. Continuing Professional Development Programs
13. Conferences / Workshop / Symposium programmes
14. Research

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

SECTION 2: COURSE SPECIFICATION

Course 1: Fundamentals in Physiotherapy Practice, Pedagogy and Research

Course Title	**Fundamentals in Physiotherapy Practice, Pedagogy and Research**
Course Code	PT F 5 01 A
Course Type	Core Theory Course
Department	Musculoskeletal Sciences
College	Physiotherapy

1. Course Summary

This fundamental course in physiotherapy is designed to train postgraduate students in principles of professional practice, research methods, biostatistics and ethics. It also provides training in application of exercise physiology and electrophysiology in clinical decision making. Beyond subject knowledge, the course also aims to train the postgraduates in teaching skills, management skills and entrepreneurship

2. Course Size and Credits:

Number of Credits	NA
Credit Structure (Lecture: Tutorial: Practical)	NA
Total Hours	As per Academic Regulations
Number of Weeks	As per Academic Regulations
Department Responsible	Physiotherapy
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

On completion of the course, the postgraduate student will be able to

PT F 5 01 A CO1: Discuss the principles of professional standards and ethics in evidence-based physiotherapy practice.
PT F 5 01 A CO2: Analyse and apply appropriate research methods and relevant biostatistics in research
PT F 5 01 A CO3: Apply the principles of exercise physiology and electrophysiology in clinical decision making
PT F 5 01 A CO4: Discuss different learning theories and taxonomies.
PT F 5 01 A CO5: Demonstrate teaching learning methods in microteaching environment.
PT F 5 01 A CO6: Explain the management processes and responsibilities as applied to principles of physiotherapy practice
PT F 5 01 A CO7: Discuss the nature of entrepreneurship in rehabilitation

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

4. Course Contents

1. Principles and Core Professional Values of Physiotherapy Practice

a. Definition of Physiotherapy, Scope of Practice
b. General and Professional competencies
c. Physiotherapy Knowledge, Skill and Education Framework
d. Introduction to World Physiotherapy Standards of Physical Therapy Practice Guideline
e. International Classification of Functioning Disability and Health.
f. Principles of Evidence Based Practice in Physiotherapy

2. Research Methodology and Biostatistics

Designing Clinical Research: Basic Ingredients

a. Getting Started: The Anatomy and Physiology of Clinical Research
b. Fundamentals of Literature Search and Review
c. Conceiving the Research Question and Developing the Study Plan
d. Choosing the Study Subjects: Specification, Sampling, and Recruitment
e. Planning the Measurements: Precision, Accuracy, and Validity
f. Hypotheses and Underlying Principles to Estimating Sample Size and Power

Designing Clinical Research: Study Designs

g. Designing Cross-Sectional, Case–Control and Cohort Studies
h. Enhancing Causal Inference in Observational Studies
i. Designing a Randomized Blinded Trial, Alternative Clinical Trial Designs and their Implementation Issues
j. Designing Studies of Diagnostic Tests
k. Research Using Existing Data
l. Fundamentals of Qualitative Research Methods
m. Fundamentals of Systematic Reviews and Meta-analysis

Ethical Principles in Conducting Research

n. ICMR Ethical Guidelines for Biomedical Research

Implementation of Clinical Research

o. Designing Questionnaires, Interviews, and Online Surveys
p. Implementing the Study and Quality Control
q. Data Management

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Biostatistics

r. Basic Fundamentals of Biostatistics
s. Probability and Normal Distribution
t. Descriptive Statistics: Measures of Central Tendency and Spread
u. Hypothesis Testing: One-Sample Inference, Two-Sample Inference, Multi-sample Inference,
v. Hypothesis Testing: Nonparametric Methods, Categorical Data
w. Regression, Correlation Methods and Diagnostic Tests

Consuming and Disseminating Research

x. Strategies for following Emerging Evidence, Clinical Practice Guidelines and Clinical pathways
y. Best Practices in Research Dissemination
z. Writing a Manuscript for Publication

3. Exercise Physiology

a. Fundamentals of Human Energy Transfer
b. Source of Nutrition and Energy, Macro and Micro Nutrients, Food Energy and Optimum Nutrition for Exercise
c. Energy Expenditure During Rest and Physical Activity
d. Body Composition, Its Evaluation, Obesity and Weight Control
e. Training the Anaerobic and Aerobic Energy Systems

4. Electrophysiology

a. Instrumentation for neuromuscular electrical stimulation.
b. Muscles plasticity in response to electrical stimulation.
c. Electrical stimulation and its effects on various systems.

5. Pedagogy in Physiotherapy Education

a. Basics of Adult Learning Theories including Learning Styles
b. Formulating Intended Learning Outcomes.
c. Teaching Learning Methods
d. Assessment Methods

6. Management, Entrepreneurship and Leadership in Physiotherapy Practice

a. Introduction to Management in Physiotherapy: Definition, Principles and Functions
b. Management Process: Planning, Organizing, Directing, Controlling. Decision making.
c. Responsibilities of the Physiotherapy Manager
d. Entrepreneurship in Physiotherapy Practice: Need, Advantages and Opportunities, Challenges and Barriers
e. Leadership: Need, Relevance, Competencies and Characteristics

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

5. Course Map (CO-PO Map)

	Program Outcomes				
Course Outcome	PT 162 PO1	PT 162 PO2	PT 162 PO3	PT 162 PO4	PT 162 PO5
PT F S 01 A CO1		2			
PT F S 01 A CO2				2	
PT F S 01 A CO3	3		2		
PT F S 01 A CO4				2	2
PT F S 01 A CO5				2	2
PT F S 01 A CO6			1		
PT F S 01 A CO7					1
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution					

6. Course Teaching and Learning Methods

The Teaching and Learning Methods will include but not limited to:

Sl. No.[1]	Teaching and Learning Methods	
1	**Lectures**	✓
2	**Seminars**	✓
3	**Group discussions**	✓
4	**Self-directed Learning**	✓
5	**Journal review meetings**	✓
6	**Demonstrations and Skill Labs**	✓
7	**Case Discussion and Presentation**	✓
8	**Patient Care in various settings**	✓
9	Field visits	
10	Inter disciplinary meetings and discussions	
11	Continuing Professional Development Programs	
12	Conferences / Workshop / Symposium programmes	
13	Research and Dissertation	

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Academic Regulations document pertaining to the Masters of Physiotherapy (MPT) Programme. The procedure to determine the final course marks is also presented in the Academic Regulations document.

8. Course Resources

1. World Physiotherapy (2019) Description of Physical Therapy: Policy Statement. Available from https://world.physio/sites/default/files/2020-07/PS-2019-Description-of-physical- therapy.pdf
2. World Physiotherapy (2011) Physical Therapist Professional Entry Level Education Guideline. (Available from: https://world.physio/sites/default/files/2020-07/G-2011-Entry- level-education.pdf)
3. CSP (2011) Physiotherapy Framework: Putting physiotherapy Behaviours, Values, Knowledge & Skills into Practice [updated May 2020](Available from: https://www.csp.org.uk/professional-clinical/cpd-education/professional- development/professional-frameworks)
4. Expected Minimum Competencies for an Entry Level Physiotherapist in the Europe Region World Physiotherapy Guidance Document (Available from: https://www.erwcpt.eu/education/expected_minimum_competencies_for_entry_level)
5. Evidence-Based Medicine: How to Practice and Teach EBM, 2nd Edition: By David L. Sackett, Sharon E. Straus, W. Scott Richardson, William Rosenberg, and R. Brian Haynes, Churchill Livingstone, 2000
6. Rob Herbert, Gro Jamtvedt, Kåre Birger Hagen, Judy Mead. Practical Evidence-Based Physiotherapy (Second Edition), Churchill Livingstone,
7. 2011, ISBN 9780702042706,
8. World Physiotherapy (2011) Standards of Physical Therapy Practice Guideline(Available from: https://world.physio/sites/default/files/2020-06/G-2011-Standards-practice.pdf)
9. 2017 ICMR National Ethical Guidelines for Biomedical and Health Research involving Human Participant
10. 2020 ICMR Policy on Research Integrity and Publication Ethics (RIPE)
11. Designing Clinical Research 4th Edition. Stephen B. Hulley et al. Published By: Lippincott Williams & Wilkins. ISBN-13: 9781469840543
12. Medical Biostatistics (Chapman & Hall/CRC Biostatistics Series). 4th Edition 2017. Abhaya Indrayan, Rajeev Kumar Malhotra. Chapman and Hall/CRC, ISBN 9781498799539
13. Exercise Physiology Nutrition, Energy, and Human Performance. 8th Edition. William D. McArdle PhD, Frank I. Katch , Victor L. Katch. Lippincott Williams & Wilkins. ISBN/ISSN: 9781451191554
14. Principles of Medical Education. 4th Edition. Tejinder Singh, Piyush Gupta, Daljit Singh. 2013. Jaypee Publishers.
15. Management in Physical Therapy Practices, 2nd Edition. Catherine G. Page PT, MPH, PhD. ISBN-13: 978-0-8036-4033-7
16. Heather A. Current thinking on Leadership and Physiotherapy Practice. 2016. Report Prepared for AGILE Professional Network of the Chartered Society of Physiotherapy

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Course 2: Foundations of Musculoskeletal Sciences

Course Title	Foundations of Musculoskelatal Sciences
Course Code	PT C 5 07 A
Course Type	Core Theory Course
Department	Musculoskeletal Sciences
College	Physiotherapy

1. Course Summary

This course is designed to provide information about anatomical, biomechanical ,pathophysiological & pathomechanical framework of the musculoskeletal system.It imparts fundamental knowledge on structure and function of musculoskeletal system of the human body. This course facilitates the students to gain better understanding on the fundamentals of the musculoskeletal dysfunctions and to prepare them for further study in the course discipline.

2. Course Size and Credits:

Number of Credits	NA
Credit Structure	NA
Total Hours	As per the academic regulation
Number of Weeks	As per the academic regulation
Department Responsible	Physiotherapy
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

On completion of the course, the postgraduate student will be able to

PT C 5 07 A CO1: Apply the knowledge of biomechanics and exercise physiology in musculoskeletal disorders

PT C5 07 A CO2: Discuss the theories of pain and apply the mechanisms of pain in clinical decision-making

PT C5 07 A CO3: Apply the theories of motor control in musculoskeletal disorders.

PT C 5 07 A CO4: Select appropriate electrophysical agents for pain management and tissue healing based on the current evidence.

PT C 507 A CO5: Discuss the role of applied mechanics in implants and assistive devices.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

4. Course Contents

1. Applied mechanics of musculoskeletal system.

a) Biomechanics and pathomechanics of peripheral and spinal joints
b) Kinetic and kinematic analysis of posture and gait
c) Biomechanics across lifespan

2. Clinical reasoning in musculoskeletal practice

a) Conceptualisation of clinical reasoning
b) Strategies to Facilitate Clinical Reasoning Development
c) Stress coping, Social, cultural and psychological factors
d) Clinical reasoning in assessment and management of pain and other musculoskeletal disorder

3. Pain sciences

a) Theories of pain, modulation of pain, biomedical and biopsychosocial model of pain
b) Integration of the pain sciences into clinical reasoning models in musculoskeletal dysfunctions

4. Motor control and motor learning in musculoskeletal disorders

a) Motor control theories- evolution of motor control
b) Theories of motor learning and stages of motor learning

5. Biomechanical properties of implants and assistive devices

a) Biomechanical properties of surgical implants ie. Intramedullary nails, screws, arthroplasty.
b) Biomechanical principles applied in orthotic and other assistive devices.

6. Response and adaptation of musculoskeletal system to exercise.

a) Effect of injury, dysfunction on exercise capacity
b) Adaptation of skeletal muscle and bone to resistance, endurance and isokinetic training.

5. Course Map (CO-PO Map)

Program Outcome / Course Outcome	PT 162 PO1	PT 162 PO2	PT 162 PO3	PT 162 PO4	PT 162 PO5
PT C 5 07 A CO1	3				
PT C 5 07 A CO2		3			
PT C 5 07 A CO3		2			
PT C 5 07 A CO4		2			
PT C 5 07 A CO5		3			
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution					

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

6. Course Teaching and Learning Methods

The Teaching and Learning Methods will include but not limited to:

Sl. No.	Teaching and Learning Methods	
1	**Lectures**	✓
2	**Seminars**	✓
3	**Group discussions**	✓
4	**Self-directed Learning**	✓
5	**Journal review meetings**	✓
6	**Demonstrations and Skill Labs**	✓
7	**Case Discussion and Presentation**	✓
8	**Patient Care in various settings**	✓
9	Field visits	
10	Inter disciplinary meetings and discussions	
11	Continuing Professional Development Programs	
12	Conferences / Workshop / Symposium programmes	
13	Research and Dissertation	

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Academic Regulations document pertaining to the Masters of Physiotherapy (MPT) Programme. The procedure to determine the final course marks is also presented in the Academic Regulations document.

8. Course Resources

Recommended Books

1. Nordin M, Frankel VH, editors. Basic biomechanics of the musculoskeletal system. Lippincott Williams & Wilkins; 4th Ed 2012.
2. Levangie PK, Norkin CC. Joint structure and function: a comprehensive analysis. 2019.
3. Lehmkuhl LD, Smith LK. Brunnstrom's clinical kinesiology. Davis; 5th Ed 1996.
4. Magee DJ. Orthopedic Physical Assessment. Elsevier Health Sciences; 7th Edition 2018.
5. Donatelli RA, Wooden MJ. Orthopaedic Physical Therapy. Elsevier health sciences; 2009.
6. Reese NB, Bandy WD. Joint range of motion and muscle length testing. Elsevier Health Sciences;2016.
7. Hislop H, Avers D, Brown M. Daniels and Worthingham's muscle Testing: Techniques of manual examination and performance testing. Elsevier Health Sciences; 2013.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

8. McKinnis LN. Fundamentals of musculoskeletal imaging. FA Davis; 2013.
9. Greenspan A, Beltran J. Orthopaedic Imaging: A practical approach. Lippincott Williams & Wilkins;2020.
10. O'Sullivan SB, Schmitz TJ. Physical rehabilitation, vol. 7. Philadelphia: FA Davis Company. 2019
11. McCarty DJ, Koopman WJ. Arthritis and allied conditions: a textbook of rheumatology. Philadelphia: Lea & Febiger; 1996.
12. American College of Sports Medicine. ACSM's resource manual for guidelines for exercise testing and prescription. Lippincott Williams & Wilkins; 2012.
13. Maxey L, Magnusson J. Rehabilitation for the postsurgical orthopedic patient. Elsevier Health Sciences; 2013.
14. S.B. Brotzman and R.C. Manske Clinical Orthopaedic Rehabilitation: An Evidence-Based Approach – Third Edition;Elsevier Mosby, 2011.
15. Hertling D, Kessler RM. Management of common musculoskeletal disorders: physical therapy principles and methods. Lippincott Williams & Wilkins; 2006.
16. Daniel S. Horwitz , Michael Suk MD. Hoppenfeld's Rehabilitation and Treatment of Fractures 2nd edition, 2018
17. Kimura J. Electrodiagnosis in diseases of nerve and muscle. Principles and practice. 2013.18.Chui KC, Jorge M, Yen SC, Lusardi MM. Orthotics and Prosthetics in Rehabilitation. Elsevier Health Sciences; 2019.
18. Ratliffe KT, Clinical pediatric physical therapy: A guide for the physical therapy team. Mosby Incorporated; 1998.
19. Saunders R, Astifidis R, Burke SL, CHT M, Higgins J, McClinton MA. Hand and upper extremity rehabilitation: a practical guide. Elsevier Health Sciences; 2015.
20. Cooper C. Fundamentals of Hand Therapy: Clinical Reasoning and Treatment Guidelines for Common Diagnoses of the Upper Extremity. Elsevier Health Sciences; 2014.
21. Burns YR, MacDonald J. Cyriax's Illustrated Manual of Orthopaedic Medicine. South African Journal of Physiotherapy. 1998 Feb 28; 54(1):22.
22. Cyriax JH, Cyriax P. Cyriax's illustrated manual of orthopaedic medicine. Elsevier Health Sciences;1996.
23. McKenzie R, May S. The lumbar spine: mechanical diagnosis and therapy. Orthopedic PhysicalTherapy; 2003.
24. McKenzie R. Stephen May. The cervical and thoracic spine: mechanical diagnosis and therapy. Orthopedic PhysicalTherapy; 2006.
25. Butler DS, Jones MA. Mobilisation of the nervous system. Elsevier health sciences; 1991.
26. Shacklock M. Clinical neurodynamics: a new system of neuromusculoskeletal treatment. Elsevier Health Sciences; 2005.
27. Mulligan B. Manual Therapy "NAGS","SNAGS","MWMS": 5thedn. Wellington, Newzealand: Plane view service. 2004.
28. Jones LH, Kusunose R, Goering E. Jones Strain-Counterstrain. Jones Strain-Counterstrain. Inc., Idaho.1995.
29. Cantu RI, Grodin AJ. Myofascial manipulation: theory and clinical application. Aspen Pub; 2001.

Raindra Hegde 4/8/22

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

30. Travell JG, Simons DG. Myofascial pain and dysfunction: the trigger point manual. Lippincott Williams & Wilkins; 3ED 2019.
31. Spoerl JJ, Mottice M, Benner EK. Soft Tissue Mobilization Techniques. JEMD Publications; 1994.
32. Chaitow L, Crenshaw K. Muscle energy techniques. Elsevier Health Sciences; 2013.
33. Banks K, Newton M. Maitland's peripheral manipulation. Elsevier; 2014
34. Maitland GD, Hengeveld E, Banks K, English K. Maitland's vertebral manipulation: Elsevier Butterworth; 2005.
35. Kaltenborn FM. The spine. Basic evaluation and mobilization techniques. Olaf Norlis Bokhandel. 1993.
36. Kaltenborn FM, Evjenth O, Kaltenborn TB, Morgan D, Vollowitz E. Manual mobilization of the joints, vol. II: the spine. Oslo: Norlis. 2003.
37. Twomey LT. Grieve's modern manual therapy. Boyling JD, Jull GA, editors. London: Churchill Livingstone; 2004.
38. Macdonald R, editor. Taping techniques: principles and practice. Butterworth-Heinemann Medical;2004.
39. Hewetson TJ, Austin K, Gwynn-Brett K, Marshall S. An illustrated guide to taping techniques: Principles and practice. Elsevier Health Sciences; 2009.
40. Gatterman MI. Foundations of chiropractic: subluxation. Elsevier Health Sciences; 2005 Mar .
41. Haldeman S. Principles and practice of chiropractic. McGraw-Hill Medical; 2004 Sep 24.
42. Ward RC, Jerome JA. Foundations of Osteopathic Medicine. 1997. Williams and Wilkins, Baltimore, MD.
43. DiGiovanna EL, Schiowitz S, Dowling DJ, editors. An osteopathic approach to diagnosis and treatment. Lippincott Williams & Wilkins; 2005.

Recommended Journals

1. Journal of Orthopedic and Sports Physical Therapy
2. Journal of Physiotherapy-Official Journal of the Australian Physiotherapy Association
3. Archives of Physical Medicine and Rehabilitation
4. Physiotherapy.
5. Physical Therapy by APTA.
6. International Journal of Physiotherapy.
7. Physiotherapy Practice.
8. Musculoskeletal Science and Practice.
9. International Biomechanics
10. Journal of Strength and Conditioning Research
11. Chiropractic and Manual Therapies
12. Journal of Hand Therapy
13. Musculoskeletal Care
14. Strength and Conditioning Journal
15. Shoulder and Elbow
16. Journal of Back and Musculoskeletal Rehabilitation
17. Journal of Manual and Manipulative Therapy
18. Manual Therapy.
19. Journal of Manual Medicine
20. Journal of Orthopedics, Trauma and Rehabilitation.
21. Gait and Posture
22. Physiotherapy - The Journal of Indian Association of Physiotherapists.

M.S. Ramaiah University of Applied Sciences * Bangalore

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences

9. Course Organization

Course Code	**PT C 5 07 A**		
Course Title	**Foundations of Musculoskeletal Sciences**		
Course Leader's Name		Dr. Shobhalakshmi Holla	
Course Leader's Contact Details		**Phone:**	9008025432
		E-mail:	shobhaholla.rcp@msruas.ac.in
Course Specifications Approval Date		26.09.2022	
Next Course Specifications Review Date		01.07.2024	
Subsequent Course Specifications Review Date			

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

M.S. Ramaiah University of Applied Sciences * Bangalore

Course 3: Assessment Approaches and Diagnosis in Musculoskeletal Physiotherapy

Course Title	Assessment Approaches and Diagnosis in Musculoskeletal Physiotherapy
Course Code	PT C 5 08 A
Course Type	Core Theory Course
Department	Musculoskeletal Sciences
College	Physiotherapy

1. Course Summary

This course is designed to educate the students to acquire adequate knowledge and skills required to carry out a muscu;oskeletal assessment including investigations, It will emphasize the importance of identification of problems through detailed assessments and evaluations using clinical skills and valid outcome measures in order to develop a functional diagnosis and formulate treatment interventions for management of musculoskeletal dysfunctions.

2. Course Size and Credits:

Number of Credits	Annual
Credit Structure (Lecture: Tutorial: Practical)	Annual
Total Hours of Interaction	As per the academic regulation
Number of Weeks in a Semester	As per the academic regulation
Department Responsible	Musculoskeletal Sciences
Total Course Marks	100 + 100 (Theory + Practical)
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

On completion of the course, the postgraduate student will be able to

PT C 5 08 A CO1: Demonstrate clinical reasoning skills to enable effective examination of patients presenting with musculoskeletal problems

PT C 5 08 A CO2: Interpret diagnostic imaging, electrophysical test and other investigations required for physiotherapy clinical decision making in musculoskeletal disorders.

PT C 5 08 A CO3: Demonstrate the skills necessary to assess and identify impairments, limitations, and participatory restrictions through clinical reasoning appropriate tools.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

4. Course Contents

1. Assessment of traumatic and musculoskeletal dysfunctions including red flags and yellow flags.

a) Clinical decision making in selection of outcome measures used in trauma and musculoskeletal disorders

b) Physiotherapy diagnosis in musculoskeletal disorders

c) Clinical reasoning in assessment, diagnosis and selection of functional outcome measures used in trauma and musculoskeletal dysfunction

d) ICF in musculoskeletal diagnosis

2. Gait, posture analysis and functional assessment.

a) Kinetic and kinematic analysis of normal and pathological gait

b) Various methods to assess gait and posture including advanced technology based assessment tools

3. Investigation methods and diagnostic imaging used in musculoskeletal dysfunction

a) Blood investigations, ultrasonography, CT and MRI imaging

b) Electrophysiological testing and diagnosis in musculoskeletal dysfunction.

4. Ergonomic sassessment in work-related musculoskeletal disorders

a) Ergonomics risk assessment in musculoskeletal disorders

b) b.Tools used in ergonomic assessment

5. Fitness assessment in musculoskeletal disorders

a) Assessment of body composition

b) Flexibility, strength, endurance testing

c) Balance, co-ordination

d) Speed, power, agility

5. Course Map (CO-PO-PSO Map)

Program Outcome / Course Outcome	PT 162 PO1	PT 162 PO2	PT 162 PO3	PT 162 PO4	PT 162 PO5
PT C 5 08 A CO 1	3	2			
PT C 5 08 A CO 2		2			
PT C 5 08 A CO 3		1			
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution					

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

6. Course Teaching and Learning Methods

The Teaching and Learning Methods will include but not limited to:

Sl. No.	Teaching and Learning Methods	
1	**Lectures**	✓
2	**Seminars**	✓
3	**Group discussions**	✓
4	**Self-directed Learning**	✓
5	**Journal review meetings**	✓
6	Demonstrations and Skill Labs	
7	**Case Discussion and Presentation**	✓
8	**Patient Care in various settings**	✓
9	Field visits	
10	**Inter disciplinary meetings and discussions**	✓
11	Continuing Professional Development Programs	
12	**Conferences / Workshop / Symposium programmes**	✓
13	Research and Dissertation	

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Academic Regulations document pertaining to the Masters of Physiotherapy (MPT) Programme. The procedure to determine the final course marks is also presented in the Academic Regulations document.

8. Course Resources

Recommended Books

1. Nordin M, Frankel VH, editors. Basic biomechanics of the musculoskeletal system. Lippincott Williams & Wilkins; 4th Ed 2012.
2. Levangie PK, Norkin CC. Joint structure and function: a comprehensive analysis. 2019.
3. Lehmkuhl LD, Smith LK. Brunnstrom's clinical kinesiology. Davis; 5th Ed 1996.
4. Magee DJ. Orthopedic Physical Assessment. Elsevier Health Sciences; 7th Edition 2018.
5. Donatelli RA, Wooden MJ. Orthopaedic Physical Therapy. Elsevier health sciences; 2009.
6. Reese NB, Bandy WD. Joint range of motion and muscle length testing. Elsevier Health Sciences;2016.
7. Hislop H, Avers D, Brown M. Daniels and Worthingham's muscle Testing: Techniques of manual examination and performance testing. Elsevier Health Sciences; 2013.
8. McKinnis LN. Fundamentals of musculoskeletal imaging. FA Davis; 2013.
9. Greenspan A, Beltran J. Orthopaedic Imaging: A practical approach. Lippincott Williams & Wilkins;2020.

Principal and Dean
M.S.Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

10. O'Sullivan SB, Schmitz TJ. Physical rehabilitation, vol. 7. Philadelphia: FA Davis Company. 2019
11. McCarty DJ, Koopman WJ. Arthritis and allied conditions: a textbook of rheumatology. Philadelphia: Lea & Febiger; 1996.
12. American College of Sports Medicine. ACSM's resource manual for guidelines for exercise testing and prescription. Lippincott Williams & Wilkins; 2012.
13. Maxey L, Magnusson J. Rehabilitation for the postsurgical orthopedic patient. Elsevier Health Sciences; 2013.
14. S.B. Brotzman and R.C. Manske Clinical Orthopaedic Rehabilitation: An Evidence-Based Approach – Third Edition;Elsevier Mosby, 2011.
15. Hertling D, Kessler RM. Management of common musculoskeletal disorders: physical therapy principles and methods. Lippincott Williams & Wilkins; 2006.
16. Daniel S. Horwitz , Michael Suk MD. Hoppenfeld's Rehabilitation and Treatment of Fractures 2nd edition, 2018
17. Kimura J. Electrodiagnosis in diseases of nerve and muscle. Principles and practice. 2013.18.Chui KC, Jorge M, Yen SC, Lusardi MM. Orthotics and Prosthetics in Rehabilitation. Elsevier Health Sciences; 2019.
18. Ratliffe KT, Clinical pediatric physical therapy: A guide for the physical therapy team. Mosby Incorporated; 1998.
19. Saunders R, Astifidis R, Burke SL, CHT M, Higgins J, McClinton MA. Hand and upper extremity rehabilitation: a practical guide. Elsevier Health Sciences; 2015.
20. Cooper C. Fundamentals of Hand Therapy: Clinical Reasoning and Treatment Guidelines for Common Diagnoses of the Upper Extremity. Elsevier Health Sciences; 2014.
21. Burns YR, MacDonald J. Cyriax's Illustrated Manual of Orthopaedic Medicine. South African Journal of Physiotherapy. 1998 Feb 28; 54(1):22.
22. Cyriax JH, Cyriax P. Cyriax's illustrated manual of orthopaedic medicine. Elsevier Health Sciences;1996.
23. McKenzie R, May S. The lumbar spine: mechanical diagnosis and therapy. Orthopedic PhysicalTherapy; 2003.
24. McKenzie R. Stephen May. The cervical and thoracic spine: mechanical diagnosis and therapy. Orthopedic PhysicalTherapy; 2006.
25. Butler DS, Jones MA. Mobilisation of the nervous system. Elsevier health sciences; 1991.
26. Shacklock M. Clinical neurodynamics: a new system of neuromusculoskeletal treatment. Elsevier Health Sciences; 2005.
27. Mulligan B. Manual Therapy "NAGS","SNAGS","MWMS": 5thedn. Welington, Newzealand: Plane view service. 2004.
28. Jones LH, Kusunose R, Goering E. Jones Strain-Counterstrain. Jones Strain-Counterstrain. Inc., Idaho.1995.
29. Cantu RI, Grodin AJ. Myofascial manipulation: theory and clinical application. Aspen Pub; 2001.
30. Travell JG, Simons DG. Myofascial pain and dysfunction: the trigger point manual. Lippincott Williams & Wilkins; 3ED 2019.
31. Spoerl JJ, Mottice M, Benner EK. Soft Tissue Mobilization Techniques. JEMD Publications; 1994.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

32. Chaitow L, Crenshaw K. Muscle energy techniques. Elsevier Health Sciences; 2013.
33. Banks K, Newton M. Maitland's peripheral manipulation. Elsevier; 2014
34. Maitland GD, Hengeveld E, Banks K, English K. Maitland's vertebral manipulation: Elsevier Butterworth; 2005.
35. Kaltenborn FM. The spine. Basic evaluation and mobilization techniques. Olaf Norlis Bokhandel. 1993.
36. Kaltenborn FM, Evjenth O, Kaltenborn TB, Morgan D, Vollowitz E. Manual mobilization of the joints, vol. II: the spine. Oslo: Norlis. 2003.
37. Twomey LT. Grieve's modern manual therapy. Boyling JD, Jull GA, editors. London: Churchill Livingstone; 2004.
38. Macdonald R, editor. Taping techniques: principles and practice. Butterworth-Heinemann Medical;2004.
39. Hewetson TJ, Austin K, Gwynn-Brett K, Marshall S. An illustrated guide to taping techniques: Principles and practice. Elsevier Health Sciences; 2009.
40. Gatterman MI. Foundations of chiropractic: subluxation. Elsevier Health Sciences; 2005 Mar .
41. Haldeman S. Principles and practice of chiropractic. McGraw-Hill Medical; 2004 Sep 24.
42. Ward RC, Jerome JA. Foundations of Osteopathic Medicine. 1997. Williams and Wilkins, Baltimore, MD.
43. DiGiovanna EL, Schiowitz S, Dowling DJ, editors. An osteopathic approach to diagnosis and treatment. Lippincott Williams & Wilkins; 2005.

Recommended Journals

1. Journal of Orthopedic and Sports Physical Therapy
2. Journal of Physiotherapy-Official Journal of the Australian Physiotherapy Association
3. Archives of Physical Medicine and Rehabilitation
4. Physiotherapy.
5. Physical Therapy by APTA.
6. International Journal of Physiotherapy.
7. Physiotherapy Practice.
8. Musculoskeletal Science and Practice.
9. International Biomechanics
10. Journal of Strength and Conditioning Research
11. Chiropractic and Manual Therapies
12. Journal of Hand Therapy
13. Musculoskeletal Care
14. Strength and Conditioning Journal
15. Shoulder and Elbow
16. Journal of Back and Musculoskeletal Rehabilitation
17. Journal of Manual and Manipulative Therapy
18. Manual Therapy.
19. Journal of Manual Medicine
20. Journal of Orthopedics, Trauma and Rehabilitation.
21. Gait and Posture
22. Physiotherapy - The Journal of Indian Association of Physiotherapists.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

MSRUAS

9. Course Organization

Course Code	**PT C 5 02 A**	
Course Title	Assessment Approaches and Diagnosis in Musculoskeletal Physiotherapy	
Course Leader's Name	Dr. Shobhalakshmi Holla	
Course Leader's Contact Details	**Phone:**	9008025432
	E-mail:	shobhaholla.rcp@msruas.ac.in
Course Specifications Approval Date	26.09.2022	
Next Course Specifications Review Date	01.07.2024	
Subsequent Course Specifications Review Date		

Raundra
Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Course 4: Physiotherapy Interventions in Musculoskeletal Disorders

Course Title	**Physiotherapy Interventions in Musculoskeletal Disorders**
Course Code	PT C 5 09 A
Course Type	Core Theory Course
Department	Musculoskeletal Sciences
Faculty	Physiotherapy

1. Course Summary

This course will facilitate the student in enhancing their knowledge, skill and clinical reasoning in planning and executing treatment strategies for musculoskeletal dysfunctions. It will also focus on the development of skill to search for evidence, appraise the available literature and apply relevant evidence for the management of acute and chronic musculoskeletal dysfunctions.

2. Course Size and Credits:

Number of Credits	Annual
Credit Structure (Lecture: Tutorial: Practical)	Annual
Total Hours of Interaction	As per the Academic Regulations
Number of Weeks in a Semester	As per the Academic Regulations
Department Responsible	Musculoskeletal Sciences
Total Course Marks	100 + 100 (Theory + Practical)
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

On completion of the course, the postgraduate student will be able to

PT C 5 09 A CO 1: Demonstrate competencies in providing evidence based physiotherapy care for patient with musculoskeletal disorders.

PT C 5 09 A CO 2: Rationalise the individualised physiotherapy protocol with sound clinical reasoning in providing musculoskeletal care.

4. Course Contents

1. Pain management strategies in physiotherapy

a) Multidisciplinary and multimodal pain management approaches

b) Biopsychosocial approach to pain management cognitive behavioural therapy, graded motor imagery, Pharmacological management of pain

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

2. Physiotherapy management of traumatic and musculoskeletal disorders

a) Conservative and post- surgical management of fractures and soft tissue injuries including ligament injuries
b) Physiotherapy management of inflammatory, neoplastic and endocrine disorders
c) Spinal surgery and arthroplasties

3. Health promotion, Exercise planning and prescription for musculoskeletal disorders

a) Intervention strategies for mobility, stability, muscle endurance and neuromuscular control
b) Ergonomics for prevention and management of work related musculoskeletal disorders
c) Recent advances and evidence based management of musculoskeletal disorders

4. Manual therapy schools of thought for joint and soft tissue mobilisation

a) Maitland, Mulligan, Mckenzie, Cyriax concepts of joint mobilisation Neural mobilisation techniques
b) Myofascial release techniques, muscle energy techniques and positional release techniques

5. Prescription of orthotics, prosthetics and other assistive devices. 6. Advance technology based intervention

a) EMG-Biofeedback
b) Isokinetic training
c) Hydrotherapy
d) d.Virtual Rehabilitation

Registrar
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

5. Course Map (CO-PO-PSO Map)

Program Outcome / Course Outcome	PT 162 PO1	PT 162 PO2	PT 162 PO3	PT 162 PO4	PT 162 PO5
PT C 5 09 A – CO1		2	2		
PT C 5 09 A – CO2		3			
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution					

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

6. Course Teaching and Learning Methods

The Teaching and Learning Methods will include but not limited to:

Sl. No.	Teaching and Learning Methods	
1	**Lectures**	✓
2	**Seminars**	✓
3	**Group discussions**	✓
4	**Self-directed Learning**	✓
5	**Journal review meetings**	✓
6	Demonstrations and Skill Labs	
7	**Case Discussion and Presentation**	✓
8	**Patient Care in various settings**	✓
9	Field visits	
10	**Inter disciplinary meetings and discussions**	✓
11	**Continuing Professional Development Programs**	✓
12	**Conferences / Workshop / Symposium programmes**	✓
13	Research and Dissertation	

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Academic Regulations document pertaining to the Masters of Physiotherapy (MPT) Programme. The procedure to determine the final course marks is also presented in the Academic Regulations document.

8. Course Resources

Recommended Books

1. Nordin M, Frankel VH, editors. Basic biomechanics of the musculoskeletal system. Lippincott Williams & Wilkins; 4th Ed 2012.
2. Levangie PK, Norkin CC. Joint structure and function: a comprehensive analysis, 2019.
3. Lehmkuhl LD, Smith LK. Brunnstrom's clinical kinesiology. Davis; 5th Ed 1996.
4. Magee DJ. Orthopedic Physical Assessment. Elsevier Health Sciences; 7th Edition 2018.
5. Donatelli RA, Wooden MJ. Orthopaedic Physical Therapy. Elsevier health sciences; 2009.
6. Reese NB, Bandy WD. Joint range of motion and muscle length testing. Elsevier Health Sciences;2016.
7. Hislop H, Avers D, Brown M. Daniels and Worthingham's muscle Testing: Techniques of manual examination and performance testing. Elsevier Health Sciences; 2013.
8. McKinnis LN. Fundamentals of musculoskeletal imaging. FA Davis; 2013.
9. Greenspan A, Beltran J. Orthopaedic Imaging: A practical approach. Lippincott Williams & Wilkins;2020.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

10. O'Sullivan SB, Schmitz TJ. Physical rehabilitation, vol. 7. Philadelphia: FA Davis Company. 2019
11. McCarty DJ, Koopman WJ. Arthritis and allied conditions: a textbook of rheumatology. Philadelphia: Lea & Febiger; 1996.
12. American College of Sports Medicine. ACSM's resource manual for guidelines for exercise testing and prescription. Lippincott Williams & Wilkins; 2012.
13. Maxey L, Magnusson J. Rehabilitation for the postsurgical orthopedic patient. Elsevier Health Sciences; 2013.
14. S.B. Brotzman and R.C. Manske Clinical Orthopaedic Rehabilitation: An Evidence-Based Approach – Third Edition;Elsevier Mosby, 2011.
15. Hertling D, Kessler RM. Management of common musculoskeletal disorders: physical therapy principles and methods. Lippincott Williams & Wilkins; 2006.
16. Daniel S. Horwitz , Michael Suk MD. Hoppenfeld's Rehabilitation and Treatment of Fractures 2nd edition, 2018
17. Kimura J. Electrodiagnosis in diseases of nerve and muscle. Principles and practice. 2013.18.Chui KC, Jorge M, Yen SC, Lusardi MM. Orthotics and Prosthetics in Rehabilitation. Elsevier Health Sciences; 2019.
18. Ratliffe KT, Clinical pediatric physical therapy: A guide for the physical therapy team. Mosby Incorporated; 1998.
19. Saunders R, Astifidis R, Burke SL, CHT M, Higgins J, McClinton MA. Hand and upper extremity rehabilitation: a practical guide. Elsevier Health Sciences; 2015.
20. Cooper C. Fundamentals of Hand Therapy: Clinical Reasoning and Treatment Guidelines for Common Diagnoses of the Upper Extremity. Elsevier Health Sciences; 2014.
21. Burns YR, MacDonald J. Cyriax's Illustrated Manual of Orthopaedic Medicine. South African Journal of Physiotherapy. 1998 Feb 28; 54(1):22.
22. Cyriax JH, Cyriax P. Cyriax's illustrated manual of orthopaedic medicine. Elsevier Health Sciences;1996.
23. McKenzie R, May S. The lumbar spine: mechanical diagnosis and therapy. Orthopedic PhysicalTherapy; 2003.
24. McKenzie R. Stephen May. The cervical and thoracic spine: mechanical diagnosis and therapy. Orthopedic PhysicalTherapy; 2006.
25. Butler DS, Jones MA. Mobilisation of the nervous system. Elsevier health sciences; 1991.
26. Shacklock M. Clinical neurodynamics: a new system of neuromusculoskeletal treatment. Elsevier Health Sciences; 2005.
27. Mulligan B. Manual Therapy "NAGS","SNAGS","MWMS": 5thedn. Wellington, Newzealand: Plane view service. 2004.
28. Jones LH, Kusunose R, Goering E. Jones Strain-Counterstrain. Jones Strain-Counterstrain. Inc., Idaho.1995.
29. Cantu RI, Grodin AJ. Myofascial manipulation: theory and clinical application. Aspen Pub; 2001.
30. Travell JG, Simons DG. Myofascial pain and dysfunction: the trigger point manual. Lippincott Williams & Wilkins; 3ED 2019.
31. Spoerl JJ, Mottice M, Benner EK. Soft Tissue Mobilization Techniques. JEMD Publications; 1994.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Director Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

32. Chaitow L, Crenshaw K. Muscle energy techniques. Elsevier Health Sciences; 2013.
33. Banks K, Newton M. Maitland's peripheral manipulation. Elsevier; 2014
34. Maitland GD, Hengeveld E, Banks K, English K. Maitland's vertebral manipulation: Elsevier Butterworth; 2005.
35. Kaltenborn FM. The spine. Basic evaluation and mobilization techniques. Olaf Norlis Bokhandel. 1993.
36. Kaltenborn FM, Evjenth O, Kaltenborn TB, Morgan D, Vollowitz E. Manual mobilization of the joints, vol. II: the spine. Oslo: Norlis. 2003.
37. Twomey LT. Grieve's modern manual therapy. Boyling JD, Jull GA, editors. London: Churchill Livingstone; 2004.
38. Macdonald R, editor. Taping techniques: principles and practice. Butterworth-Heinemann Medical;2004.
39. Hewetson TJ, Austin K, Gwynn-Brett K, Marshall S. An illustrated guide to taping techniques: Principles and practice. Elsevier Health Sciences; 2009.
40. Gatterman MI. Foundations of chiropractic: subluxation. Elsevier Health Sciences; 2005 Mar .
41. Haldeman S. Principles and practice of chiropractic. McGraw-Hill Medical; 2004 Sep 24.
42. Ward RC, Jerome JA. Foundations of Osteopathic Medicine. 1997. Williams and Wilkins, Baltimore, MD.
43. DiGiovanna EL, Schiowitz S, Dowling DJ, editors. An osteopathic approach to diagnosis and treatment. Lippincott Williams & Wilkins; 2005.

Recommended Journals

1. Journal of Orthopedic and Sports Physical Therapy
2. Journal of Physiotherapy-Official Journal of the Australian Physiotherapy Association
3. Archives of Physical Medicine and Rehabilitation
4. Physiotherapy.
5. Physical Therapy by APTA.
6. International Journal of Physiotherapy.
7. Physiotherapy Practice.
8. Musculoskeletal Science and Practice.
9. International Biomechanics
10. Journal of Strength and Conditioning Research
11. Chiropractic and Manual Therapies
12. Journal of Hand Therapy
13. Musculoskeletal Care
14. Strength and Conditioning Journal
15. Shoulder and Elbow
16. Journal of Back and Musculoskeletal Rehabilitation
17. Journal of Manual and Manipulative Therapy
18. Manual Therapy.
19. Journal of Manual Medicine
20. Journal of Orthopedics, Trauma and Rehabilitation.
21. Gait and Posture
22. Physiotherapy - The Journal of Indian Association of Physiotherapists.

Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Approved by the Academic Council at its 26th Meeting held on 14th July 2022

MSRUAS

9. Course Organization

Course Code	**PT C 5 03 A**	
Course Title	**Physiotherapy Interventions in Musculoskeletal Disorders**	
Course Leader's Name	Dr. Shobhalakshmi Holla	
Course Leader's Contact Details	**Phone:**	9008025432
	E-mail:	shobhaholla.rcp@msruas.ac.in
Course Specifications Approval Date	26.09.2022	
Next Course Specifications Review Date	01.07.2024	
Subsequent Course Specifications Review Date		

Ravindra
Principal and Dean
M.S. Ramaiah College of Physiotherapy
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

M.S. Ramaiah University of Applied Sciences * Bangalore

Annexure 1

Programme Electives

Biomedical research (PT E 5 01 A) - Encompasses application such as devices, drug trials which are not covered under research syllabus as they are not integral to the programme outcomes. This course aims to provide the student an opportunity to understand research applications in the fields of the bio-physical sciences as well as an insight into clinical research.

Basic Life Support (PT E 5 02 A) - As a clinician in the field, a physiotherapist is expected to be competent in all life saving procedures. As the syllabus is more focussed towards the practice of physiotherapeutics, this course shall ensure that a physiotherapist is competent to deliver basic life support in case of an emergency. Furthermore, the certification is required to be a independent clinical practitioner.

Professional Ethics (PT E 5 03 A) – This module aims to augment the practice of ethics and professionalism as delivered in the main course. This course shall be done on a continuous basis along with other courses so as to leverage the experience gain by the students in clinical postings toward further development of professional ethics.

Open elective

Advanced Life Support (PT O 5 01 A)– This course aims to provide training on a set of life saving skills that extends beyond BLS. It is for health care professionals who either direct or participate in the management of cardiac emergencies such as cardiac arrest, stroke, myocardial infarction. It is provided by American Heart Association.

Medico legal aspects in patient care (PT O 5 02 A)– The course aims to equip the students in the basic understanding of medico legal jurisprudence so as to improve the understanding of the legal implications of day-to-day practice and the knowledge of consumer laws.

Quality management in health care (PT O 5 03 A)– This course aims to provide an overview of design, policies and processes that can minimize harm and optimize patient care and outcome.

Financial Literacy (PT O 5 04 A)– This course aims to provide the foundation for effective financial decision making with their financial resources. Financial literacy makes the student confident in understanding the concepts of saving, investing and debt that leads to an overall sense of financial well-being and self-trust.

Raindra

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Registrar
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054