



**Course Name: Laws, Ethics & Administration and Educational Methodology (LEM)**

**Year: MPT 1**

**Course Code: MPT101**

**Prerequisite:** Learners should possess foundational knowledge of physiotherapy practice, professional ethics, healthcare systems, research methodology, and basic teaching–learning principles acquired during undergraduate physiotherapy education.

**Rationale:** This course is designed to develop advanced competencies in ethical decision-making, legal and professional responsibilities, healthcare management, educational methodology, communication, and leadership skills essential for effective clinical practice, research, administration, teaching, and entrepreneurship in physiotherapy.

**Course Objective:**

At the end of the course, the learner should be able to,

| Sr. No | Course Objective                                                                                                                                           | Mapped CO |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1      | To develop understanding of legal principles, ethical guidelines, research ethics frameworks, and laws governing physiotherapy practice                    | CO1       |
| 2      | To impart knowledge of professional ethics, informed consent, confidentiality, and ethical responsibilities in physiotherapy practice and research         | CO2       |
| 3      | To enable application of management principles, communication skills, quality assurance, and administrative practices in physiotherapy services            | CO3       |
| 4      | To facilitate analytical understanding of educational principles, learning theories, and teaching–learning processes in physiotherapy education            | CO4       |
| 5      | To develop analytical skills in teaching methodologies, curriculum planning, assessment strategies, and professional development in physiotherapy practice | CO5       |

**Teaching and Examination Scheme**

| Teaching Scheme      |                       |                  |                      |        | Examination Scheme |    |   |                |   | Total |
|----------------------|-----------------------|------------------|----------------------|--------|--------------------|----|---|----------------|---|-------|
| Lecture<br>Hrs./Week | Tutorial<br>Hrs./Week | Lab<br>Hrs./Week | Seminar<br>Hrs./Week | Credit | Internal Marks     |    |   | External Marks |   |       |
|                      |                       |                  |                      |        | T                  | CE | P | T              | P |       |
| 2                    | -                     | -                | -                    | 6      | -                  | -  | - | 100            | - | 100   |

**T - Theory, P– Practical**

**Course Content:**

| Sr. No | Unit                         | Sub-unit | Content                                                                                                                                                                                                       | Weightage (%) | Teaching Hours | CO       |
|--------|------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|----------|
| 1      | Unit 1:<br>ETHICS<br>AND LAW | 1.1      | Principles of ethics History and evolution of ethics - Helsinki declaration; Nuremberg Code; Principles of ethics and its importance - Autonomy, Beneficence, Nonmaleficence, Justice                         | 4             | 4              | CO1      |
| 2      |                              | 1.2      | Professionalism                                                                                                                                                                                               | 3             | 2              | CO1      |
| 3      |                              | 1.3      | Ethics in professional practice Principles of practice in respective profession. Privacy, confidentiality, shared decision making, informed consent, equality and equity, justice                             | 4             | 4              | CO1      |
| 4      |                              | 1.4      | ICMR Guidelines General principles, Responsible conduct of research, Risk benefit assessment                                                                                                                  | 4             | 4              | CO1      |
| 5      |                              | 1.5      | Informed Consent Process Components of informed consent document, Procedure in obtaining informed consent, Special situations, waivers, and proxy consent                                                     | 5             | 4              | CO1      |
| 6      |                              | 1.6      | Roles and Responsibilities of IEC Ethical Review process, Classification of projects for review, Roles and responsibilities of members, Communications with investigators and authorities                     | 5             | 4              | CO2      |
| 7      |                              | 1.7      | Ethics in Special and Vulnerable Populations Types of Vulnerability and vulnerable population, Challenges for research in vulnerable population, Guidelines for research in special and vulnerable population | 4             | 4              | CO2      |
| 8      |                              | 1.8      | Conflict of Interest Definition and Types of Conflict of Interest, Identifying, mitigating and managing Conflict of Interest, Conflicts of interest in international collaborations                           | 4             | 3              | CO2      |
| 9      |                              | 1.9      | Publication Ethics Importance of publishing, Authorship guidelines according to ICMJE, Plagiarism                                                                                                             | 4             | 3              | CO2      |
| 10     |                              | 1.10     | Laws governing Physiotherapy practice: NCAHP Act, Consumer Protection Act, Rights of persons with disability act Ethical issues in practice of Physiotherapy-Clinical, Research and Academics                 | 5             | 4              | CO2, CO4 |
| 11     | Unit 2:<br>Management and    | 2.1      | Principles and applications of Management and Administration to Physio Therapy practice                                                                                                                       | 5             | 4              | CO3      |

|       |                                                                                                                               |     |                                                                                                                                                                                                                                                    |      |    |             |
|-------|-------------------------------------------------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----|-------------|
| 12    | administr<br>ation in<br>Physiothe<br>rapy                                                                                    | 2.2 | Management PROCESS: planning, organizing, staffing, finance, marketing, controlling, directing                                                                                                                                                     | 6    | 6  | CO3         |
| 13    |                                                                                                                               | 2.3 | Quality assurance: Total Quality Management: basis of quality management, quality assurance program in hospitals, medical audit and international quality system.                                                                                  | 5    | 5  | CO3         |
| 14    |                                                                                                                               | 2.4 | COMMUNICATION: Process of Communication Barriers to Communication Types of Communication Written vs. Oral Communication Elements of good communication                                                                                             | 5    | 5  | CO3,C<br>O5 |
| 15    |                                                                                                                               | 2.5 | Hospital as an organization: functions and types of hospitals MANAGEMENT IN HOSPITAL Setting of a physiotherapy service unit                                                                                                                       | 5    | 5  | CO3,C<br>O4 |
| 16    | Unit 3:<br>Managem<br>ent of<br>Teaching<br>Instituti<br>on and<br>Education<br>al<br>Methodol<br>ogy In<br>Physiothe<br>rapy | 3.1 | Education: definition, aims and objectives of education, Agencies of education, Formal and informal education, brief introduction to the philosophies of education, taxonomy of educational objectives, essentials of Physiotherapy education, NEP | 5    | 5  | CO4         |
| 17    |                                                                                                                               | 3.2 | Basics of Adult Learning Theories including Learning Styles and Motivation                                                                                                                                                                         | 5    | 4  | CO4         |
| 18    |                                                                                                                               | 3.3 | Concept of teaching – learning - nature of learning, type and stages of learning, factors affecting learning, laws of learning, learning style teaching learning process, role of teacher in teaching learning process, adult learning             | 6    | 5  | CO4,<br>CO5 |
| 19    |                                                                                                                               | 3.4 | Teaching skills, Teaching Methods in Classroom Setting, clinical teaching methods, planning of teaching: lesson planning and unit planning Teaching aids and educational technology                                                                | 5    | 5  | CO5         |
| 20    |                                                                                                                               | 3.5 | Formulating Intended Learning Outcomes Including Tyler’s principles, Bloom's Taxonomy, Miller's Pyramid, Clinical Competence, and Dreyfus' Model of Skill Acquisition                                                                              | 6    | 6  | CO5         |
| 21    |                                                                                                                               | 3.6 | Entrepreneurship in Physiotherapy Practice: Need, Advantages and Opportunities,                                                                                                                                                                    | 5    | 4  | CO5         |
| TOTAL |                                                                                                                               |     |                                                                                                                                                                                                                                                    | 100% | 90 | -           |



**Course Outcome**

At the end of the course, the learner should be able to,

|            |                                                                                                                                         |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO1</b> | Describe fundamental legal principles, ethical guidelines, research ethics frameworks (ICMR), and laws governing physiotherapy practice |
| <b>CO2</b> | Explain professional ethics, informed consent, confidentiality, and ethical responsibilities in physiotherapy practice and research     |
| <b>CO3</b> | Discuss principles of management, communication, quality assurance, and administration in physiotherapy services                        |
| <b>CO4</b> | Explain educational principles, learning theories, and teaching–learning processes relevant to physiotherapy education                  |
| <b>CO5</b> | Describe teaching methodologies, curriculum planning, assessment frameworks, and professional development in physiotherapy practice     |



**Course Name: Research methodology and Biostatistics and Evidence based practice (RMB)**

**Year: MPT 1**

**Course Code: MPT102**

**Prerequisite:** Learners should possess foundational knowledge of research principles, basic statistics, scientific writing, and undergraduate-level evidence-based physiotherapy practice.

**Rationale:** This course is designed to equip postgraduate physiotherapy students with advanced competencies in research methodology, biostatistics, evidence-based practice, critical appraisal, and scientific communication necessary for conducting, interpreting, and translating research into clinical and academic practice.

**Course Objective:**

At the end of the course, the learner should be able to,

| Sr. No | Course Objective                                                                                                                                                                                                                                                                                                | Mapped CO |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1      | To explain the basic concepts of research methodology including types of research, research questions, and different study designs used in rehabilitation research.                                                                                                                                             | CO1       |
| 2      | To develop understanding of sources of bias, research reporting, evaluation of published research, authorship roles, research communication, and principles of evidence-based practice including formulation of clinical questions, use of guidelines, and translation of evidence into physiotherapy practice. | CO2       |
| 3      | To explain the principles of sampling, measurement, outcome measures, and basic statistical concepts used in research.                                                                                                                                                                                          | CO3       |
| 4      | To describe statistical tests, interpretation of data, and use of statistical software in research analysis.                                                                                                                                                                                                    | CO4       |
| 5      | To explain the principles of scientific writing including research reports, publication, citation styles, thesis preparation, and presentation of research work.                                                                                                                                                | CO5       |

**Teaching and Examination Scheme**

| Teaching Scheme |           |           |           |        | Examination Scheme |    |   |                |   | Total |
|-----------------|-----------|-----------|-----------|--------|--------------------|----|---|----------------|---|-------|
| Lecture         | Tutorial  | Lab       | Seminar   | Credit | Internal Marks     |    |   | External Marks |   |       |
| Hrs./Week       | Hrs./Week | Hrs./Week | Hrs./Week |        | T                  | CE | P | T              | P |       |
| 2               | -         | -         | -         | 6      | -                  | -  | - | 100            | - | 100   |

T - Theory, P- Practical



**Course Content:**

| Sr. No | Unit                                | Sub-unit | Content                                                                                                                                 | Weightage | Teaching Hours | CO      |
|--------|-------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|---------|
| 1      | Unit 1 -<br>RESEARCH<br>METHODOLOGY | 1.1      | Introduction to research                                                                                                                | 2         | 2              | CO1     |
| 2      |                                     | 1.2      | Types of research                                                                                                                       | 2         | 2              | CO1     |
| 3      |                                     | 1.3      | Defining a research question                                                                                                            | 2         | 2              | CO1     |
| 4      |                                     | 1.4      | Qualitative study designs                                                                                                               | 2         | 2              | CO1     |
| 5      |                                     | 1.5      | Quantitative study                                                                                                                      | 2         | 2              | CO1     |
| 6      |                                     | 1.6      | Type I and type II bias                                                                                                                 | 2         | 2              | CO2     |
| 7      |                                     | 1.7      | Study design: types                                                                                                                     | 2         | 2              | CO1     |
| 8      |                                     | 1.8      | Case study, Case series, longitudinal cohort, Pre post design, Time series design, repeated measures design, Randomized control design. | 5         | 4              | CO1     |
| 9      |                                     | 1.9      | Sampling design, calculating minimum sample size based on design                                                                        | 3         | 3              | CO3     |
| 10     |                                     | 1.10     | Measurement: Properties of measurement: reliability, validity, responsiveness, MCID.                                                    | 2         | 2              | CO3     |
| 11     |                                     | 1.11     | Outcome measures: Use of outcome measures in rehabilitation research                                                                    | 2         | 2              | CO3     |
| 12     |                                     | 1.12     | Research Methods: Designing methodology, Reporting results, Type I and Type II bias.                                                    | 2         | 2              | CO2,CO3 |
| 13     |                                     | 1.13     | Communicating research.                                                                                                                 | 2         | 1              | CO2,CO5 |
| 14     |                                     | 1.14     | Evaluating published research: looking at the evidence                                                                                  | 2         | 2              | CO2     |
| 15     |                                     | 1.15     | Introduction to evidence-based practice, evaluating evidence                                                                            | 2         | 2              | CO2     |
| 16     |                                     | 1.16     | Asking clinical questions                                                                                                               | 2         | 1              | CO2     |
| 17     |                                     | 1.17     | Translating of evidence into practice: strategies                                                                                       | 2         | 2              | CO2     |
| 18     |                                     | 1.18     | Use of clinical practice guidelines, clinical pathways, prediction rules to inform practice.                                            | 2         | 1              | CO2     |
| 19     | Unit 2 -<br>BIOSTATISTICS           | 2.1      | Descriptive Statistics and measurement variability                                                                                      | 3         | 3              | CO3     |
| 20     |                                     | 2.2      | Inferential Statistics                                                                                                                  | 3         | 3              | CO3     |
| 21     |                                     | 2.3      | Comparison of group means: T-test                                                                                                       | 3         | 3              | CO4     |
| 22     |                                     | 2.4      | Analysis of variance                                                                                                                    | 3         | 3              | CO4     |
| 23     |                                     | 2.5      | Multiple comparison tests                                                                                                               | 2         | 2              | CO4     |
| 24     |                                     | 2.6      | Parametric and Non parametric tests                                                                                                     | 3         | 3              | CO3,CO4 |
| 25     |                                     | 2.7      | Correlations                                                                                                                            | 2         | 2              | CO4     |
| 26     |                                     | 2.8      | Regression                                                                                                                              | 3         | 3              | CO4     |
| 27     |                                     | 2.9      | Analysis of frequencies: Chi square                                                                                                     | 2         | 2              | CO4     |
| 28     |                                     | 2.10     | Statistical measure of validity and reliability                                                                                         | 2         | 2              | CO3,CO4 |
| 29     |                                     | 2.11     | Factorial Design analysis                                                                                                               | 2         | 2              | CO4     |



|       |                             |      |                                                                                                                                                                                                                             |      |    |         |
|-------|-----------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----|---------|
| 30    |                             | 2.12 | Power analysis – Determining sample size, Epidemiological Measures – Rate, Ratio, Proportion, Incidence and prevalence, Relative risk, Risk ratio, Odds ratio                                                               | 5    | 4  | CO3,CO4 |
| 31    |                             | 2.13 | Application of various statistical software.                                                                                                                                                                                | 2    | 2  | CO4     |
| 32    | Unit 3 - SCIENTIFIC WRITING | 3.1  | Definition and kinds of scientific documents – Research paper, Review paper, Book, Reviews, Thesis, Conference and project reports (for the scientific community and for funding agencies).                                 | 5    | 4  | CO5     |
| 33    |                             | 3.2  | Publication – Role of author, Guide, Co-authors.                                                                                                                                                                            | 3    | 3  | CO2,CO5 |
| 34    |                             | 3.3  | Structure, Style and contents; Style manuals (APA, MLA); Citation styles: Footnotes, References; Evaluation of research                                                                                                     | 5    | 4  | CO5     |
| 35    |                             | 3.4  | Significance of Report writing; Different steps in Report writing; Mechanics and precautions of writing research reports Oral and poster presentation of research papers in conferences/symposia; Preparation of abstracts. | 7    | 5  | CO5     |
| 36    |                             | 3.5  | Structure of Thesis and Content – Preparing Abstracts.                                                                                                                                                                      | 5    | 4  | CO5     |
| TOTAL |                             |      |                                                                                                                                                                                                                             | 100% | 90 | -       |

#### Course Outcome

At the end of the course, the learner should be able to,

|            |                                                                                                                                                                                                                                                                                                                                                                   |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO1</b> | Explain the basic concepts of research methodology including types of research, research questions, qualitative and quantitative designs, study designs, and methods used in rehabilitation research.                                                                                                                                                             |
| <b>CO2</b> | Describe the sources of bias, principles of research reporting, and evaluation of published research, along with the roles of authors and co-authors, communication of research findings, and the principles of evidence-based practice, including formulation of clinical questions, use of guidelines, and translation of evidence into physiotherapy practice. |
| <b>CO3</b> | Explain the principles of measurement, sampling, outcome measures, descriptive and inferential statistics, and epidemiological concepts used in research.                                                                                                                                                                                                         |
| <b>CO4</b> | Describe statistical tests, data analysis methods, interpretation of results, and use of statistical software in research.                                                                                                                                                                                                                                        |
| <b>CO5</b> | Explain the principles of scientific writing including research documentation, publication process, citation styles, report writing, thesis preparation, and presentation of research.                                                                                                                                                                            |





**Course Name: Biomechanics & Therapeutics (BCT)**

**Year: MPT 1**

**Course Code: MPT103**

**Prerequisite:** Learners should possess foundational knowledge of human anatomy, physiology, kinesiology, exercise therapy, electrotherapy, and basic physiotherapy assessment and treatment principles acquired during undergraduate physiotherapy education.

**Rationale:** This course is designed to develop advanced understanding of biomechanics, movement analysis, therapeutic exercise techniques, electrodiagnostic procedures, and physiotherapy interventions to enhance clinical reasoning, functional rehabilitation, evidence-based practice, and patient-centered care in physiotherapy.

**Course Objective:**

At the end of the course, the learner should be able to,

| Sr. No | Course Objective                                                                                                                                                                                                                                                       | Mapped CO |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1      | To develop understanding of principles of kinesiology, biomechanics, tissue mechanics, kinetics, kinematics, biomechanical analysis of human motion, analytical tools and instrumentation, and biomechanics of the upper extremity in physiotherapy                    | CO1       |
| 2      | To provide knowledge of biomechanics of the lower extremity, gait, gait analysis, and pathological gait in physiotherapy practice                                                                                                                                      | CO2       |
| 3      | To enable understanding of principles of therapeutic exercises including dynamic, plyometric, isokinetic, kinetic chain exercises, balance and coordination training, tissue response to mechanical loading, and functional assessment and re-education                | CO3       |
| 4      | To develop understanding of biomechanics of the spine, ergonomic principles, clinical reasoning approaches, manual therapy concepts, electrodiagnosis, electromyography, nerve conduction studies, evoked potentials, and biofeedback used in physiotherapy evaluation | CO4       |
| 5      | To impart knowledge of physiotherapy modalities including hydrotherapy, yoga, thermal agents, electrotherapy (low and high frequency currents, TENS, IFT, LASER), advanced electrotherapeutics, and wound care in physiotherapy practice                               | CO5       |

**Teaching and Examination Scheme**

| Teaching Scheme |           |           |           |        | Examination Scheme |    |   |                |   | Total |
|-----------------|-----------|-----------|-----------|--------|--------------------|----|---|----------------|---|-------|
| Lecture         | Tutorial  | Lab       | Seminar   | Credit | Internal Marks     |    |   | External Marks |   |       |
| Hrs./Week       | Hrs./Week | Hrs./Week | Hrs./Week |        | T                  | CE | P | T              | P |       |
| 2               | -         | -         | -         | 6      | -                  | -  | - | 100            | - | 100   |

T - Theory, P- Practical



**Course Content:**

| Sr. No | Unit                              | Sub-unit | Content                                                                                                                                           | Weightage | Teaching Hours | CO       |
|--------|-----------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|----------|
| 1      | Unit 1 - Concepts of Biomechanics | 1.1      | Introduction to Kinesiology and Biomechanics. Biomechanics of Tissues and structures of the musculoskeletal system                                | 2         | 2              | CO1      |
| 2      |                                   | 1.2      | Principle of Biomechanics                                                                                                                         | 3         | 2              | CO1      |
| 3      |                                   | 1.3      | Nature and importance of Biomechanics in Physiotherapy.                                                                                           | 1         | 1              | CO1      |
| 4      |                                   | 1.4      | Methods of kinetics and kinematics investigation                                                                                                  | 2         | 2              | CO1      |
| 5      |                                   | 1.5      | Introduction to biomechanical analysis of human motion.                                                                                           | 2         | 2              | CO1      |
| 6      |                                   | 1.6      | Analytical tools and techniques –1. Isokinetic Dynamometer,2. Kinesiological EMG,3. Electronic Goniometer,4. Force Platform,5. Videography.       | 3         | 3              | CO1      |
| 7      |                                   | 1.7      | Upper Extremity: Shoulder and Shoulder girdle, Elbow joint, Wrist joint and Hand.                                                                 | 10        | 7              | CO1      |
| 8      |                                   | 1.8      | Lower Extremity: Pelvic Girdle, Hip joint, Knee joint, Ankle & Foot                                                                               | 10        | 6              | CO2      |
| 9      |                                   | 1.9      | Spine                                                                                                                                             | 5         | 4              | CO4      |
| 10     |                                   | 1.10     | Gait                                                                                                                                              | 3         | 3              | CO2      |
| 11     |                                   | 1.11     | Gait Analysis: Kinetic & Kinematic Analysis.                                                                                                      | 3         | 3              | CO2      |
| 12     |                                   | 1.12     | Pathological Gait: Kinetic & Kinematic Analysis                                                                                                   | 3         | 3              | CO2      |
| 13     |                                   | 1.13     | Ergonomic approach to lifting and handling, workspace and environment. Patient positioning, body mechanics and Transfer techniques                | 3         | 3              | CO4      |
| 14     | Unit 2 - Physiotherapy techniques | 2.1      | Principle of therapeutic exercises                                                                                                                | 2         | 2              | CO3      |
| 15     |                                   | 2.2      | Definition, details of effects and uses of following exercises.                                                                                   | 1         | 1              | CO3      |
| 16     |                                   | 2.3      | Dynamic Exercises                                                                                                                                 | 2         | 2              | CO3      |
| 17     |                                   | 2.4      | Plyometric Exercises                                                                                                                              | 1         | 1              | CO3      |
| 18     |                                   | 2.5      | Isokinetic Exercises                                                                                                                              | 2         | 2              | CO3      |
| 19     |                                   | 2.6      | Kinetic chain exercises                                                                                                                           | 2         | 2              | CO3      |
| 20     |                                   | 2.7      | Balance and coordination exercises                                                                                                                | 2         | 2              | CO3      |
| 21     |                                   | 2.8      | Biophysics of contractile and non-contractile tissues, Response to mechanical loading                                                             | 2         | 2              | CO3      |
| 22     |                                   | 2.9      | Clinical reasoning and differential clinical diagnosis based on various approaches such as Maitland, Kaltenborne, Cyriax, Mulligan, McKenzie etc. | 4         | 3              | CO4      |
| 23     |                                   | 2.10     | Proprioceptive neuromuscular Facilitation,                                                                                                        | 2         | 2              | CO3, CO4 |
| 24     |                                   | 2.11     | Hydrotherapy Techniques                                                                                                                           | 2         | 2              | CO5      |
| 25     |                                   | 2.12     | Functional assessment and re-education                                                                                                            | 2         | 2              | CO3      |

|              |      |                                                                                                                                                                                                                                                                                                                                                                                                  |             |           |          |
|--------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------|----------|
| 26           | 2.13 | Yoga: Introduction, Historical background and Origin of Yoga, Meaning and Concept of Yoga and its relationship with Physical Education and Sports, Yoga in Global Scenario, Pranayama: Meaning, Types and its importance. Asanas: Asanas- meaning, types, principles, Techniques of asanas and effects of asanas on various systems of the body - circulatory, respiratory and digestive system. | 2           | 2         | CO5      |
| 27           | 2.14 | Electro diagnosis: introduction to methods of electro diagnosis SD CURVE                                                                                                                                                                                                                                                                                                                         | 2           | 2         | CO4      |
| 28           | 2.15 | Electromyography: technique of EMG, interpretation of normal and abnormal responses                                                                                                                                                                                                                                                                                                              | 2           | 2         | CO4      |
| 29           | 2.16 | Nerve conduction studies: MNCV, SNCV, variables affecting nerve conduction, measurement of NCV of nerves of upper limb and lower limb, interpretations of normal and abnormal responses.                                                                                                                                                                                                         | 3           | 3         | CO4      |
| 30           | 2.17 | Evoked potentials, H-reflex, P wave, repetitive nerve stimulation, VEP, BAEP, SSEP, SSR.                                                                                                                                                                                                                                                                                                         | 2           | 2         | CO4      |
| 31           | 2.18 | Review of Principles underlying the application of following modalities with reference to their Production, biophysical and therapeutic effects, indications and contraindications and the specific uses of: 1. Superficial heating modalities, 2. Deep heating modalities, 3. Ultrasound, 4. Cryotherapy                                                                                        | 3           | 3         | CO5      |
| 32           | 2.19 | Review of Principles underlying the application of following modalities with reference to their Production, biophysical and therapeutic effects, indications and contraindications and the specific uses of Physiotherapy                                                                                                                                                                        | 2           | 2         | CO5      |
| 33           | 2.20 | Low Frequency Current: Diadynamic Current, Iontophoresis                                                                                                                                                                                                                                                                                                                                         | 2           | 2         | CO5      |
| 34           | 2.21 | High Voltage, Pulsed Galvanic Stimulation, TENS, IFT, Russian Currents. LASER                                                                                                                                                                                                                                                                                                                    | 3           | 3         | CO5      |
| 35           | 2.22 | Advanced Electro Therapeutics in Tissue healing, Wound care, Management of Scars, keloids, Muscle Plasticity & Integumentary Conditions.                                                                                                                                                                                                                                                         | 3           | 3         | CO5      |
| 36           | 2.23 | Bio-Feedback                                                                                                                                                                                                                                                                                                                                                                                     | 2           | 2         | CO4, CO5 |
| <b>TOTAL</b> |      |                                                                                                                                                                                                                                                                                                                                                                                                  | <b>100%</b> | <b>90</b> | <b>-</b> |



**Course Outcome**

At the end of the course, the learner should be able to,

|            |                                                                                                                                                                                                                                                          |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO1</b> | Explain the principles of kinesiology, biomechanics, tissue mechanics, kinetics, kinematics, biomechanical analysis of human motion, analytical tools and instrumentation, and biomechanics of the upper extremity in physiotherapy.                     |
| <b>CO2</b> | Describe the biomechanics of lower extremity, gait, gait analysis, and pathological gait in physiotherapy practice.                                                                                                                                      |
| <b>CO3</b> | Explain the principles of therapeutic exercises including dynamic, plyometric, isokinetic, kinetic chain exercises, balance and coordination training, tissue response to mechanical loading, and functional assessment and re-education.                |
| <b>CO4</b> | Describe the biomechanics of the spine, ergonomic principles, clinical reasoning approaches, manual therapy concepts, electrodiagnosis, electromyography, nerve conduction studies, evoked potentials, and biofeedback used in physiotherapy evaluation. |
| <b>CO5</b> | Explain the application of physiotherapy modalities including hydrotherapy, yoga, thermal agents, electrotherapy (low and high frequency currents, TENS, IFT, LASER), advanced electrotherapeutics, and wound care in physiotherapy practice.            |


**Course Name: Sports Traumatology (STT)**
**Year: MPT 1**
**Course Code: MPTS104**

**Prerequisite:** Learners should possess foundational knowledge of human anatomy, kinesiology, biomechanics, exercise physiology, musculoskeletal assessment, and basic sports physiotherapy principles acquired during undergraduate physiotherapy education.

**Rationale:** This course is designed to develop advanced competencies in sports injury assessment, clinical decision-making, risk evaluation, emergency management, biomechanical analysis, injury prevention, rehabilitation, and return-to-sport planning essential for evidence-based sports physiotherapy practice.

**Course Objective:**

At the end of the course, the learner should be able to,

| Sr. No | Course Objective                                                                                                                                                                                                                  | Mapped CO |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1      | To develop understanding of principles of assessment, documentation, diagnostic imaging, pathological investigations, clinical decision making, and causes and mechanisms of sports injuries in sports physiotherapy              | CO1       |
| 2      | To provide knowledge of pre-participation evaluation, physical fitness assessment, sports-specific examination, risk factor analysis, prevention of sports injuries, causes of collapse, and return-to-sport criteria in athletes | CO2       |
| 3      | To enable understanding of principles of management of acute and overuse sports injuries of upper limb, lower limb, and spine in sports physiotherapy                                                                             | CO3       |
| 4      | To develop understanding of principles of emergency care, first aid, medical planning, transportation, emergency situations, and management of collapsed or injured athletes during sports events                                 | CO4       |
| 5      | To impart knowledge of biomechanical analysis of sports skills, sport-specific injuries, and preventive considerations related to individual, team, contact, and water sports                                                     | CO5       |

**Teaching and Examination Scheme**

| Teaching Scheme |           |           |           |        | Examination Scheme |    |   |                |   | Total |
|-----------------|-----------|-----------|-----------|--------|--------------------|----|---|----------------|---|-------|
| Lecture         | Tutorial  | Lab       | Seminar   | Credit | Internal Marks     |    |   | External Marks |   |       |
| Hrs./Week       | Hrs./Week | Hrs./Week | Hrs./Week |        | T                  | CE | P | T              | P |       |
| 3               | -         | 3         | -         | 12     | -                  | -  | - | 100            | - | 100   |

T - Theory, P– Practical



## Course Content:

| Sr. No | Unit   | Sub-unit | Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Weightage | Teaching Hours | CO  |
|--------|--------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|-----|
| 1      | Unit 1 | 1.1      | ICF conceptual frame work 1. Importance of assessment & evaluation, Outlines of principles and Methods of evaluation. Need and types of Documentation. 2. Critical decision making and selection of outcome measures in SPORTS Physiotherapy. 3. Investigative Procedures. Diagnostic imaging (CT, MRI, Ultra sound, bone scan and other diagnostic imaging's) for diagnosis of congenital anomalies and normal variants, traumatic injuries, scoliosis, degenerative disorders and infections). 4. Principles of pathological investigations and imaging techniques related to musculoskeletal disorders with interpretation Causes & Mechanism of Sports Injuries.                                                                                                                                                                                                                                                                                                   | 11        | 25             | CO1 |
| 2      |        | 1.2      | Evaluation Of Risk Factors And Pre-Participation Examination: 1. Components of pre-participation evaluation, Scope and implementation of pre-participation program in Sports PT; 2. Evaluation of Physical Fitness: Assessment of components of physical fitness including functional tests: muscle strength, flexibility, agility, balance, co-ordination, sensory deficits, cardio-pulmonary endurance; 3. Sports-Specific evaluation and criteria for return to sport; 4. Examination of lower limb - i. Pelvis, ii. Hip, iii. Thigh, iv. Knee, v. Leg, vi. Ankle and Foot; 5. Examination of Upper Extremity - i. Shoulder girdle, ii. Shoulder, iii. Arm, iv. Elbow & Forearm, v. Wrist and hand. 6. Assessment of vertebral column - i. Cervical, ii. Thoracic, iii. Lumbosacral including Tests of Neural Tension; 7. Sporting emergencies screening - i. Head and neck, ii. Face, iii. Abdominal injuries; 8. Anthropometric evaluation; 9. Kinesiological EMG | 12        | 25             | CO2 |
| 3      | Unit 2 | 2.1      | Causes & Mechanism of Sports Injuries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5         | 13             | CO1 |
| 4      |        | 2.2      | Prevention of Sports injuries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5         | 13             | CO2 |
| 5      |        | 2.3      | Principle of management of sports injuries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5         | 13             | CO3 |



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|--------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|----------|
| 6            | 2.4  | Common acute and overuse injuries, causation, prevention and management of lower Extremity in Sports PT                                                                                                                                        | 5           | 13         | CO3      |
| 7            | 2.5  | Common acute and overuse injuries, causation, prevention and management of upper extremity in Sports PT                                                                                                                                        | 5           | 13         | CO3      |
| 8            | 2.6  | Common sports injuries of spine with respect to causation, prevention and management                                                                                                                                                           | 5           | 12         | CO3      |
| 9            | 2.7  | Sporting emergencies first aid                                                                                                                                                                                                                 | 5           | 12         | CO4      |
| 10           | 2.8  | Emergency Medical Planning and Cover for Sports Events                                                                                                                                                                                         | 5           | 12         | CO4      |
| 11           | 2.9  | Emergency Situations, Primary and secondary emergency assessment, emergency plan, Transportation of an injured person                                                                                                                          | 5           | 12         | CO4      |
| 12           | 2.10 | Treatment of collapsed athlete- Severe head injury, Athlete with spinal injury,                                                                                                                                                                | 5           | 12         | CO4      |
| 13           | 2.11 | Causes of Collapse                                                                                                                                                                                                                             | 5           | 12         | CO2, CO4 |
| 14           | 2.12 | Sports specific injuries, with special emphasis on the specific risk factor, nature of Sports,                                                                                                                                                 | 11          | 25         | CO3, CO5 |
| 15           | 2.13 | Biomechanical Analysis of Skills, kind of medical intervention anticipated and prevention with respect to various sporting events. i. Individual events: Field & Track. ii. Team events. iii. Contact and Non-contact sports. iv. Water sports | 11          | 25         | CO2, CO5 |
| <b>TOTAL</b> |      |                                                                                                                                                                                                                                                | <b>100%</b> | <b>240</b> | <b>-</b> |



### Course Outcome

At the end of the course, the learner should be able to,

|            |                                                                                                                                                                                                                                          |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO1</b> | Describe the principles of assessment, documentation, diagnostic imaging, pathological investigations, clinical decision making, and causes and mechanisms of sports injuries in sports physiotherapy.                                   |
| <b>CO2</b> | Explain the components of pre-participation evaluation, physical fitness assessment, sports-specific examination, risk factor analysis, prevention of sports injuries, causes of collapse, and criteria for return to sport in athletes. |
| <b>CO3</b> | Explain the principles of management of acute and overuse sports injuries of upper limb, lower limb, and spine in sports physiotherapy.                                                                                                  |
| <b>CO4</b> | Describe the principles of emergency care, first aid, medical planning, transportation, emergency situations, and management of collapsed or injured athlete during sports events.                                                       |
| <b>CO5</b> | Explain the biomechanical analysis of sports skills, sport-specific injuries, and preventive considerations related to individual, team, contact, and water sports.                                                                      |