

DEPARTMENT OF PHYSIOTHERAPY
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY
HISAR – 125001 (HARYANA)

PROPOSED SYLLABUS FOR
MASTER OF PHYSIOTHERAPY
TWO YEARS DEGREE COURSE
BASED ON CREDIT BASED SYSTEM
REVISED SYLLABUS
TO BE IMPLIMENTED FROM: 2021-2022

Note:-

- Weightage of minor and major tests etc. shall be conducted as per policy of University.

- All other rules and regulations for the students of Physiotherapy shall be applicable as per ordinance of the Department / University already in force and / or as amended from time to time.

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PREAMBLE

At the outset it must be mentioned that the present document should best be taken as a guiding framework. In preparing the same we are well aware that in some small pockets in the country, the teaching of Physiotherapy is thriving in creative directions. A few departments are grounded in clinical perspectives, some other in the experimental research and industrial-organizational areas. The Learning Outcome based curriculum framework (LOCF), it is to be better understood as a document to be studied in relation to other advances in the field of Physiotherapy. It intends to offer a broad guideline to reorient the organization of teaching-learning processes at the UG and PG level to augment the quality of learning in the context of contemporary challenges of higher education in India. It explores the opportunities to improve class room transaction, teacher preparation and sense of relevance for the learners. In this endeavour it departs from the earlier scheme in a major way and explicitly states the learning outcomes and uses that to organize the diverse teaching-learning processes. In so doing it tries to address the needs of society, groups and the individual.

This scheme considers learning as an experiential and participatory activity with sufficient space for innovation and initiative, building the scientific spirit of objectivity and critical perspective. In this venture teachers and learners are assumed to jointly engage in a creative exercise of knowledge construction and skill building. In the last few decades, the discipline of Physiotherapy has also emerged as a new treatment measure. Its training can empower students assess diagnose and treat various disorders or diseases and mal alignments. Teaching program therefore must include the agenda/ courses which are meaningful to the surrounding society. Educational institutions must reach out to the society. This will give us opportunity to get validation of skill training, knowledge acquisition, research and demonstration of relevance of graduate attributes. In turn, this kind of experience will also help shaping the learning outcomes. The employability gap would also be addressed. Preparing teachers to teach through pedagogies suitable to promote the values given in the LOCF document is an essential condition for the attainment of LOCF. It is perhaps the most daunting challenge in order to fulfil the mandate of LOCF. The diversity maintenance and appreciation, along with standardisation of teaching -learning across the nation requires accommodating local realities with an open mind.

Physiotherapy or Physical Therapy (P.T.) is a Movement Science with an established theoretical and scientific base and widespread clinical applications in the Prevention, Restoration and Rehabilitation, Maintenance and Promotion of optimal physical function.

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

This holistic approach incorporates a broad range of physical and physiological therapeutic interventions and aids. The core skills used by Physiotherapy include manual therapy, therapeutic exercises and the application of electro-therapeutic modalities.

Specifically, physiotherapists improve the client's quality of life by:

- Promoting optimal mobility, physical activity, and overall health and wellness;
- Preventing disease, injury, and disability;
- Geriatric care and Rehabilitation;
- Managing acute and chronic conditions, activity limitations and participation restrictions;
- Improving and maintaining optimal functional independence and physical performance;
- Rehabilitating injury and the effects of disease or disability with therapeutic exercise programs and other interventions; and
- Educating and planning maintenance and support programs to prevent re-occurrence, re-injury or functional decline.

LEARNING OBJECTIVES OF THE COURSE

▪ COMMUNICATION

- Effective communication and interpersonal skill which are adapted to meet the needs of diverse individuals and groups.

▪ ETHICAL AND LEGAL STANDARDS

- Adherence to safe, ethical and legal standards of current practice (as identified by professional organisations, federal and state law and accrediting bodies).

▪ DIAGNOSIS AND PLAN OF CARE

- Development of physiotherapy diagnoses and an individualized plan of care for the management and prevention of movement dysfunction across the life span.
- Demonstrate effective physiotherapy screening of the following systems for keep-refer decisions: Musculoskeletal; Neuromuscular; Cardiovascular and Pulmonary; Integumentary.
- Demonstrate effective history taking, examination, evaluation, and re-evaluation that leads to an appropriate physiotherapy diagnosis and prognosis for patients with disorder of the following systems: Musculoskeletal; Neuromuscular; Cardiovascular and Pulmonary; Integumentary
- Develop an appropriate plan of care and intervention for patients with disorders of the following systems: Musculoskeletal; Neuromuscular; Cardiovascular and Pulmonary; Integumentary.
- Assess and address needs of individuals and communities for health promotion and prevention of movement dysfunction.

1. TEAM MEMBER

Effective participation as an intra- and inter-professional team member.

2. PRACTICE MANAGEMENT

Effective clinical practice management for delivery of physiotherapy services in diverse settings.

3. TEACHING AND LEARNING PRINCIPLES

Application of teaching and learning principles in educational, practice, and community settings.

4. EVIDENCE-BASED PRACTICE

Application of principles of critical thinking and clinical reasoning to evidence-based physiotherapist practice.

5. PROFESSIONAL RESPONSIBILITY AND COMMITMENT

Responsibility and commitment to the profession and society through life-long learning and involvement in activities beyond the job responsibilities.

LEARNING OUTCOMES OF THE COURSE

On completion of this course, the students will be able to:

1. Integrate concepts from the biological, physical, behavioural, and clinical sciences into physical therapy services
2. Exhibit professional conduct and behaviours that are consistent with the legal and ethical practice of physical therapy
3. Demonstrate compassion, caring, integrity, and respect for differences, values, and preferences in all interactions with patients/clients, family members, health care providers, students, other consumers, and payers
4. Demonstrate culturally sensitive verbal, nonverbal, and written communications that are effective, accurate, and timely
5. Collect and critically evaluate data and published literature to apply in the delivery of care, practice management, and to examine the theoretical and scientific basis for physical therapy
6. Screen patients/clients to determine if they are candidates for physical therapy services or if a referral to, or consultation with, another health care professional or agency is warranted
7. Complete a patient/client examination/ re-examination and evaluate and interpret the examination data to determine a physical therapy diagnosis and prognosis
8. Employ critical thinking, self-reflection, and evidence-based practice to make clinical decisions about physical therapy services

9. Collaborate with patients/clients, caregivers, and other health care providers to develop and implement an evidence-based plan of care that coordinates human and financial resources
10. Provide services and information related to health promotion, fitness, wellness, health risks, and disease prevention within the scope of physical therapy practice.
11. Advocate for patient/client and profession
12. Provide consultative services and education to patients/clients, caregivers, health care workers, and the public using culturally sensitive methods that are adapted to the learning needs, content, and context
13. Employ effective leadership skills in the context of supervising, delegating, and mentoring within the profession

Master of Physiotherapy -1st year

(Common to all disciplines)

SEMESTER I										
S.No	Course	Subject	Title	Teaching hrs/week		Marks				
				L-T-P	Credits	Theory		Practical		Total Marks
						Internal	External	Internal	External	
1	MPT 111	Review of Basic Sciences (Anatomy)	PC	4-0-0	4	30	70	---	---	100
2	MPT 112	Review of Basic Sciences (Physiology)	PC	4-0-0	4	30	70	---	---	100
3	MPT 113	Applied Physiotherapy	PC	6-0-0	6	30	70	---	---	100
4	MPT 113 P	Applied Physiotherapy Practical	PC	0-0-6	3			30	70	100
5	MPT 114	Applied Biomechanics	PC	4-0-0	4	30	70	---	---	100
6	MPT 115	Biostatistics and Research Methodology	PC	4-0-0	4	30	70	---	---	100
7	MPT 116	Seminar /case presentations	PC	0-0-4	2	---	---	30	70	100
8	MPT 117	Clinical Training	PC	0-0-10	Qualifying	---	---	---	---	---
					27	150	350	60	140	700

Master of Physiotherapy -1st year

(Common to all Disciplines)

SEMESTER II										
S.No.	Course	Subject	Title	Teaching hrs./week		Marks				Total Marks
				L-T-P	Credits	Theory		Practical		
						Internal	External	Internal	External	
1	MPT 211	Review of Basic Sciences (Pathology)	PC	4-0-0	4	30	70	---	---	100
2	MPT 212	Review of Basic Sciences (Pharmacology)	PC	4-0-0	4	30	70	---	---	100
3	MPT 213	Advanced Physiotherapy	PC	6-0-0	6	30	70			100
4	MPT 213 P	Advanced Physiotherapy Practical	PC	0-0-6	3			30	70	100
5	MPT 214	Ergonomics	PC	4-0-0	4	30	70	---	---	100
6	MPT 215	Professional development & Ethics	PC	4-0-0	4	30	70	---	---	100
7j	MPT 216	Seminar /case presentations	PC	0-0-4	2	---	---	30	70	100
7	MPT 217	Clinical Training	PC	0-0-10	Qualifying	---	---	---	---	---
					27	150	350	60	140	700

Master of Physiotherapy- 2nd year

(Musculoskeletal Disorders)

SEMESTER III										
S.No.	Course	Subject	Title	Teaching hrs/week		Marks				Total Marks
				L-T- P	Credits	Theory		Practical		
						Internal	External	Internal	External	
1	MPT 331	Medical and surgical Management in Musculoskeletal Disorders	PC	6-0-0	6	30	70	---	---	100
2	MPT 332	Vertebral Disorders and Rehabilitation	PC	6-0-0	6	30	70	---	---	100
3	MPT 333	Hand Rehabilitation	PC	6-0-0	6	30	70	---	---	100
4	MPT 334	Assessment & Physiotherapy Management in Musculoskeletal Disorders	PC	6-0-0	6	30	70	---	---	100
5	MPT 335 P	Practical (Musculoskeletal Disorders, clinical / viva-voce)	PC	0-0-8	4	---	---	30	70	100
6	MPT 336	Seminar /case presentations	PC	0-0-4	2	---	---	30	70	100
7	MPT 337	Clinical Training	PC	0-0-10	Qualifyin g	---	---	---	---	---
					30	120	280	60	140	600

SEMESTER IV										
S.No.	Course	Subject	Title	Teaching hrs/week		Marks				Total Marks
				L-T-P	Credits	Theory		Practical		
						Internal	External	Internal	External	
1	MPT 338	Dissertation (based on clinical / case presentation including viva-voce)	PC	0-0-24	12	---	---	---	100	100
2	MPT 339	Seminar	PC	0-0-4	2	---	---	30	70	100
Total Credits					14					200

Master of Physiotherapy- 2nd year

(Neurological Disorders)

SEMESTER III										
S.No.	Course	Subject	Title	Teaching hrs/week		Marks				Total Marks
				L-T-P	Credits	Theory		Practical		
						Internal	External	Internal	External	
1	MPT 441	Medical and Surgical Management in Neurological Disorders	PC	6-0-0	6	30	70	---	---	100
2	MPT 442	Physiotherapy in Neurological Disorders	PC	6-0-0	6	30	70	---	---	100
3	MPT 443	Neurological Rehabilitation	PC	6-0-0	6	30	70	---	---	100
4	MPT 444	Physiotherapy in Pediatric Neurology	PC	6-0-0	6	30	70	---	---	100
5	MPT 445 P	Practical (Neurological Disorders, clinical / viva-voce)	PC	0-0-8	4	---	---	30	70	100
6	MPT 446	Seminar /case presentations	PC	0-0-4	2	---	---	30	70	100
7	MPT 447	Clinical Training	PC	0-0-10	Qualifying	---	---	---	---	---
Total Credits					30	120	280	60	140	600

SEMESTER IV										
S.No.	Course	Subject	Title	Teaching hrs/week		Marks				Total Marks
				L-T-P	Credits	Theory		Practical		
						Internal	External	Internal	External	
1	MPT 448	Dissertation (based on clinical / case presentation including viva-voce)	PC	0-0-24	12	---	---	---	100	100
2	MPT 449	Seminar	PC	0-0-4	2	---	---	30	70	100
Total Credits					14					200

Master of Physiotherapy- 2nd year

Sports Physiotherapy

SEMESTER III										
S.No	Course	Subjects	Title	Teaching hrs/week		Marks				Total marks
				L-T-P	credits	Theory		Practical		
						Internal	External	Internal	External	
1.	MPT 551	Medical and surgical Management in Sports Injuries	PC	6-0-0	6	30	70			100
2.	MPT 552	Traumatology	PC	6-0-0	6	30	70			100
3.	MPT 553	Fundamentals in Sports	PC	6-0-0	6	30	70			100
4.	MPT 554	Rehabilitation in Sports	PC	6-0-0	6	30	70			100
5.	MPT 555 P	Practical (Sports Physiotherapy, clinical / viva-voce)	PC	0-0-8	4	---	---	30	70	100
6.	MPT 556	Seminar/Case presentations	PC	0-0-4	2	---	---	30	70	100
7.	MPT 557	Clinical Training	PC	0-0-10	Qualifying	---	---	---	---	-----
Total Credits					30	120	280	60	140	600
SEMESTER IV										
S.No	Course	Subjects	Title	Teaching hrs/week		Marks				Total marks
				L-T-P	credits	Theory		Practical		
						Internal	External	Internal	External	
1.	MPT 558	Dissertation (Based on clinical/case presentation including viva-voce)	PC	0-0-24	12	---	---		100	100
2.	MPT 559	Seminar	PC	0-0-4	2	---	---	30	70	100
Total Credits					14					200

Master of Physiotherapy -2nd year

(Cardiothoracic and Pulmonary Disorders)

SEMESTER III										
S.No.	Course	Subject	Title	Teaching hrs/week		Marks				Total Marks
				L-T-P	Credits	Theory		Practical		
						Internal	External	Internal	External	
1	MPT 661	Medical and surgical Management in Cardiovascular and Pulmonary Conditions	PC	6-0-0	6	30	70	---	---	100
2	MPT 662	Physiotherapy Management of Cardiovascular and Pulmonary Conditions	PC	6-0-0	6	30	70	---	---	100
3	MPT 663	Fundamental of Cardiovascular and Pulmonary System	PC	6-0-0	6	30	70	---	---	100
4	MPT 664	Cardiac & Pulmonary Rehabilitation	PC	6-0-0	6	30	70	---	---	100
5	MPT 665 P	Practical (Cardiothoracic & Pulmonary Disorders, clinical / viva-voce)	PC	0-0-8	4	---	---	30	70	100
6	MPT 666	Seminar /Case Presentations	PC	0-0-4	2	---	---	30	70	100
7	MPT 667	Clinical Training	PC	0-0-10	Qualifying	---	---	---	---	---
		Total Credits			30	120	280	60	140	600

SEMESTER IV										
S.No.	Course	Subject	Title	Teaching hrs/week		Marks				Total Marks
				L-T-P	Credits	Theory		Practical		
						Internal	External	Internal	External	
1	MPT 668	Dissertation (based on clinical / case presentation including viva-voce)	PC	0-0-24		12	---	---	100	100
2	MPT 669	Seminar	PC	0-0-4		2	---	30	70	100
Total credits						14				200

Master of Physiotherapy -1st year

(Common to all disciplines)

SEMESTER -I

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 111	Review of Basic Sciences (Anatomy)	PC	4-0-0	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Q.no.1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand the basic human anatomy.
CO2.	Demonstrate competency in performing surface marking and interpreting the various body parts.
CO3.	Understand the clinical anatomy of the various body parts.
CO4.	Examine current approaches to understand the structure of human body.

Course Contents

Unit I

1. Basic human anatomy

- i) Bone/joints (Osteology and Arthrology)

- ii) Muscles (Myology)
- iii) Nerve and nervous system
- iv) Integumentary system

Unit II

1. Upper limb and lower limb

- i) Bone and Joints
- ii) Muscles
- iii) Nerve and nervous system
- iv) Vascular system

Various regions:

- Upper limb-Pectoral, Axilla, Scapular, Arm, Forearm, Cubital fossa and Hand.
- Lower limb-Thigh, Gluteal region, Popliteal fossa, Leg and Foot

2. Introduction to trunk region

- i) Bone and Joints (Vertebrae, Ribs and Sternum)
- ii) Muscles
- iii) Nerve and Plexuses
- iv) Vascular structures
- v) Various regions
 - Thoracic
 - Lumbar
 - Sacro-Coccygeal

3. Head & Neck

- i) Bone & Joints

- ii) Muscles
- iii) Nerve and Plexuses
- iv) Vascular structures
- v) Various regions-
 - Head- Cranial cavity, Orbit, Nasal, cavity, Oral cavity
 - Neck- Triangles (anterior& posterior) back of neck

Unit III

1. Cardio-Respiratory system

- i) Pleura and Lungs
- ii) Pericardium and Heart
- iii) Vessels and Large vessels

Unit IV

1. Neuro-anatomy

- i) Nervous System
 - Central Nervous System (Brain and Spinal Cord)
 - Somatic Nervous System (Cranial and Spinal)
 - Autonomic Nervous System
- ii) Meninges and Ventricular system of C.N.S.
- iii) Blood supply to C.N.S.

Reference books

- McMinn's Color Atlas of Human Anatomy./ Abrahams, Peter H.,Edition 5
- Cunningham's Manual of Practical Anatomy by GJ Romanes.,Edition 1,Vol 3(1986)
- Textbook of Human Neuroanatomy./ Singh, Inderbir.,Edition 10(2017)
- Clinical Anatomy for Medical students./ Snell, Richard S.,Edition 6(2000)
- Essential Clinical Anatomy./ More, Keith L.,Edition 5(2014)
- Human Anatomy: Color Atlas and Text/ by JA Gosling, PF Harris, I Whitmore and PLT Willan ,Edition 3(1996)
- Human Anatomy: Regional and Applied/ by BD Chaurasia ,Edition 7,Vol4,(2016)

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 112	Review of Basic Sciences (Physiology)	PC	4-0-0	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Demonstrate competency in interpreting the functioning of various body parts.
CO2.	Understand the difference between normal and abnormal physiology of different body parts.
CO3.	Examine current approaches to understand the functions of human body.

Course Contents

Unit I

1. Cardiovascular System

- i) Structure and Properties of Heart
- ii) Cardiac Cycle
- iii) The regulation of Heart's performance/circulation during Exercise
- iv) Cardiac Output
- v) The Arterial Blood Pressure
- vi) The Physiology of Vascular System

- vii) Lymphatic Circulation
- viii) Protection from Coronary Heart disease
- ix) Sudden Cardiac death in Sports

2. Respiratory System

- i) Ventilation and Control of Ventilation
- ii) Alveolar air
- iii) Regulation of Breathing/Respiration during Exercise
- iv) Pulmonary Function Test
- v) Air Conditioning
- vi) Second wind
- vii) Oxygen Debt
- viii) Breath holding and Scuba Diving, High Pressure Ventilation

Unit II

1. Muscle Physiology

- i) Electrical properties of Neuron
- ii) Classification of Nerve Injury
- iii) Effects of Nerve Injury
- iv) Structure of Skeletal Muscle
- v) Electrical properties of Skeletal Muscle
- vi) The Contractile Mechanism
- vii) Length-Tension Relationship
- viii) Fast and Slow Muscles
- ix) Skeletal Muscle Metabolism
- x) Growth and Exercise
- xi) Repair and Adaptation during Exercise
- xii) Training for Muscular Strength and Endurance
- xiii) Muscle tissue Fiber types and their significance

UNIT III

1. Gastrointestinal tract& Endocrine

- i) Effects of Sports on G.I.T. and Liver
- ii) Hormone regulation, Fluid and Electrolytes during Exercise
- iii) Exercise and Menstrual Cycle
- iv) Stress Hormones in Exercise
- v) Effects of Exercise on various Hormones in the Body
- vi) Opioids, Runner's high

UNIT IV

1. Nervous System

- i) Elementary Neuro-Anatomy
- ii) Neurons and Neuroglia
- iii) Properties of nerve fibers, Synapse
- iv) Spinal cord
- v) Cerebral Cortex
- vi) Pyramidal and Extra Pyramidal system
- vii) The Cerebellum
- viii) Autonomic Nervous System
- ix) Cerebrospinal fluid
- x) Cranial nerves

Reference books

- Principles of Exercise Physiology/Axen, Kenneth.,Edition 1(2000)
- Physiology of Sport and Exercise by Wilmore, Jack M, Edition 4(2008)
- Text book of Practical Physiology/ Ghai, CL, Edition 8th(2013)
- Concise Medical Physiology/Chaudhary, Sujit K., Edition 7th
- Human Physiology/ by NM Muthayya/Muthayya, MN., Edition 4th (2010)
- Samson Wright's Applied Physiology/Keele, Cyril A., Edition 13th (2008)
- Textbook of Medical Physiology/Guyton, Arthur C, Edition 11(2007)
- Textbook of Physiology/ by AK Jain, Edition 5th ,Vol 1&2(2017)

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 113	Applied Physiotherapy	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Q.no.1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand role of Exercise therapy
CO2.	Review of various mobilization techniques for rehabilitation.
CO3.	Understand current treatment approaches to exercise and electro therapy.
CO4.	Understand Evidence based clinical practice in rehabilitation.

Course Contents

Unit I

- i) Assessment techniques: Manual Muscle Testing and Goniometry
- ii) Stretching and Mobilization
- iii) Re-education and Strengthening
- iv) Balance and Co-ordination Exercise
- v) Analysis of gait and gait training (Normal and Pathological)

Unit II

- i) Relaxation and Soft Tissue Manipulations
- ii) Posture
- iii) PNF and Neuromuscular Coordination
- iv) Hydrotherapy
- v) Joint Mobilization

Unit III

- i) General Review of Low, Medium and High frequency currents and their modifications like Di-dynamic and Russian Currents etc.
- ii) Laser
- iii) Cryotherapy

Unit IV

- i) UVR and IRR
- ii) Other Thermal Modalities like SWD, MWD, Hydro Collator, Wax therapy and Fluido- therapy

Reference books

- The Principles of Exercise Therapy/ Gardiner, M Dena.,Edition 4th (2005)
- Therapeutic Exercise: Foundation and Techniques/ by Carolyn Kisner and Lynn Allen Colby.,Edition 6th (2012)
- Practical Exercise Therapy/ by Margaret Hollis &Phyl Fletcher- Cook,Edition 4th (1999)
- Electrotherapy Explained: Principles and Practice/ by John Low, Ann Reed and Mary Dyson,Edition 3rd (1999)
- Clayton's Electrotherapy/ edited by Sheila Kitchen and Sarah Bazin,Edition 10(2000)
- Muscles Testing and Function/ by Florence Peterson Kendall (et al.),Edition 5th,(2005)
- Therapeutic Modalities for Physical Therapists/ by William E Prentice, William Quillen and Frank Underwood,Edition 2,(2002)
- Therapeutic Exercise Moving toward Function/ by Carrie M Hall and Lori Thein Brody.,Edition 3(2010)
- Daniels and Worthingham's Muscle Testing Techniques of Manual Examination/ by Helen J Hislop and Jacqueline Montgomery,Edition 9,(2013)

Course No	Subject	Title	Teaching Hours/ Week	
			L –T - P	Credits
MPT 113 P	Applied Physiotherapy Practical	PC	0- 0- 6	3

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand the role of Exercise therapy techniques by using practical knowledge for rehabilitation in clinical judgment.
CO2.	Understand the demonstration of various mobilization techniques for rehabilitation.
CO3.	Practically demonstrate exercise therapy and electro therapy.
CO4.	Understand evidence based clinical practice in rehabilitation.

Course Contents

Unit I

1. Exercise Therapy

- i) Musculoskeletal and Neurological Assessment
- ii) Strengthening techniques
- iii) Soft tissue Stretching and Mobilization
- iv) Gait Analysis and Training
- v) Postural assessment and Re-education
- vi) Balance and Coordination
- vii) Hydrotherapy

Unit II

1. Electrotherapy

All types of Low and Medium Frequency Currents

- i) Faradic
- ii) Galvanic
- iii) High Voltage Current
- iv) Di Dynamic
- v) Russian
- vi) Interferential Therapy
- vii) TENS
- viii) Micro Currents

Unit III

All types of High Frequency Currents and Modalities

- i) Cryotherapy
- ii) UVR
- iii) IRR
- iv) LASER

Unit IV

Other modalities like Hydro-Collator, Wax-therapy, Fluido-therapy

Reference books

- The Principles of Exercise Therapy/ Gardiner, M Dena.,Edition5th (2002)
- Therapeutic Exercise: Foundation and Techniques/ by Carolyn Kisner and Lynn Allen Colby.,Edition 2nd
- Practical Exercise Therapy/ by Margaret Hollis &Phyl Fletcher- Cook,Edition 5th
- Electrotherapy Explained: Principles and Practice/ by John Low, Ann Reed and Mary Dyson,Edition 3rd
- Clayton's Electrotherapy/ edited by Sheila Kitchen and Sarah Bazin,Edition4th
- Muscles Testing and Function/ by Florence Peterson Kendall (et al.),Edition3rd
- Therapeutic Modalities for Physical Therapists/ by William E Prentice, William Quillen and Frank Underwood,Edition1st
- Therapeutic Exercise Moving toward Function/ by Carrie M Hall and Lori Thein Brody.,Edition 3rd
- Daniels and Worthingham's Muscle Testing Techniques of Manual Examination/ by Helen J Hislop and Jacqueline Montgomery,Edition 2nd.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 114	Applied Biomechanics	PC	4-0-0	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand role of applied biomechanics by using theoretical and practical knowledge for rehabilitation in clinical judgment.
CO2.	Understand Review of biomechanics in movement and mobilization techniques for rehabilitation.
CO3.	Understand Current approaches in applied biomechanics.
CO4.	Present Evidence based clinical practice in rehabilitation.

Course Contents

Unit I

1. Fundamental Mechanics

- i) Forces; Composition and Resolution of Forces; Force Systems
- ii) Force of Gravity, LOG and COG

- iii) Stability
- iv) Reaction forces
- v) Friction
- vi) Moments
- vii) Newton's laws
- viii) Equilibrium: Static and Dynamic
- ix) Simple Machines: Levers, Pulleys, Wheel and Axis
- x) Work, Power and Energy
- xi) Density and Mass
- xii) Segmental dimensions
- xiii) Poisson's effect
- xiv) Stress and Strain
- xv) Modulus of Rigidity and Modulus of Elasticity
- xvi) Strain energy
- xvii) Static and Cyclic Load behaviors
- xviii) Load: Load sharing and Load transfer

2. Kinematics

- i) Motion: Types, Location, Magnitude and Direction
- ii) Angular Motion and its various parameters
- iii) Linear Motion and its various parameters
- iv) Projectile Motion

Unit II

1. Muscle Mechanics

- i) Structure and Composition of Muscle
- ii) Fiber length and Cross-Section Areas
- iii) Mechanical properties
- iv) EMG changes during Fatigue and Contraction
- v) Changes in Mechanical properties because of Aging, Exercise and Immobilization
- vi) Clinical applications

2. Ligament and Tendon Mechanics

- i) Structure, Composition and Mechanical Properties
- ii) Cross-Sectional Area measurement
- iii) Muscle Tendon properties
- iv) Temperature Sensitivity
- v) Changes in Mechanical properties because of Aging, Exercise and Immobilization
- vi) Mechanoreceptors
- vii) Clinical application

3. Joint Mechanics

- i) Joint design
- ii) Joint categories
- iii) Joint functions: Arthrokinematics , Osteokinematics and kinematics chains
- iv) Joint forces, Equilibrium and Distribution of these forces
- v) Degenerative changes in Weight bearing Joints and Compensatory actions
- vi) Joint Stability and Its Mechanisms
- vii) Clinical applications

Unit III

1. Measurement Instruments

- i) Photo-Optical devices
- ii) Pressure Transducers and Force Plates
- iii) Gait Analyzer
- iv) Isokinetic device
- v) EMG (Electro Physiology of Muscle contraction, Recording, Processing)
- vi) Relationship between EMG and Biomechanical Variables

2. Mechanical energy, Work and Power

- i) Definitions
- ii) Positive and Negative Muscles Work
- iii) Muscle Mechanical Power
- iv) Causes of Inefficient, Movement Co-contractions, Isometric contractions, Against Gravity Jerky movement, Energy generation at one joint and Absorption at another, Energy flow
- v) Energy Storage

3. Gait

- i) Gait parameter : Kinetic, Kinematics, Time-Space
- ii) Pathological Gait
- iii) Running
- iv) Stair Climbing
- v) Changes in Gait following various Surgeries/Diseases/Disorders

Unit IV

1. Cardiopulmonary Mechanics

- i) Cardio Mechanics
- ii) Pulmonary Mechanics
- iii) Vascular Mechanics

2. Joint structure and function of

- i) Vertebral Column
- ii) Hip Joint
- iii) Knee Joint
- iv) Ankle and Foot Complex
- v) Shoulder Joint
- vi) Elbow Joint
- vii) Wrist and Hand Complex

Reference books:

- Introduction to Kinesiology/ Hoffman, Shirf, Edition 4th (2013)
- Kinesiology: The Mechanics & Pathomechanics of Human Movement/ by Carol A Oatis., Edition 2nd (2009)
- Joint Structure and Function Cynthia Norkins, Edition 5th (2010)
- Joint Structure and Function: A Comprehensive Analysis./ Levangie, Pamela K, Edition 5th (2010)
- Clinical Biomechanics of the Lower Extremities/ by Ronald L Valmassy, Edition 1 (1996)
- Fundamentals of Biomechanics, Orkaya, N, Edition 2 (2007)

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 115	Biostatistics and Research Methodology	PC	4-0-0	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Apply the information on research design and their implementation.
CO2.	Identify to read critique research articles and understand and apply the principles of research to perform a guided research.
CO3.	Recognize the importance of data collection and its role in determining scope of inference; Demonstrate a solid understanding of interval estimation and hypothesis testing
CO4.	Analyze and undertake data for research purpose and its documentation for long life learning in physiotherapy.

Course Contents

Unit I

1. Research Methodology

- i) How to Read and Critique Research
- ii) Introduction to Research: Framework, Levels of Measurement and Variables
- iii) Basic Research Concepts: Validity and Reliability
- iv) Design Instrumentation and Analysis of Qualitative Research
- v) Design Instrumentation and Analysis of Quantitative Research
- vi) How to Write a Research Proposal
- vii) The Use and Protection of Human and Animal Subjects

Unit II

1. Biostatistics

- i) Introduction
- ii) Description and Inferential Statistics, Methods of Collection, Classification, Tabulation and Presentation of Data
- iii) Central Tendency: Mean, Median, Mode and Standard deviation

Unit III

- i) Co-relation and Regression
- ii) Karl Pearson's Co-relation method
- iii) Rank Co-relation method
- iv) Regression and Co-efficient
- v) Hypothesis Testing
- vi) Data collection
- vii) Types of Sampling
- viii) Parametric and Non – Parametric Tests

Unit IV

- i) Probability, Binomial distribution, Poisson's distribution, Normal distribution
- ii) One way ANOVA & Two way ANOVA
- iii) Test of Significance (t test, chi square test, f test, z test)
- iv) Non Parametric Tests
- v) Simple Statistical Analysis using available Software

Reference books

- Research Methods in Physical Activity: Thomas, J, Edition 7th(2015)
- Statistical Application for Health Information Management: Osborn, CE, Edition 2(2005)
- Clinical Research for Health Professionals: A User-friendly Guide: Batavia, Mitchell., Edition 1,(2000)
- Clinical Audit in Physiotherapy: From Theory into Practice./ Barnard, Sue., Edition 1(1998)
- Practical Research: A Guide for Therapists./ French, Sally, Edition 2(2001)
- Rehabilitation Research: Principles and Applications: Elizabeth Domholdt, Edition 4th(2010)
- Methods in Biostatistics for Medical Students and Research Workers. Mahajan BK., Edition 7th(2010)
- Manual of Biostatistics: Baride, JP, Edition 1(2003)
- Medical Biostatistics: Indrayan, A., Edition 4th (2018)

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 116	Seminar/ Case Presentations	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Review the physical therapy documentation including the goals, and objectives; identifying major indications, contraindication, precautions and safety issues and identifying patient goals and outcomes in the documents
CO2.	Describe safe environments, appropriate risk management strategies, and emergency responses/support activities to take when the safety of self, patient or others is at risk in the clinical setting with evidences.
CO3.	Learn communication processes and presentations of different cases.
CO4.	Understand evidence based clinical practice in rehabilitation.

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT117	Clinical Training	PC	0-0-10	Qualifying

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Develop initial patient contact skills and apply directed components of basic data collection and intervention techniques.
CO2.	Review the physical therapy documentation including the goals, and objectives; identifying major indications, contraindication, precautions and safety issues and identifying patient goals and outcomes in the documents
CO3.	Describe safe environments, appropriate risk management strategies, and emergency responses/support activities to take when the safety of self, patient or others is at risk in the clinical setting.
CO4.	Get knowledge of communication processes within the clinical arena including referral process, patient delegation, review of records, between health care team members, and methods for reporting patient status.
CO5.	Engage in clinical training in hospital based medical and physiotherapy departments/ settings to enhance their clinical skills and apply contemporary knowledge gaining during teaching sessions.

Students will undergo clinical training in recognized physiotherapy unit for a period of 2 hours/day for 5 days in a week (240 hours) .OPD set ups will be under the supervision of senior physiotherapist. A Register/Log book will be maintained by student to document the Evaluation / Functional Analysis and Functional Diagnosis. Reports of minimum 5 cases per assignment and signature to be obtained from respective Section–in–charge at the end of each assignment for submission to the chairperson.

Master of Physiotherapy -1st year

(Common to all disciplines)

SEMESTER –II

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 211	Review of Basic Sciences (Pathology)	PC	4-0-0	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rests of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand the concept of cell injury, the change produced thereby, in the different tissues and organs and the body capacity for healing
CO2.	Understand the etiopathogenesis, the pathological effects and the clinic-pathological correlation of common infectious and non-infectious disease.
CO3.	Correlate normal and altered morphology of different organ systems in different diseases to the extent needed of understanding of the disease processes and their significance
CO4.	Attain knowledge of various neurological, musculoskeletal and cardiovascular disorders commonly treated by physiotherapy and their effects on human system

Course Contents

Unit I

GENERAL PATHOLOGY

- i) Cell injury
- ii) Inflammation
- iii) Repair
- iv) Immune system

Unit II

NERVOUS SYSTEM

- i) Meningitis
- ii) Encephalitis
- iii) Vascular Disease:
- iv) Ischemic Encephalopathy
- v) Cerebral Infarction
- vi) Intracranial Infarction
- vii) Intracranial Hemorrhage
- viii) Degenerative Disease:
- ix) Alzheimer's Disease
- x) Huntington's Disease
- xi) Parkinson's Disease
- xii) Motor Neuron Disease
- xiii) Demyelinating Disease:
- xiv) Multiple Sclerosis
- xv) The Peripheral Nervous System
- xvi) Peripheral Neuropathy
- xvii) Acute Idiopathic Polyneuropathy
- xviii) Diabetic Neuropathy

Unit III

MUSCULOSKELETAL SYSTEM

- i) Bones
- ii) Hereditary and Metabolic Diseases (Osteoporosis, Rickets, Osteomalacia, Osteitis)

Fibrosa Cystica, renal Osteodystrophy)

iii) Infections (Osteomyelitis and Tuberculosis)

iv) Joints:

v) Degenerative Joint Disease

vi) Bursitis

vii) Skeletal Muscles:

viii) Muscle Atrophy

ix) Myositis

x) Muscular Dystrophy

xi) Myasthenia Gravis

Unit IV

CARDIOVASCULAR SYSTEM

i) Rheumatic Heart Disease

ii) Myocardial Infarction

iii) Atherosclerosis

iv) Congenital Heart Diseases

Reference books

- Textbook of Pathology./ Mohan, Harsh., Edition 7th (2015)
- Pathology Illustrated/ by Peter S Macfarlane, Robin Reid and Robin Callander, Edition 5th (2001)
- Pathology: Implications for the Physical Therapists/ by Catherine Cavallaro, D Goodmann and Williams G Boissonn, Edition 3rd (2009)
- Pathology, Quick Review, Harsh, Edition 2nd (2005)

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT212	Review of Basic Sciences (Pharmacology)	PC	4-0-0	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rests of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand the basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy
CO2.	Understand the general principles of drug action, its metabolism and its effects on various systems of the body
CO3.	Understand the physiological effects of various drugs & their interaction with the physiotherapy management

Course Contents

Unit- I

1. Drugs used in Pain

- i) Opioids Analgesics
- ii) Non-Steroidal Anti-Inflammatory Drugs(NSAIDS)

2. Local Anaesthetics

Unit - II

1. Steroids

- i) Corticosteroids
- ii) Anabolic steroids
- iii) Glucocorticoids
- iv) Mineralocorticoids

2. Drugs used in Rheumatoid arthritis and Osteoporosis

3. Topical Analgesics

Unit- III

1. Muscle Relaxants

- i) Peripherally acting (Neuromuscular blockers)
- ii) Centrally acting-skeletal muscle relaxants

2. Drugs acting upon Central and Autonomic Nervous System

- i) Drugs acting on central nervous system
 - General anaesthetics
 - Sedative and hypnotics
 - Alcohol and disulfiram
 - Anti psychotic
 - Anti-depressant
 - Anti-Anxiety
 - Anti-epileptic drugs
 - Anti-parkinsonism drugs
 - Analgesics, antipyretics and anti-inflammatory drugs

- CNS stimulants.
- ii) Drugs acting on autonomic nervous system
- Cholinergic agents (Parasympathomimetics)
 - Cholinergic blocking agents (Parasympatholytics)
 - Adrenergic agents (Sympathomimetics)
 - Adrenergic blocking agent (Sympatholytics)
 - Ganglion blocking and stimulating agents
 - Neuromuscular blocking agents
 - Local anaesthetic agents

Unit-IV

1. Drugs acting upon Cardiac system

- i) Drugs used in congestive heart failure
- ii) Anti-hypertensive drugs
- iii) Anti-anginal drugs
- iv) Anti-arrhythmic drugs
- v) Anti-hyperlipidemic drugs

2. Drugs acting upon Respiratory system

- i) Antitussive drugs
- ii) Expectorants drugs
- iii) Antiasthmatic drugs

Reference books

- Essential of Medical Pharmacology/ by KD Tripathi, Edition 3rd (2005)
- Pharmacology Drug Actions & Reactions, Edition 2nd
- Blueprints Notes & Cases: Pharmacology, Edition 1st
- Textbook of Pharmacology, Seth, SD., Edition 3rd

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 213	Advanced Physiotherapy	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rests of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand the basic concept and knowledge of various advanced techniques used in physiotherapy to treat patients
CO2.	Understand the proper positioning, holding and application of various advanced techniques
CO3.	Understand the various special consideration in the field of physiotherapy and using this information in planning and tailoring effective and safe physiotherapy treatment programs for various conditions

Course Contents

Unit -I

- Manual Therapy:** Introduction, History, Basic Classification, Assessment for Manipulation, discussion in brief about the concepts of Mobilization. Like Cyriax, Maitland, Mulligan, Butler, Kaltenborn, methodology in general with examples at view Joints/Nerves (Manipulation Studies and work according to their specialization)
- Muscle Energy techniques and positional stretch:** The basic concept and Application of

these techniques.

Unit-II

1. **Positional Release Therapy:** The basic concept and Application of these techniques.
2. **Myofascial Release:** Concept and Application.

Unit-III

1. **Nerve Conduction Studies and Electromyography:** Normal, Abnormal Action Potentials, its recording Protocols Analysis, Application.
2. **Geriatric Physiotherapy.**

Unit-IV

1. **Biofeed back.**
2. **Taping for Injury Prevention and Rehabilitation**

Reference books

- Electrotherapy Explained: Principles and Practice/ by John Low, Ann Reed and Mary Dyson.,Edition4th (2006)
- Clayton's Electrotherapy/ edited by Sheila Kitchen and Sarah Bazin, Edition 10th (1995)
- Positional Release Techniques, DeigD, Edition 2nd .
- Muscle Energy Techniques, Chaitow, L, Edition 3rd

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 213P	Advanced Physiotherapy Practical	PC	0-0-6	3

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Practice different advanced techniques and gain confidence in performing these skills before implementing the same on the patients so that high quality patient care is ensured
CO2.	Provide high quality, ethical, effective, and cost efficient practices by students and gain expertise in the advanced techniques prescription to patients
CO3.	Understand principles and procedures, indications, contraindications and precautions, appropriate methods of application of each of the treatment techniques hands on and on models.
CO4.	Communicate with the patient in a professional and ethical manner

Course Contents

Unit-1

1. Demonstration of following Manual Therapy according to their specialization field:

- i) Cyriax
- ii) Maitland
- iii) Mulligan
- iv) Buttlar
- v) Nerve Mobilization etc.

Unit-II

1. Outline and Practical knowledge of

- i) Muscle Energy Technique
- ii) Positional Stretch
- iii) Myofascial Stretch etc.

Unit-III

1. Demonstration and Practical knowledge of

- i) NCV, EMG
- ii) Bio Feedback etc.

Reference books

- Electrotherapy Explained: Principles and Practice/ by John Low, Ann Reed and Mary Dyson.,Edition4th (2006)
- Clayton's Electrotherapy/ edited by Sheila Kitchen and Sarah Bazin, Edition 10th (1995)
- Positional Release Techniques, DeigD, Edition 2nd .
- Muscle Energy Techniques, Chaitow, L, Edition 3rd

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 214	Ergonomics	PC	4-0-0	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rests of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand the basic concept of ergonomics and their physiological and bio-mechanical risk factor
CO2.	Understand importance of ergonomics, diagnose work related disorders, manage them and modify the work station accordingly
CO3.	Understand the need to provide advice about creation of healthy work environment, work station exercises, and home exercises for children & computer operators

Course Contents

Unit-I

1. Definitions
2. Physiological and Bio-mechanical Risk factors

Unit-II

1. Job Design
2. Developing and Implementing Work Site Programme

Unit-III

Ergonomics in Home, Child Care and Leisure Activities

Unit-IV

Addressing Problems at Computer Workstation

Reference books

- Ergonomics for Therapists: Karen Jacobs, Carl M Bettencourt, Edition 3rd(2007)
- Hand book of Human Factors and Ergonomics: Gavriel Salvendy, Edition 4th(2012)
- Ergonomics: How to Design for Ease and Efficiency: KHE Kroemer, HB Kroemer, KE Kroemer-Elbert, Edition 2nd (2000)
- Ergonomics, Work and Health: Pheasant, Stephen, Edition(1991)
- A Guide to Human Factors and Ergonomics: Martin Helander, Edition 2(2005)

Course No	Subject	Title	Teaching Hours/ Week	
			L – T – P	Credits
MPT215	Professional Development & Ethics	PC	4-0-0	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rests of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Understand concept of teaching, learning and curriculum. Understand various method and techniques of teaching, teaching aids and planning for teaching, measurement and evaluation
CO2.	Understand meaning and concepts of guidance & counseling and awareness regarding clinical education
CO3.	Understand principles of management in personal management, time management and administration including budgeting
CO4.	Understand the ethical principles of physiotherapy profession

Course Contents

Unit-1

1. Concepts of Teaching and Learning

- i) Meaning and Scope of Educational Psychology
- ii) Meaning and Relationship between Teaching and Learning
- iii) Learning Theories
- iv) Dynamics of Behavior
- v) Individual Differences

2. Curriculum

- i) Meaning and Concepts
- ii) Basis of Curriculum Formulation Development
- iii) Framing Objectives for Curriculum
- iv) Process of Curriculum Development and Factors Affecting Curriculum Development
- v) Evaluation of Curriculum

3. Method and Techniques of Teaching

- i) Lecture, Demonstration, Discussion, Seminar, Assignment, Project and Case Study.

4. Planning for Teaching

- i) Bloom's Taxonomy of Instructional Objectives, Writing Instructional
- ii) Unit planning and Lesson planning

5. Teaching Aides

- i) Types of Teaching Aids
- ii) Principles of Selection, Preparation & Use of Audio-Visual aids.

6. Measurement and Evaluation

- i) Nature of Educational Measurement: Meaning, Process and Types of Tests
- ii) Construction of an Achievement Test and its Analysis Standardized Test
- iii) Introduction of some Standardized tools, Important Tests of Intelligence, Aptitude Personality.
- iv) Continuous and Comprehensive Evaluation

Unit-II

1. Guidance and Counseling

- i) Meaning and Concepts of Guidance and Counseling
- ii) Principles
- iii) Guidance and Counseling Services for Students and Faculty members
- iv) Faculty Development and Development of Personnel for Physiotherapy Services

2. Clinical education

- i) Awareness and Guidance to the Common people about Health Diseases and Available Professional services
- ii) Patient Education
- iii) Education of the Practitioners

3. Functions of management

4. Management process: Planning, Organization, Direction, Controlling, and Decision-making.

5. Personal Management: Staffing, Recruitment Selection Performance Appraisal, Collective Bargaining, Discipline, and Job Satisfaction.

Unit-III

1. Quantitative methods of Management: Relevance of Statistical and/ or Techniques in Management.

2. Marketing: Marketing Segmentation, Marketing Research Production, Planning Pricing, and Channels of Distribution, Promotion, Consumer Behavior and Licenser.

3. Total Quality Management: Basis of Quality Management, Quality Assurance Program in Hospitals, Medical Audit and International Quality System.

4. Hospital as an Organization: Functions and types of Hospitals Selected, Clinical Supportive and Ancillary Staff of the Hospital, Emergency Department, Nursing, Physical Medicine and Rehabilitation, Clinical Laboratory, Pharmacy and Dietary Department.

5. Roles of Physiotherapy Director, Physiotherapy Supervisor, Physiotherapy Assistant, Physiotherapy Aide, Occupational Therapist, Home Health Aide and Volunteer.

6. Direct Care and Referral Relationships and Confidentiality.

Unit-IV

1. Physiotherapy: Definition and Development

2. Implications and Conformation to the Rules of Professional Conduct

3. Legal Responsibility for their actions in the Professional Context and Understanding the Physiotherapist's Liability and Obligations in the Case of Medico-legal Action

4. Code of Ethics: Wider Knowledge of Ethics relating to Current Social and Medical Policy in the Provision of Health Care.

5. Function of Relevant Professional Associations Education Body and Trade Union

6. Role of the International Health Agencies such as the World Health Organization

7. Standards of Practice for Physiotherapy

8. Current issues

9. Basics of Computer-Hardware and Software

10. Basic Computer Applications-Windows, MS Word, Excel, Power Point, etc.

Reference books

- Fox Pro 2.5 Made Simple for DOS & Windows, Taxali, RK, Edition 2nd (2003)
- Computers and Commonsense, Hunt, R & Shelly, J, Edition 3rd, (1983)
- Social Problems in India, Ahuja, R., Edition 3rd (2014)
- Health Studies: An Introduction, Naidoo, Edition 3rd (2015)
- An Introduction to Sociology/ by VidyaBhushan and DR Sachdeva, Edition 2nd (2014)

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT216	Seminars/ Case Presentations	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques.
CO2.	Review the physical therapy documentation including the goals, and objectives; identifying major indications, contraindication, precautions and safety issues and identifying patient goals and outcomes in the documents
CO3.	Describe safe environments, appropriate risk management strategies, and emergency responses/support activities to take when the safety of self, patient or others is at risk in the clinical setting with evidences.
CO4.	Learn communication processes and presentations of different cases.
CO5.	Demonstrate Evidence based clinical practice in rehabilitation.

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 217	Clinical Training	PC	0-0-10	Qualifying

Course Outcomes

S.No.	At the end of the semester, students will be able to:
CO1.	Review the physical therapy documentation including the goals, and objectives; identifying major indications, contraindication, precautions and safety issues and identifying patient goals and outcomes in the documents
CO2.	Describe safe environments, appropriate risk management strategies, and emergency responses/support activities to take when the safety of self, patient or others is at risk in the clinical setting.
CO4.	Describe communication processes within the clinical arena including referral process, patient delegation, review of records, between health care team members, and methods for reporting patient status.
CO5.	Engage in clinical training in hospital based medical and physiotherapy departments/ settings to enhance their clinical skills and apply contemporary knowledge gaining during teaching sessions.

Students will undergo clinical training in recognized physiotherapy unit for a period of 2 hours/day for 5 days in a week (240 hours) .OPD set ups will be under the supervision of senior physiotherapist. A Register/Log book will be maintained by student to document the Evaluation / Functional Analysis and Functional Diagnosis. Reports of minimum 5 cases per assignment and signature to be obtained from respective Section–in–charge at the end of each assignment for submission to the chairperson.

Master of Physiotherapy

(Musculoskeletal Disorders) 3rd Semester

SEMESTER –III

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 331	Medical and Surgical Management in Musculoskeletal Disorders	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

Sr. No.	At the end of the semester, the students will be able:
CO 1	To describe various disorders related to bone and joints such as infectious, metabolic, congenital, degenerative, developmental, inflammatory or neuromuscular related etc.
CO 2	To understand and assess the incidence, mechanism, clinical features, complications for a variety of injuries occurring to bones, joints, soft tissues, muscles and nerves including fractures, subluxations, dislocations etc.
CO 3	To explain the commonly used surgical procedures and their rehabilitation in preoperative and postoperative phases
CO 4	To examine and assess the physiological and pathological changes in geriatric population and disorders associated with ageing

Course Contents

Unit-I

General Orthopedics

- i) Infection Disorders of the Bones and Joints
- ii) Metabolic Disorders of the Bones and Joints
- iii) Congenital Disorders of the Bones and Joints
- iv) Inflammation of the Bones and Joints
- v) Degeneration of the Bones and Joints
- vi) Developmental Disorders of the Bones and Joints
- vii) Connective Tissue Disorders
- viii) Neuromuscular Disorders
- ix) Tumors of Bones
- x) Complex Regional Pain Syndrome

Unit-II

Traumatology (includes Fractures, Subluxations, Dislocations and Soft tissue injury)

Incidence, Etiology, Clinical Features, Complications, Assessment, Investigations and Physiotherapy
Management of following:

- i) Trauma of the Upper Limb
- ii) Trauma of the Lower Limb
- iii) Trauma of the Lower Spine
- iv) Peripheral Nerve Injuries

Unit-III

Orthopedic Surgeries

Methodology of Different types of Some Common Surgeries and Their Rehabilitation

- i) Osteotomy
- ii) Arthrodesis
- iii) Arthroplasty
- iv) Tendon Transfers, Repairs and Grafting
- v) Nerve Suturing
- vi) Soft Tissue Release
- vii) Spinal Stabilization
- viii) Spinal Fusion
- ix) Discectomy
- x) Laminectomy
- xi) Reattachment of Limbs
- xii) Ilizarov's Technique
- xiii) Meniscectomy
- xiv) Amputation
 - Types, Level and Procedure
 - Preoperative, Operative and Prosthetic management.
 - Prevention and Treatment of Complications

Unit-IV

Geriatric Care

- i) Theories of Ageing
- ii) Examination and Assessment of Geriatric Patient
- iii) Pathological and Physiological Changes of Ageing

iv) Disorders Specific to Ageing

Reference books

- Pediatric Orthopaedics: Core Knowledge in Orthopaedics./ Dormans, John P, Edition 3rd, 2015
- Clinical Orthopaedic Examination./ Mcrae, Ronald, Edition 5th, 2003
- Apley's System of Orthopaedics and Fractures./ Solomon, Louis, Edition 9th, 2010
- Fractures of Upper Extremity./ Ziran, Bruce H. ed, Edition 1st, 2003
- Musculoskeletal Disorders in the Workplace: Principles and Practice./ Nordin, Margareta., Edition 2nd, 2012
- The Orthopaedic Physical Examination./ Reider, Bruce, Edition 2nd, 1999
- Orthopaedic Physical Assessment: Magee, DJ, Edition 5th
- Essentials of Orthopaedics for Physiotherapists: Ebnezar, J, Edition 3rd, 2016
- The Orthopaedic Physical Exam: Reider, B, Edition 2nd, 2004
- Chiropractic Care of the Older Patient./ Gleberzon, Brian J. ed., Edition 1st, 2001
- Orthopaedics Principles of Basic and Clinical Science: Bronner, F & Warrell, RV, Edition 4th, 2013
- Burnsides Working with Older Adults Group Process and Techniques: Haight, B, Edition 4th, 2005.

Course No	Subject	Title	Teaching Hours/Week	
			L – T - P	Credits
MPT 332	Vertebral Disorders and Rehabilitation	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

Sr. No.	At the end of the semester, the students will be able:
CO 1	To observe and palpate anatomical landmarks of vertebral column
CO 2	To describe various congenital, inflammatory, structural and pathological disorders related to vertebrae and joints of vertebral column
CO 3	To explain the regional conditions of cervical, thoracic and lumbar area including fractures, subluxations, soft tissue injuries and muscular imbalances etc.
CO 4	To examine or assess the level of spinal cord injury and rehabilitate the patients with spinal cord injury

Course Contents

Unit-I

Review of Anatomy and Biomechanics of Vertebral column.

Unit-II

- 1. Congenital Disorders of Vertebral column & Vertebral Deformities, Inflammatory Disorders of Vertebrae, Vertebral Joints, Soft tissues, Disease of the Vertebral joints, Segmental Instability.**
- 2. Disorders of Structural changes, Changes of Alignment of Bone, Joint of Vertebral column, Low Back Pain, Pain in Vertebral Column & Stiffness Disorders**

Unit-III

1. Region wise conditions for Cervical, Lumbar, Thoracic and Sacral regions.

- i) Soft tissue Injuries, Tightness, Structural changes
- ii) Bone Injuries(Fractures & Dislocation of Spine)
- iii) Pelvic Injuries

Unit-IV

Spinal Cord Injuries

- i) Types, Classifications
- ii) Pathology
- iii) Level
- iv) Examination
- v) Management & Rehabilitation
- vi) Orthopedic Surgeries
- vii) Bio Engineering Appliances & Support Devices
- viii) Pre & Post-Operative Rehabilitation

Reference books

- Neck and Arm Pain/ by Rene Cailliet., Edition 3rd,1991
- ABC Spinal Cord Injury/ by David Grundy and Andrew Swain, Edition 4th, 2002
- Orthopedic Physical Assessment./ Magee, David J., Edition 6th,2014
- Measurement of Joint Motion: A guide to Goniometry. Norkin, Cynthia C.,Edition 4th

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 333	Hand Rehabilitation	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

Sr. No.	At the end of the semester, the students will be able:
CO 1	To describe the hand functions, biomechanics & pathomechanics of hand and classification of hand disorders
CO 2	To differentiate various injuries related to hand such as tendon injuries, nerve injuries, fractures and joint injuries
CO 3	To explain a variety of hand disorders including rheumatic hand disorders and spastic hand etc.
CO 4	To understand the use and rehabilitation of artificial hand for example prosthetic hand and orthoses

Course Contents

Unit-1

Functions of hand as Motor and Sensory Organ with Advanced Bio and Patho mechanics of Hand. Classification of Hand Injuries and Principles of Hand Rehabilitation (Functional and Vocational Training)

Unit-II

1. Tendon Injuries
2. Nerve Injuries
3. Crush Injuries
4. Incision and their effects on later rehabilitation, Fractures, Joint Injuries and Correction of Deformities.

Unit-III

1. Spastic Hand
2. Rheumatoid Hand
3. Hand in Hansen's Disease
4. Reflex Sympathetic Dystrophy

Unit-IV

1. Phantom Hand Pain
2. Prosthetic Hand
3. Orthosis for Hand and their uses

Reference books

- Cash's Textbook of Orthopaedics and Rheumatology for Physiotherapists: Downie, PA, Edition 1st,1987
- Physical Rehabilitation in Arthritis: Walker, JM &Heleura, A., Edition 2nd,2004
- Hand Therapy Principles and Practice: Salter, M &Chishire, L, Edition 1st,2017
- Hand Fractures Repair Reconstruction & Rehabilitation: Freeland, AE, Edition 3rd,2000

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 334	Assessment and Physiotherapy Management in Musculoskeletal Disorders	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

Sr. No.	At the end of the semester, the students will be able:
CO 1	To evaluate and to plan the physiotherapy management of a patient having musculoskeletal disorder
CO 2	To assess the regional areas such as cervical, thoracic, lumbar spines and upper extremity regions with special emphasis on special tests
CO 3	To assess the regions in lower extremity such as pelvis region, knee, leg, ankle and foot with special emphasis on special tests
CO 4	To understand and identify the musculoskeletal disorders based on diagnostic procedures such as radiographs, EMG, NCV, arthroscopy, DEXA, Myelography etc.

Course Contents

Unit-1

Orthopedic Assessment: Assessment and Evaluation of a Patient to Plan a Therapeutic program for various orthopedic conditions

- i) Patient History
- ii) Observation
- iii) Examination-Active and Passive Movements, Functional Assessment, Special Tests, Reflexes and cutaneous Distribution, Joint Play Movements, Palpation
- iv) Gait-Definitions, Gait Cycle, Abnormal Gait patterns
- v) Posture-Normal and Abnormal, Spinal Deformities
- vi) Disability Evaluation
- vii) Assessment of Amputees
- viii) Examinations and Assessment of Geriatric Patient

Unit-II

Regional Examination with Special Emphasis on Special Tests and Physiotherapy Management of Orthopedic Conditions of the following regions:

- i) Head and Face
- ii) Cervical Spine
- iii) Shoulder
- iv) Elbow
- v) Forearm, Wrist and Hand
- vi) Thoracic Spine
- vii) Lumbar Spine

Unit-III

Regional Examination with Special Emphasis on Special Tests and Physiotherapy Management of Orthopedic Conditions of the following regions:

- i) Pelvis
- ii) Hip
- iii) Knee

iv) Lower Leg, Ankle and Foot

Unit-IV

Orthopedic Diagnosis (for practical purposes only)

- i) Biomechanical measurements-Limbs and Spine
- ii) Haematology and Serology
- iii) Biopsy
- iv) Plain Radiography
- v) Contrast Radiography
- vi) Myelography
- vii) Radioactive Scanning
- viii) Discography
- ix) Tomography
- x) Magnetic Resonance Imaging
- xi) Arthroscopy
- xii) Electromyography, Nerve Conduction Velocity, Strength Duration Curve
- xiii) BMD-Bone Densitometry-Ultrasound densitometer and Dual Energy X-ray Absorptiometry (DEXA)

Reference books

- Orthotics in Rehabilitation: Splinting the Hand and Body/ McKee, Pat, Edition 1st,1998
- Physiotherapy in Orthopaedics: A Problem Solving Approach./ Atkinson, Karen., Edition 2nd,2005
- Examination of Musculoskeletal Injuries: Shultz, SJ, Edition 4th,2015
- Clinical Orthopaedic Rehabilitation./ Brotzman, S. Brent, Edition 1st,1996
- Orthopedic Physical Therapy: Donatelli, RA & Wooden, MJ, Edition 2nd,2009
- Joint Structure and Function: A Comprehensive Analysis: Levangie, PK &Norkin, CC, Edition 5th,2012
- Essentials of Orthopedics &Applied Physiotherapy: Joshi, J &Kotwal, P, Edition 3rd,2017

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 335 P	Practical (Musculoskeletal Disorders, Clinical/ Viva-voce)	PC	0-0- 8	4

Course Assessment Methods (Internal: 30; External: 70) one minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

Sr. No.	At the end of the semester, the students will be able:
CO 1	To apply advanced knowledge of clinical skills in problem solving related to assessment and investigation of various musculoskeletal conditions
CO 2	To plan the principles and follow up of physiotherapy management for a variety of musculoskeletal disorders
CO 3	To document a written record of the subjective and objective assessment, examination findings, diagnosis and treatment strategies concerned with patient

The students will be equipped with clinical knowledge. They will be able to apply advanced knowledge of clinical skills in problem solving related to assessments, investigations, and physiotherapy management of all the above conditions. Students will be judged on one elective and one non elective case. They will be expected to assess, diagnose and plan effective treatment plan for both cases.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 336	Seminar / Case Presentations	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

Sr. No.	At the end of the semester, the students will be able:
CO 1	To integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques
CO 2	To question the clinical reasoning and diagnosis of the disorders
CO 3	To confer the evidence based new advancements in physiotherapy skills

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 337	Clinical Training	PC	0-0-10	Qualifying

Course Outcomes

Sr. No.	At the end of the semester, the students will be able:
CO 1	To perform a comprehensive Physiotherapy assessment of various musculoskeletal conditions along with screening of Red and Yellow flags in patients
CO 2	To correlate the radiological findings and clinical findings
CO 3	To frame the specific diagnosis based on history, clinical examination and investigations
CO4	To develop a customized treatment protocol of the patient based on his condition
CO 5	To keep a systematic, meaningful, and accurate written record of patient related information

Students will undergo clinical training in recognized physiotherapy unit for a period of 2 hours/day for 5 days in a week (240 hours) .OPD set ups will be under the supervision of senior physiotherapist. A Register/Log book will be maintained by student to document the Evaluation / Functional Analysis and Functional Diagnosis. Reports of minimum 5 cases per assignment and signature to be obtained from respective Section–in–charge at the end of each assignment for submission to the chairperson.

SEMESTER –IV

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT338	Dissertation(Based on Clinical/ Case presentation including viva-voce)	PC	0-0-24	12

Course Assessment Methods (External: 100): End semester examination is of maximum 100 marks.

Course Outcomes

Sr. No	At the end of the semester, the student will be able:
CO 1	To establish evidence based physiotherapy protocols
CO 2	To establish research evidence on various aspects of Musculoskeletal-Physiotherapy

As part of their requirement for the Master Degree the student is required to undertake a research study under the guidance of Guide and Co-guide. Research study must be selected only from the chosen specialization i.e Musculoskeletal conditions and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voce by examining committee.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT339	Seminar	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

Sr. No	At the end of the semester, the student will be able:
CO1.	Review the physical therapy documentation including the goals, and objectives; identifying major indications, contraindication, precautions and safety issues and identifying patient goals and outcomes in the documents
CO2.	Describe safe environments, appropriate risk management strategies, and emergency responses/support activities to take when the safety of self, patient or others is at risk in the clinical setting with evidences.
CO3.	Learn communication processes and presentations of different cases.
CO4.	Learn Evidence based clinical practice in rehabilitation.

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques.

Students will give presentations on topic provided to them.

Master of Physiotherapy
(Neurological Disorders) 2nd Year

SEMESTER III

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 441	Medical and Surgical Management in Neurological Disorders	PC	6 – 0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt to the four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

Sr. No	At the end of the semester, the student will be able:
CO1.	To attain in-depth Knowledge of the Central Nervous System (CNS) disorder.
CO2.	To assess and differentially diagnose various Neurological Disorders
CO3.	Understand Medical and surgical Management of Neurological disorder

Course Contents

Unit-I

1. Congenital and Hereditary disorders

2. Head injury

- i) Comatose Patient
- ii) Closed Skull Fractures
- iii) Haematomas, Subdural, Epidural and Intracerebral haemorrhage
- iv) Open Cranio-cerebral Injuries
- v) Reconstruction Operations in Head injuries

3. Disorders of Spinal Cord and Cauda Equina

- i) Acute Traumatic Injuries
- ii) Haematomyelia and Acute Central Cervical Cord Injuries
- iii) Slow Progressive Compression of the Spinal Cord
- iv) Syringomyelia
- v) Ischaemia and Infarction of the Spinal Cord and Cauda
- vi) Spina-Bifida

4. Disorders of Cranial Nerves

Unit-II

1. Disorders of Peripheral Nerves

- i) Peripheral Neuropathies
- ii) Causalgia
- iii) Reflex Sympathetic Dystrophy
- iv) Irradiation Neuropathy
- v) Peripheral Nerves Tumours
- vi) Traumatic, Compressive and Ischaemic Neuropathy
- vii) Spinal Radiculitis and Radiculopathy
- viii) Hereditary Motor and Sensory Neuropathy
- ix) Acute Idiopathic Polyneuritis/Chronic

- x) Neuropathy due to Infections
- xi) Vasculomotor Neuropathy
- xii) Neuropathy due to Systemic Medical Disorders
- xiii) Drug Induced Neuropathy

2. Disorders of Muscle

- i) The Myotonic Disorders
- ii) Inflammatory Disorders of the Muscle
- iii) Myasthenia Gravis
- iv) Endocrine Dystrophy

3. Cerebellar Disorders

- i) Ataxia
- ii) Motor Neuron Disease

4. Demyelinating Disorders

- i) Multiple Sclerosis
- ii) Diffuse Sclerosis

5. Deficiency and Nutritional Disorders

- i) Deficiency of Vitamins and Related Disorders
- ii) Other Nutritional Neuropathies

6. Disorders of Cerebral Circulation-Stroke

Unit-III

1. Infectious Disorders

- i) Meningitis
- ii) Encephalitis
- iii) Brain Abscess
- iv) Syphilis
- v) Herpes Simplex
- vi) Chorea

vii) Poliomyelitis

viii) Tuberculosis

ix) Transverse Myelitis

2. Disorders of the Vestibular System

3. Extra Pyramidal Disorders

i) Parkinsonism

ii) Balance Disorders

4. Epilepsy, Dementia, Alzheimer's Disease

5. Development of Child- Weight, Head ,Circumference Measurement related to Age in Normal child, Developmental Milestones, Neonatal Reflexes, Factors influencing Growth and Development, Types of Body Built, Physical Examination of the Child, Growth Patterns

6. Nutrition and immunization of a normal child- Normal Nutrition Requirement of a Child, Infant Feeding, Prevention of Nutritional Disorders, Immunization

7. General Principles of Neurosurgery

8. Tumours

i) Tumours of Cranial bones

ii) Meningioma's

iii) Tumours in Spinal Cord

iv) Intra-cranial Tumours

v) Space-occupying Lesions

Unit-1V

1. Intracranial Abscess

2. Hydrocephalus

3. Vascular Disease of the Brain

- i) Aneurysms
- ii) Thrombosis
- 1. Stereo tactic Surgery**
- 2. Cerebral Malformations**
- 3. Operations of the Discs-Cervical and Lumber Disc Operations**
- 4. Malformations of the Spine and Spinal Cord**
- 5. Lumber and Cisternal Punctures Technique and Complication**
- 6. General rules of Surgical Repair of the Peripheral Nerves**
- 7. Muscle Lengthening/ Release Operations**
- 8. Spasticity Reductions**
- 9. Intensive Care Unit Management of the Neurologically Impaired Patient**

Reference Books

- Merrit's Neurology, Elan D Louis, 13th Edition
- Clinical Neuropathology, Text and Colour atlas, Catherine Haberl and, 1st Edition
- Brain's Disease of nervous System, Michael Donaghy, 12th Edition
- Current therapy in Neurologic disease, Richard T Johnson, 6th Edition
- High Yield Neuroanatomy, James D, 2nd Edition
- Clinical Neurology. John W. Scadding and Nicholas A. Losseff. 4th edition.
- Bradley's Neurology in Clinical Practice. Robert B. Daroff. 6th edition.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 442	Physiotherapy in Neurological Disorders	PC	6– 0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt to the four questions by selecting one from each of the four units. All the questions including Q.no.1 shall carry equal marks.

Course Outcomes

Sr.No	At the end of the semester, the student will be able:
CO1.	To plan tailor made physiotherapy Protocols for various neurological disorders
CO2.	To do Neurological assessment and examination
CO3.	To develop basic knowledge of Investigative procedures in Neurological disorders
CO4.	To administer advanced Neuro-Physiotherapy techniques like MRP,PNF etc

Course Contents

Unit-I

1. Introduction

- i) The history of the Illness.
- ii) Examination of the Patient.
- iii) Investigation of the Patient with Neurological Disease EMG, EEG, Nerve Conduction test, Radiology X-ray, CT, MRI, Laboratory test etc.

- iv) Physiotherapy Assessment & Rehabilitation (Advanced Therapeutic Techniques like Bobath, Motor Relearning Programme, Rood, PNF, Mobilization etc.)

2. Cranial Nerves

- i) Testing of Cranial Nerves
- ii) Disorders of Cranial Nerves, Cranial Neuropathy
- iii) Rehabilitation Protocol

3. Stupor and Coma

- i) The Neural basis of Consciousness
- ii) Clinical Terminology
- iii) Lesions Responsible for Stupor and Coma
- iv) The Assessment and Investigation of the Unconscious Patient
- v) The Diagnosis of Brain Death
- vi) The Management of the Unconscious Patient
- vii) Total Rehabilitation Protocol

4. Disorders of the Cerebral Circulation

- i) Epidemiology of the Stroke
- ii) Causes, Types, Pathophysiology
- iii) Clinical Features and Investigation
- iv) Treatment of Different Type of Stroke
- v) Recovery and Rehabilitation
- vi) Stroke Prevention

Unit-II

1. Infectious Disorders

Classification, Causes, Pathophysiology, Clinical features, Complication of following disorders:

- i) Meningitis
- ii) Encephalitis

- iii) Brain Abscess
- iv) Syphilis
- v) Herpes Simplex
- vi) Chorea
- vii) Tuberculosis
- viii) Transverse Myelitis
- ix) Poliomyelitis

2. Demyelinating Diseases of the Nervous System

- i) Classification of Demyelinating Diseases
- ii) Multiple Sclerosis
- iii) Diffuse Sclerosis

3. Movement Disorders

- i) Akinesic- Rigidity Syndromes Disorders
- ii) Dyskinesia's Disorders

4. Degenerative disease of the spinal cord and cerebellum

- i) All Type of Ataxia
- ii) Motor Neuron Disease
- iii) Spinal Muscular Atrophies

Unit-III

1. Disorders of the Spinal Cord & Cauda Equina

- i) Acute Traumatic Injuries of the Spinal Cord
- ii) Haematomyelia and Acute Central Cervical Cord Injuries
- iii) Slow Progressive Compression of the Spinal Cord
- iv) Syringomyelia
- v) Ischaemia and Infarction of the Spinal Cord and Cauda Equina

- vi) Spina bifida

2. Deficiency and Nutritional Disorders

- i) Deficiency of Vitamins & Related Disorders
- ii) Other Nutritional Neuropathies

3. Disorders of Higher Cerebral Cortical Function

Disorders of Different Lobes

- i) Frontal lobes
- ii) Temporal lobes
- iii) Parietal lobes
- iv) Occipital lobes
- v) Sub Cortical lesions

Unit-IV

1. Disorders of Peripheral Nerves

- i) Clinical Diagnosis of Peripheral Neuropathy
- ii) Reflex Sympathetic Dystrophy
- iii) Peripheral Nerve Tumours and Irradiation Neuropathy
- iv) Traumatic, Compressive and Ischaemic Neuropathy
- v) Spinal Radiculitis and Radiculopathy
- vi) Hereditary Motor and Sensory Neuropathy (HMSN) (Type I, II, IV & V)
- vii) Acute & Chronic Idiopathic Polyneuritis
- viii) Infectious Neuropathy
- ix) Vasculomotor Neuropathy
- x) Neuropathy due to Systemic Medical Disorders
- xi) Drug-induced Neuropathy

xii) Metal-poisoning Chemical Neuropathies

2. Disorders of Muscle

- i) Classification of the Muscular Dystrophies
- ii) Myotonic Disorders
- iii) Myasthenia Gravis
- iv) Endocrine and Metabolic Myopathies

3. Autonomic Nervous Disorders

- i) Disorders of Autonomic Function after Lesions of the Spinal Cord

4. Seizures

- i) Epidemiology, Classification, Causes, Precipitating factors, Diagnosis
- ii) Myoclonus

5. Disorders of Higher Cerebral Cortical Function

- i) Disorders of Different Lobes
 - Frontal Lobes
 - Temporal Lobes
 - Parietal Lobes
 - Occipital Lobes
 - Sub Cortical Lesions

Reference Books

- Physical Rehabilitation, Assessment and Rehabilitation, Susan B O Sullivan, Thomas J Schmitz, George D Fulk, 6th Edition
- Steps to Follow, the Comprehensive treatment of patients with Hemiplegia, Patricia M Davies, 2nd Edition
- Adult Hemiplegia, Evaluation and Treatment, Berta Bobath, 3rd Edition
- ABC of Spinal Cord Injury, David Grundy. 4th edition.
- Neurodevelopmental Technique, a guide to NDT Clinical Practice, Judith CBierman,
- Campbell Rehabilitation for traumatic Brain Injury, Physical Therapy Practice in Context
- Neurological Rehabilitation, Optimizing motor performance, Janet Carr, Roberta Shepherd, 2nd Edition.
- Cash Textbook of Neurology for Physiotherapist. Dame Ciely Saunders. 4th edi

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 443	Neurological Rehabilitation	PC	6 – 0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt to the four questions by selecting one from each of the four units. All the questions including Q.no.1 shall carry equal marks.

Course Outcomes

Sr.No	At the end of the semester, the student will be able:
CO1.	To perform pre and post-operative Physiotherapy assessment
CO2.	To administer pre-operative customized Neurological Physiotherapy for various neurosurgeries
CO3.	To administer Post-operative customized Neurological Physiotherapy Protocols for various neurosurgeries

Course Contents

Unit-I

1. Epidemiology, Pathology, Symptoms, Signs, Investigation, Management, Pre and Post Operative Physiotherapy, Complication of Cranial Cerebral Injury (Head & Brain Injury)

- i) Closed Skull Fractures
- ii) Haematomas: Epidural, Subdural, Intra-cerebral
- iii) Open Cranio-cerebral Injuries

- iv) Re-construction Operation in Head Injuries

2. Tumours

- i) Tumours of Cranial Bones
- ii) Meningioma
- iii) Tumours in Spinal Cord
- iv) Intra Cranial Tumours

Unit-II

1. Pathophysiology, Classification, Effects of Mass lesion, Symptoms and Sign, Examination

Management, Pre & Post Operative Rehabilitation protocol of Conditions related to Raised Intracranial Pressure

- i) Hydrocephalus
- ii) Intracranial Abscess
- iii) Central Edema

2. Vascular Disease of the Brain

- i) Aneurysms
- ii) Thrombosis

Unit-III

1. Decompression Surgery of Spinal cord

- i) Disc Operation (Cervical, Lumbar)
- ii) Stenosis
- iii) Edema, Abscess
- iv) Lumbar Puncture

Unit- IV

1. Peripheral Nerves

- i) De-compression
- ii) Nerve Suture
- iii) Nerve Grafting

Reference books

- Handbook of Neurosurgery. Mark S Greenberg. 8thedition.
- Neurology and Neurosurgery Illustrated. Kenneth W Lindsay. 5thedition.
- Umphred's Neurological Rehabilitation. Darcy A Umphred. 6thedition.

- Manual of Traumatic Brain Injury Assessment and Management. Felise S. Zollman. 2ndedition.
- Neurological Clinical Examination A Concise Guide
- Atlas of Neurosurgical Techniques. Laligam N. Sekhar. 2ndedition.
- Principles of Neurosurgery. Robert G. Grossman. 2ndEdition.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 444	Physiotherapy in Paediatric Neurology	PC	6 – 0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt to the four questions by selecting one from each of the four units. All the questions including Q.no.1 shall carry equal marks.

Course Outcomes

S.No	At the end of the semester, the student will be able:
CO1.	To attain In-depth knowledge of the paediatric nutrition and immunization
CO2.	To assess and differentially diagnose various Neuro-paediatric Conditions
CO3.	To administer paediatric Neuro-Physiotherapy protocols
CO4.	To administer pre and post-operative physiotherapy assessment and treatment in paediatric neurosurgeries

Course Contents

Unit-I

- 1. General Developmental sequence of Normal Child:** Weight, Height and Circumference Measurements related to Age in Normal Child, Developmental Milestones, Neonatal Reflexes, Factors Influencing Growth & Development, Various Periods of Growths Post Natal Growth Patterns, Types of Body Built, Physical Examination of a Child

Unit-II

- 1. Nutrition and Immunization:** Normal Nutritional requirement of a Child, Infant Feeding, Prevention of Some Nutritional Disorders, Nutritional Deficiency Diseases. Immunization (Salk and Sabin DPT and against Some Common Viral Diseases)

Unit-III

- 1. Cerebral Palsy:** Types, Aetiology, Clinical features, Management and Rehabilitation of various types of Cerebral Palsies
- 2. Seziures**
- 3. Epilepsy**

Unit-IV

1. Aetiology, Clinical features & Rehabilitation Neurological Infection of Childhood

- Poliomyelitis,
- Spina bifida,
- Hydrocephalus,
- Encephalitis
- Peripheral Nerve Injuries in Early Childhood.

2. Muscular Disorders

- Types of Muscular Dystrophies
- Myopathies of Childhood
- The Floppy Infant Syndrome

Reference Books

- Clinical Pediatrics Physical Therapy, Ratliffe, Catherinet, 2nd Edition
- Physiotherapy in Pediatrics, Roberta Shepherd, 3rd Edition
- Motor Assessment of the developing infant, Martha Piper, 1st Edition
- Clinical Pediatric Neurology A Sign and Symptom Approach. Gerald M Fenichel. 5th edition.
- Treatment of Cerebral Palsy and Motor Delay. Ann Reiner. 5th edition.
- Swaiman's Pediatric Neurology, Principle and Practice. Kenneth Swaiman's. 6th edition.
- Fenichel's Clinical Pediatric Neurology A Signs and Symptoms Approach. J. Eric PinaGarza.
- Pediatric Rehabilitation; Principle and Practice. Michael A. Alexander. 5th edition.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 445P	Practical (Neurological disorders, Clinical/ viva-voce)	PC	0-0-8	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

Sr.No	At the end of the semester, the student will be able:
CO1.	To assess and differentially diagnose various Neurological conditions
CO2.	To understand and implement practical aspects of Neuro-Rehabilitation
CO3.	To apply practical aspects of Neuro-Physiotherapy like Neural Mobilization, MRP etc

The students will be equipped with clinical knowledge. They will be able to apply advanced knowledge of clinical skills in problem solving related to assessments, investigations and Physiotherapy management of all the above conditions. Students will be judged on one elective and one non-elective case. They will be expected to assess, diagnose and plan effective treatment plan for both cases.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 446	Seminars/ Case Presentations	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

Sr.No	At the end of the semester, the student will be able:
CO1.	To rationally implement their theory and practical knowledge into clinical skills
CO2.	To assess and provide Physiotherapy interventions to patients with neurological conditions

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT447	Clinical Training	PC	0-0-10	Qualifying

Course Outcomes

Sr.No	At the end of the semester, the student will be able:
CO1.	To rationally implement their theory and practical knowledge into clinical skills
CO2.	To assess and provide Physiotherapy interventions to patients with neurological conditions

Students will undergo clinical training in recognized physiotherapy unit for a period of 2 hours/day for 5 days in a week (240 hours) .OPD set ups will be under the supervision of senior physiotherapist. A Register/Log book will be maintained by student to document the Evaluation / Functional Analysis and Functional Diagnosis. Reports of minimum 5 cases per assignment and signature to be obtained from respective Section-in-charge at the end of each assignment for submission to the chairperson.

SEMESTER IV

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT448	Dissertation (Based on Clinical/ Case presentation including viva-voce)	PC	0 – 0 - 24	12

Course Assessment Methods (External: 100): End semester examination is of maximum 100 marks.

Course Outcomes

Sr.No	At the end of the semester, the student will be able:
CO1.	To establish evidence based physiotherapy protocols
CO2.	To establish research evidence on various aspects of Neuro-Physiotherapy

As part of their requirement for the Master Degree the student is required to undertake a research study under the guidance of Guide and Co-guide. Research study must be selected only from the chosen specialization i.e Neurological conditions and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voice by examining committee.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT449	Seminar	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

Sr.No	At the end of the semester, the student will be able:
CO1.	To integrate theory and practical knowledge
CO2.	To critically apply these skills into clinical aspects

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

Master of Physiotherapy
(Sports Physiotherapy) 2nd Year

SEMESTER –III

Course No.	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 551	Medical and Surgical Management in Sports injuries	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rests of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

S. No.	At the end of the semester, students will be able to:
CO1	Understand the Definition, Terminologies, Epidemiology, Pathomechanics, Clinical features of various medical and surgical conditions related to sports
CO2	Understand Prevention of the various medical and surgical management of Sports Injuries
CO3	Understand the various special considerations in sports and enable the students to use this information in Planning and Tailoring Effective, Specific, Safe Physiotherapy treatment programs.

Course Contents

Unit- I

1. Medical problems of Athletes

Fungal Infections, Viral Infections, Common Cold, Diarrhea, Dysentery, T.B., Amoebiasis etc.

• **Special consideration**

- i) Female athlete- Female Athlete Triad (Sports Amenorrhea, Anorexia and Osteoporosis), Anemia, Injury to Female Reproductive Tract, Menstrual Asynchrony
- ii) Adolescent Athlete
- iii) Disabled Athlete
- iv) Doping amongst Athlete
- v) Protective Equipment Considerations.
- vi) Emergency Care, First-aid and Cardiopulmonary Resuscitation in athletes
- vii) Weight Management

• **Sports Injuries**

- i) Frequency and Site of Injury
- ii) Etiological Factors
- iii) Prevention of Injury
- iv) Mechanism of Injury
- v) Role of Teachers and Coaches in Prevention of Injury
- vi) Physiology of Sports Rehabilitation.

Unit- II

Sports Specific Injury Pattern: Acute, Overuse and traumatic injuries in the following games

- i) Cricket
- ii) Judo
- iii) Throw Ball
- iv) Basket Ball
- v) Discus Throw
- vi) Javelin Throw

Unit- III

Acute, Overuse and traumatic injuries in the following games

- i) Foot Ball
- ii) Baseball
- iii) Badminton
- iv) Tennis
- v) Gymnastics

Unit- IV

1. Sports Injuries of Upper limb
2. Sports Injuries of Lower limb
3. Sports Injuries of the Spine
4. Sports Injuries of Head and Neck

Reference books

- Sports Injuries Diagnosis and Management, Norris, CM, Edition 1st,2004
- Physical Aspects of Sports Training and Performance, Hoffman, Jay, Edition 2nd,2014
- Sports Psychology, Yadvinder Singh, Edition 2nd,2005
- Sports Medicine, Jain, R, Edition 1st,2005
- Evidence Based Sports Medicine, Macaulay, D & Best, Edition 2nd,2007
- Sports Medicine in Primary Care, Johnson, R, Edition 4th,2013
- Sports Medicine of the Lower Extremity, Subotnick, Edition 2nd,1992
- Surgical Atlas of Sports Medicine/ by Mark D. Miller, Richard F. Howard and Kevin D. Plancher, Edition 3rd,2003

Course No.	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 552	Traumatology	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

S. No.	At the end of the semester, students will be able to:
CO1	Understand the methods of assessment of the various regions of the body to diagnose the conditions specific to the region
CO2	Assess and understand various conditions of the specific region
CO3	Examine and plan treatment of various sports related injuries

Course Contents

Unit- I

1. Assessment Principles

Detailed Physical Assessments of Spine, Hip &Thigh, Knee & Leg, Foot &Ankle, Shoulder &Arm, Elbow &Forearm, wrist & hand.

2. Common Back Problems and Injuries

PIVD, Spondylosis, Spondylolisthesis, Spinal Canal Stenosis, Postural Strain, Back Injuries in Sports, Ankylosing Spondylitis, Scoliosis, Whiplash Injuries-Cervical Spine etc.

Unit- II

1. Hip & Thigh Problems and Injuries

Perthe's diseases, Coxa Vera, Ligament and Muscle Injuries in Sports, Irritable Hip Syndrome, Arthritis, Congenital Dislocation of Hip etc.

2. Knee & Leg Problems and Injuries

Arthritis, Genu Valgum and Varum, Meniscal injuries, Ligament and Muscle Injuries, Loose Bodies, Bursitis etc.

3. Ankle &Foot Problems and Injuries

Pain in Heel, Pain behind Heel, Plantar Fasciitis, Morton's Neuralgia, Pes Planus and Pes Cavus, CTEV, Muscle and Ligament Injuries.

Unit-III

1. Shoulder & Arm Problems and Injuries

Rotator Cuff Injuries, Peri-arthritis, Bursitis, and Painful Arc Syndrome etc.

2. Elbow &Forearm Problems and Injuries

Cubitus valgus and varus, Arthritis, Tennis and Golfer Elbow and Other Injuries.

3. Wrist and Hand Problems and Injuries

Claw Hand, Dupuytren's Contracture, Trigger Finger, Arthritis, Dequervain's disease, Baseball Finger etc.

Unit- IV

1. **Common Fractures and Dislocations:** Fractures and Dislocations of Upper Limb, Lower Limb, Spine and Stress Fractures.

2. **DiagnosisandManagementofCommonSkinconditions:**FungalInfections,Boils, Cellulites, Sun burn etc.

3. **Female Specific Problems:** Sports Amenorrhea, Injury to Female Reproductive Tract, Menstrual Problems.

4. **Common Diseases:** Common Cold, Fever, Diarrhea, Amoebiasis, Sore Throat, Stress Ulcers.

Reference books

- Athletic Injuries, Kanika, K, Edition 3rd, 2011
- Sports Injuries Diagnosis & Management: Norris, CM, Edition 2nd, 1999
- Sports Injury Management: Andreson, MK, Edition 2, 1998
- Evidence Based Sports Medicine: Macaulay, D & Best, I, Edition 2nd, 2007
- Sports Medicine Handbook: Wallace, WA & Hackney, RG, Edition 2nd, 2012
- Office Sports Medicine: Mellion, MB, Edition 1st, 2005
- Sports Medicine in Primary Care: Johnson, R, Edition 1st, 1998
- Sports Medicine of the Lower Extremity: Subotnick, SI, Edition 1st, 2008
- Encyclopedia of Sports Medicine: Narang, Priyanka, Edition 2nd, 2004
- Ethics, Injuries and the Law in Sports Medicine./ Grayson, Edward, Edition 1st, 1999
- Magnetic Resonance Imaging and Spectroscopy in Sports Medicine: Osteaux, M, Edition 3rd, 2014
- Sports Medicine Secrets/ by Morris B. Mellion., Edition 1st, 1994
- Athletic Training and Sports Medicine/ Storkey, Chad, Edition 4th, 2016

Course No.	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 553	Fundamentals in Sports	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions are to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno.1 shall carry equal marks.

Course Outcomes

S. No.	At the end of the semester, students will be able to:
CO1	Understand the basic laws of physics and their implication in sports
CO2	Understand the terminology, methodology and details of the equipments and infrastructure of various games
CO3	Understand and analyze biomechanics of the basics maneuvers in various activities related to sports
CO4	Understand vivid considerations such as psychological aspects, doping, the importance of body composition analysis in sports

Course Contents

Unit-I

Brief idea about Some Common Sports Terminology, Methodology, Rules, Equipment's and Infrastructure: Cricket, Football, Hockey, Tennis, Badminton, Table Tennis, Wrestling, Boxing, Track and Field, Gymnastics, Volleyball, Basketball and Aquatic sports.

Unit-II

Physics in sports

Type of Motion, Distance, Speed, Velocity, Angular Motion, Acceleration, Inertia, Mass, Newton's Law of Motion, Force and Its Characteristics, Classification of Force System, Force Couple, Composing and Resolution of Force System, Function, Projectile Motion, Levers and Fluid Mechanics.

Unit-III

Biomechanics

Biomechanics of Running; Biomechanics of Throwing; Biomechanics of Swimming; Biomechanics of Jumping; Introduction to Analysis of Equipment

Unit-IV

Miscellaneous

- i) Psychological aspect in Sports
- ii) Spirit and Moral Values, Doping in Sports
- iii) Special Aids in Performance
- iv) Body Composition, its Analysis and its Effects in Sports

Reference books

- Basic Biomechanics: Hall, SJ, Edition 2nd, 2006
- Principles of Mechanics and Biomechanics: Bell, F, Edition 1st, 1998
- Biomechanics of Sport and Exercise: McGinnis, PM, Edition 3rd, 2013
- Fundamentals of Biomechanics: Orkaya, N, Edition 4th, 2016
- Clinical Biomechanics of the Lower Extremity /by Ronald L. Valmassy., Edition 2nd, 1995
- Sports Psychology: Yadvinder Singh, Edition 3rd, 2005
- Sports Psychology: Jain, R, Edition 3rd, 2005

Course No.	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 554	Rehabilitation in Sports	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the Four Units). It will contain seven short answer type questions each of two marks. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including Qno1 shall carry equal marks.

Course Outcomes

S. No.	At the end of the semester, students will be able to:
CO1	Understand the various physiological responses to exercises
CO2	Perform Injury evaluation and its management
CO3	Understand Nutrition and its importance in sports
CO4	Analyze common injuries associated with certain sports

Course Contents

Unit- I

1. Physiological Responses to Exercise

Exercise effects on Metabolism, Muscle Fatigue, Respiratory, Cardiovascular and Hormonal changes during Exercise, Second Wind, Water and Electrolyte Regulation during Sports, Altitude Training, Under Water Training, Hypoxic and Hyperoxic training etc.

2. Response to Injury

Muscle Trauma, Contusions, Strains and Rupture, Effects of Immobilization and Detraining, Bone Trauma, Ligament and Tendon Injury, Nervous tissue, Alteration in Mechanical Properties of the joint and the surrounding structures.

Unit-II

1. Prevention of Injuries

- i) Risk Factors in Sports (Intrinsic and Extrinsic)
- ii) Strategies of Injury Prevention.

2. Injury Evaluation and Management

- i) Sporting Emergencies, On-field Assessment, Clinical Assessments, Principles of Management. (Acute Management, Remodeling and Conditioning, Maintenance of Fitness and Rehabilitation).
- ii) Fitness Testing and its analysis, Flexibility Defects and Its Correction. Strength training for Children and Adolescents, Environmental Effects on Training.

3. Nutrition in Sports

Requirements of Athletes, Diet needs for various Sports, Pre Game Meal and Carbohydrate Loading.

Unit-III

Some common injuries related to some common and popular sports and their management.

- i) Injuries in Football and Soccer
- ii) Track and field
- iii) Long distance running
- iv) Aquatic sports
- v) Baseball and Cricket

Unit-IV

Some common injuries related to some common and popular sports and their management

- i) Hockey
- ii) Basketball
- iii) Volleyball
- iv) Table tennis
- v) Badminton and Tennis
- vi) Gymnastics

Reference books

- Rehabilitation of Sports Injuries: Scientific Basis: Frontera, WR, Edition 3rd, 2010
- Prevention & Treatment of Sports Injuries: Anbust, Anju, Edition 3rd, 2000
- Physical Rehabilitation of the Injured Athlete: Andrews, JR, Edition 4th, 2012
- Sports Injuries Mechanized Prevention & Treatment/ by Freddie H F, Edition 4th, 2016
- Sports Injuries Recognition and Management/ edited by MA Hutson, Edition 3rd, 200

Course No.	Subject	Title	Teaching Hours/ Week	
			L – T – P	Credits
MPT 555 P	Practical (Sports Physiotherapy, Clinical/ viva-voce)	PC	0-0-8	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

S. No.	At the end of the semester, students will be able to:
CO1	Perform Physiotherapy management of all the conditions related to sports
CO2	Understand the terminology, methodology and details of the equipments and infrastructure of various games
CO3	Assess the various regions of the body
CO4	Perform Fitness testing and its analysis as per the games

Related to assessments, investigations and Physiotherapy management of all the above conditions. Students will be judged on one elective and one non-elective case. They will be expected to assess, diagnose and plan effective treatment plan for both cases.

Course No.	Subject	Title	Teaching Hours/ Week	
			L – T – P	Credits
MPT 556	Seminar/ Case Presentations	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

S. No.	At the end of the semester, students will be able to:
CO1	Discuss the various considerations in sports and its physiotherapy management.
CO2	Comprehend and present the topics with confidence.

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on the topic provided to them.

Course No.	Subject	Title	Teaching Hours/ Week	
			L – T – P	Credits
MPT 557	Clinical Training		0-0-10	Qualifying

Course Outcomes

Sr. No.	At the end of the semester, the students will be able:
CO 1	Perform a comprehensive Physiotherapy assessment of various sports conditions along with screening of Red and Yellow flags in patients
CO 2	Correlate the radiological findings and clinical findings
CO 3	Frame the specific diagnosis based on history, clinical examination and investigations
CO 4	Develop a customized treatment protocol of the patient based on his condition
CO 5	Keep a systematic, meaningful, and accurate written record of patient related information

Students will undergo clinical training in recognized physiotherapy unit for a period of 2 hours/day for 5 days in a week (240 hours) .OPD set ups will be under the supervision of senior physiotherapist. A Register/Log book will be maintained by student to document the Evaluation / Functional Analysis and Functional Diagnosis. Reports of minimum 5 cases per assignment and signature to be obtained from respective Section–in–charge at the end of each assignment for submission to the chairperson.

SEMESTER IV

Course No.	Subject	Title	Teaching Hours/ week	
			L – T - P	Credits
MPT 558	Dissertation (Based on Clinical/ Case presentation including viva-voce)	PC	0-0-24	12

Course Assessment Methods (External-100): End semester examination is of maximum 100 marks.

Course Outcomes

S. No.	At the end of the semester, students will be able to:
CO1	Learn to search and locate the literature related to the topic
CO2	Orient themselves towards the recent researches in the field
CO3	Learn research methodology and its implementation
CO4	Gain insight about the topic of dissertation in detail

As part of their requirement for the Master Degree the student is required to undertake a research study under the guidance of Guide and Co-guide. Research study must be selected only from the chosen specialization i.e. Sports physiotherapy and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voce by examining committee.

Course No.	Subject	Title	Teaching Hours/ Week
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			L – T - P	Credits
MPT 559	Seminar	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcome

S. No.	At the end of the semester, students will be able to:
CO1	Discuss the various considerations in sports and its physiotherapy management
CO2	Comprehend and present the topics with confidence.

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

Master of Physiotherapy
(Cardiothoracic and Pulmonary Disorders) 2ndYear

SEMESTER –III

Course No.	Subject	Title	Teaching Hours/week L-T-P	Credits
MPT 661	Medical & Surgical Management in Cardiovascular and Pulmonary Conditions	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the four Units). It will contain Seven Short Answer Type questions, each of two marks. Rest of the eight questions are to be given by setting two questions from each of the Four Units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including QNo.1 shall carry equal marks.

Course Outcomes

S. No	At the end of the semester, students will be able to:
CO1	Assess different cardiovascular and pulmonary conditions.
CO2	Understand Different cardiovascular and pulmonary conditions and their epidemiology.
CO3	Understand Clinical presentation of cardiovascular and pulmonary conditions.
CO4	Enhance knowledge about medical management of cardiovascular and pulmonary disorders.

CO5	Enhance knowledge about the surgical management of cardiovascular and pulmonary conditions.
CO6	Enhance knowledge about the different surgical incisions.
CO7	Understand Pre and post operative assessment of different cardiovascular and pulmonary conditions
CO8	Explain concepts of mechanical ventilation, their physiological effects and their complication.
CO9	Understand Conventional approaches for managing neuromuscular ventilator failure
CO10	Enhance knowledge about different pulmonary surgeries.
CO11	Enhance knowledge about different cardiac surgeries.
CO12	Enhance knowledge about ICU patient's management.

Course Contents

Unit I

CARDIOVASCULAR CONDITIONS

- i) Assessment of Cardiovascular system
- ii) Disorders of cardiac rate, rhythm and conduction
- iii) Cardiac Arrest
- iv) Shock
- v) Rheumatic Fever/ Rheumatic Heart Disease
- vi) Congenital Heart Diseases
- vii) Valvular Heart Diseases
- viii) Infective Endocarditis, Pericarditis
- ix) Ischemic Heart Disease
- x) Hypertension
- xi) Orthostatic Hypotension
- xii) CPR

- xiii) Heart diseases in Pregnancy
- xiv) Degenerative Arterial Diseases
- xv) Inflammatory Arterial Diseases
- xvi) Raynaud's Disease
- xvii) Venous Thrombosis/DVT
- xviii) Peripheral Vascular Diseases
- xix) Cardiomyopathy
- xx) Diseases of the pericardium
- xxi) Buerger's Disease
- xxii) Varicose Vein/ Ulcer
- xxiii) Congestive Heart Failure
- xxiv) Pulmonary and Systemic Hypertension
- xxv) Phlebothrombosis

Unit II

PULMONARY DISORDERS

- i) Obstructive Pulmonary Diseases
- ii) Infections of Pulmonary System
- iii) Interstitial & Infiltrative Pulmonary Diseases
- iv) Pulmonary Diseases due to Exposure of Organic & Inorganic Pollutants
- v) Pulmonary Disorders due to Systemic Inflammatory Disease
- vi) Pulmonary Vascular Disease
- vii) Diseases of Pleura
- viii) Respiratory Failure
- ix) Supplementary Oxygen and Oxygen Delivery Devices in chronic Respiratory disease
- x) Neuromuscular and Skeletal disorders leading to Global alveolar Hypoventilation, Myopathies, Spinal muscular atrophies, Poliomyelitis, Motor neuron diseases,

Kyphoscoliosis, Pectus carinatum, Pectus excavatum

- xi) Pathophysiology of Paralytic-Restrictive Pulmonary Syndromes
- xii) Conventional approaches to manage Neuromuscular ventilator failure
- xiii) Mechanical Ventilation: Concepts, Physiological effects and Complications.
- xiv) Pulmonary Embolism

Unit III

PRE/ POST OPERATIVE ASSESSMENT AND MEDICAL & SURGICAL MANAGEMENT OF CARDIAC SURGERIES

- i) Closed versus Open Heart Surgeries
- ii) Incisions
- iii) Preoperative Assessment of Patients
- iv) Pre and Post Operative Blood Gas Exchange
- v) Hemodynamics Performance of CTVS Patient
- vi) Emergencies in CTVS
- vii) AV Shunt
- viii) Cardiac Transplantation
- ix) Left Ventricular Assistive Devices
- x) Procedure on Sternum, Chest Wall, Diaphragm, Mediastinum and Esophagus
- xi) Cardiopulmonary Bypass
- xii) Maintaining and Removing Artificial Airways
- xiii) CABG
- xiv) Repair of Septal Defect
- xv) Aneurysectomy
- xvi) Pericardiectomy

Unit IV

PRE/POST OPERATIVE ASSESSMENT AND MEDICAL & SURGICAL MANAGEMENT OF PULMONARY SURGERIES

- i) Thoracoscopy, Thoracotomy
- ii) Lobectomy, Pneumonectomy
- iii) Pleurodesis, Pleurectomy, Blebectomy etc.

Reference Books:

- Textbook of general medical and surgical conditions for physiotherapists - Downie Bros., 2nd Edition.
- Essential of Cardiopulmonary physical therapy – Hillegass and Sadowsky...2nd Edition
- Text book of Chest, Heart and Vascular Disorders for Physiotherapists –Downie Bros., 3rd Edition.
- Cardiopulmonary physical therapy – Irwin and Tecklin – Mosby.,2nd Edition
- Vascular and respiratory physiotherapy – Smith and Ball –Mosby.,3rd Edition
- Physiotherapy in Intensive Care Unit – Mackenzic et al – WilliamsandWilkins.,1st Edition

Course No.	Subject	Title	Teaching Hours/week L-T-P	Credits
MPT 662	Physiotherapy Management of Cardiovascular & Pulmonary Conditions	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the four Units). It will contain Seven Short Answer Type questions, each of two marks. Rest of the eight questions are to be given by setting two questions from each of the Four Units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including QNo.1 shall carry equal marks.

Course Outcomes

S. No	At the end of the semester, students will be able to:
CO1	Learn Subjective and objective assessment of cardiac and pulmonary disorders
CO2	Understand Physiotherapeutic tests for the diagnosis of the cardiovascular disorders
CO3	Understand Physiotherapeutic techniques used in the treatment of cardiovascular and pulmonary impairments
CO4	Learn CPR and its significance in IHCA and OHCA incidents
CO5	Understand the pre operative and post operative assessment and the rehabilitation
CO6	Understand Pre and post-operative Physiotherapeutic management of cardiac surgeries
CO7	Understand Pre and post-operative physiotherapeutic management of pulmonary surgeries
CO8	Learn techniques for strengthening of respiratory muscles

Course Contents

Unit I

CARDIOVASCULAR CONDITIONS

- i) Assessment of Cardiovascular system
- ii) Disorders of cardiac rate, rhythm and conduction
- iii) Cardiac Arrest
- iv) Shock
- v) Rheumatic Fever/ Rheumatic Heart Disease
- vi) Congenital Heart Diseases
- vii) Valvular Heart Diseases
- viii) Infective Endocarditis, Pericarditis
- ix) Ischemic Heart Disease
- x) Hypertension
- xi) Orthostatic Hypotension
- xii) CPR
- xiii) Heart disease in Pregnancy
- xiv) Degenerative Arterial Diseases
- xv) Inflammatory Arterial Diseases
- xvi) Raynaud's Disease
- xvii) Venous Thrombosis/DVT
- xviii) Peripheral Vascular Disease
- xix) Cardiomyopathy
- xx) Diseases of the pericardium
- xxi) Buerger's Disease
- xxii) Varicose Vein/ Ulcer
- xxiii) Congestive Heart Failure

xxiv) Pulmonary and Systemic Hypertension

xxv) Phlebothrombosis

Unit II

PULMONARY DISORDERS

i) Obstructive Pulmonary Diseases

ii) Infections of Pulmonary System

iii) Interstitial & Infiltrative Pulmonary Diseases

iv) Pulmonary Diseases due to Exposure of Organic & Inorganic Pollutants

v) Pulmonary Disorders due to Systemic Inflammatory Disease

vi) Pulmonary Vascular Disease

vii) Diseases of Pleura

viii) Respiratory Failure

ix) Paralytic-Restrictive Pulmonary Syndromes

x) Pulmonary Embolism

Unit III

PRE/ POST OPERATIVE ASSESSMENT AND MEDICAL & SURGICAL MANAGEMENT OF CARDIAC SURGERIES

i) Cardiopulmonary Bypass

ii) CABG

iii) Cardiac Transplantation

iv) Repair of Septal Defects

v) Aneurysectomy

vi) Pericardiectomy

vii) AV Shunt

Unit IV

PRE/POST OPERATIVE ASSESSMENT AND MEDICAL & SURGICAL MANAGEMENT OF PULMONARY SURGERIES

- i) Thoracoscopy
- ii) Thoracotomy
- iii) Lobectomy
- iv) Pneumonectomy
- v) Pleurodesis
- vi) Pleurectomy
- vii) Blebectomy etc.

Reference Books:

- Textbook of general medical and surgical conditions for physiotherapists – Downie Bros., 2nd Edition
- Essential of Cardiopulmonary physical therapy – Hillegass and Sadowsky., 2nd Edition
- Text book of Chest, Heart and Vascular Disorders for Physiotherapists – Downie Bros., 3rd Edition
- Cardiopulmonary physical therapy – Irwin and Tecklin – Mosby., 3rd Edition
- Vascular and respiratory physiotherapy – Smith and Ball – Mosby., 5th Edition
- Physiotherapy in Intensive Care Unit – Mackenzic et al – Williams and Wilkins., 2nd Edition

Course No.	Subject	Title	Teaching Hours/week L-T-P	Credits
MPT 663	Fundamental of Cardiovascular & Pulmonary System	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the four Units).It will contain Seven Short Answer Type questions, each of two marks. Rest of the eight questions are to be given by setting two questions from each of the Four Units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including QNo.1 shall carry equal marks.

Course Outcomes

S. No	At the end of the semester, students will be able to:
CO1	Understand brief introduction of applied anatomy of the Heart and Lung.
CO2	Understand Biomechanical impairments and their impact on the cardio respiratory mechanics
CO3	Understand effects of pharmacology on cardio respiratory physiology
CO4	Understand anatomical and physiological differences between adult and children
CO5	Understand additional criteria used for the assessment and treatment of pediatric patients
CO6	Briefly explain the intrauterine development of pulmonary and cardiovascular system

CO7	Understand the intrinsic and extrinsic factors that regulate heart and respiratory rate at rest and during exercise
CO8	Understand impact of aging on cardiovascular and respiratory functioning
CO9	Understand evaluation of person's cardiovascular and respiratory responsiveness with the help of various exercise testing tools.

Course Contents

Unit I

Brief Introduction of Cardiovascular and Pulmonary System

- i) Cardio-Thoracic Applied Anatomy
- ii) Intrauterine Development of Cardiovascular & Pulmonary System
- iii) Difference between Adult and Pediatric Cardiovascular & Pulmonary System
- iv) Respiratory & Cardiovascular Physiology

Unit II

BIOMECHANICS

- i) Biomechanics of Respiration/ Respiratory Mechanics
- ii) Biomechanics of Cardiac System/ Cardiac Mechanics

Unit III

EXERCISE PHYSIOLOGY

- i) Cardiovascular Responses to Exercise
- ii) Respiratory Regulation during Exercise
- iii) Ventilation & Energy Metabolism
- iv) Respiratory Limitation to Performance
- v) Exercise Testing and Condition
- vi) Exercise Testing for Adults with Pulmonary Dysfunctions
- vii) Exercise Testing for Children with Pulmonary Dysfunctions
- viii) Abnormal Exercise Physiology

Unit IV

- i) Pharmacological Consideration

ii) Cardiopulmonary Changes with Aging

Reference Books:

- Textbook of general medical and surgical conditions for physiotherapists – Downie Bros., 2nd Edition
- Essential of Cardiopulmonary physical therapy – Hillegass and Sadowsky., 3rd Edition
- Text book of Chest, Heart and Vascular Disorders for Physiotherapists – Downie Bros., 2nd Edition
- Cardiopulmonary physical therapy – Irwin and Tecklin – Mosby., 3rd Edition
- Vascular and respiratory physiotherapy – Smith and Ball – Mosby., 5th Edition

Course No.	Subject	Title	Teaching Hours/week	Credits
			L-T-P	
MPT 664	Cardiac & Pulmonary Rehabilitation	PC	6-0-0	6

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Instructions for Paper Setters

Nine questions are to be set by the examiner. Question no.1 will be compulsory and based on the entire syllabus (all the four Units).It will contain Seven Short Answer Type questions, each of two marks. Rest of the eight questions are to be given by setting two questions from each of the Four Units of the syllabus. A candidate is required to attempt other four questions by selecting one from each of the four units. All the questions including QNo.1 shall carry equal marks.

Course Outcomes

S. No	At the end of the semester, students will be able to:
CO1	Enhance knowledge about concepts of mechanical ventilation, physiological effects and complications which helps in managing patients.
CO2	Improve knowledge about cardiac and pulmonary rehabilitation.
CO3	Enhance knowledge about stabilization of vital functions.
CO4	Learn chest PT techniques to treat different cardiac and pulmonary conditions.
CO5	Learn Respiratory muscle training to strengthen respiratory muscles.
CO6	Learn Conventional approaches to manage neuromuscular ventilator failure.
CO7	Learn ICU concepts and set up.
CO8	Understand Cardiopulmonary resuscitation to save a person's life.
CO9	Understand Rehabilitation program for different cardiovascular and pulmonary conditions.
CO10	Understand Exercise prescription to improve health and fitness.
CO11	Understand Significance of body composition and effect of diet on body composition.

CO12	Learn Cardiovascular and pulmonary training to improve cardiopulmonary endurance and performance.
CO13	Learn about Cardiovascular diseases and their effect on physical activity.

Course contents

Unit I

- i) Mechanical Ventilation: Concepts, Physiological Effects, Complications
- ii) Supplementary Oxygen: Administration, Principle, Devices and Techniques
- iii) Maintaining and Removal of Artificial Airways
- iv) Emergencies in CTVS: Principle, Management, Indication of Surgical Intervention,
- v) Stabilization of Vital Functions

Unit II

- i) Chest PT Techniques and Respiratory Muscle Training
- ii) Conventional Approaches for Managing Neuromuscular Ventilatory Failure
- iii) PT Management in ICU: Concept & Set-Up, Equipment's, Monitoring and Patient Management
- iv) Cardiopulmonary Resuscitation
- v) Rehabilitation Program for:
 - Patients with Thoracic and Abdominal Surgery
 - Patients with Spinal Cord Injury
 - Patients with COPD
 - Patients with Peripheral Vascular Disease
 - Neonates with Respiratory Disorders
 - Children with Respiratory Disorders

Unit III

1. PHYSICAL ACTIVITY, BODY COMPOSITION, ENERGY BALANCE AND

WEIGHT CONTROL

- i) Significance & Measurement of Body Composition
- ii) Body Composition & Physical Performance
- iii) Effect of Diet & Exercise on Body Composition
- iv) Weight Standards & Achieving Optimal Weight

2. PRESCRIPTION OF EXERCISE FOR HEALTH AND FITNESS

- i) Medical Clearance
- ii) Exercise Prescription
- iii) Monitoring Exercise Intensity
- iv) Exercise Program
- v) Exercise and Rehabilitation of People with Disease

3. CARDIOVASCULAR AND PULMONARY ADAPTATION TO TRAINING

- i) Muscular and Cardiorespiratory Endurance
- ii) Evaluating Cardiorespiratory Endurance Capacity
- iii) Cardiovascular Adaptation to Training
- iv) Respiratory Adaptation to Training
- v) Metabolic Adaptation to Training
- vi) Long Term Improvement in Cardiopulmonary Endurance
- vii) Factors Affecting the Responses to Aerobic Training
- viii) Cardiopulmonary Endurance and Performance

Unit IV

CARDIOVASCULAR DISEASE AND PHYSICAL ACTIVITY

- i) Forms of Cardiovascular Disease
- ii) Understanding the disease process
- iii) Determining Individual Risk
- iv) Reducing Risk through Physical Activity
- v) Risk of Heart Attack and Death during Exercise

Reference Books:

- Textbook of general medical and surgical conditions for physiotherapists
Downie Bros., 2nd Edition
- Essential of Cardiopulmonary physical therapy – Hillegass and Sadowsky., 3rd Edition
- Text book of Chest, Heart and Vascular Disorders for Physiotherapists –
Downie Bros., 2nd Edition
- Cardiopulmonary physical therapy – Irwin and Tecklin – Mosby., 2nd Edition
- Vascular and respiratory physiotherapy – Smith and Ball – Mosby., 3rd Edition

Course No.	Subject	Title	Teaching Hours/week L-T-P	Credits
MPT 665 P	Practical (Cardiothoracic & Pulmonary Disorders, clinical/ viva- voce)	PC	0-0-8	4

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

Sr.No	At the end of the semester, the students will be able:
CO1.	To assess and differentially diagnose various Cardiothoracic conditions
CO2.	To understand and implement practical aspects of Cardiothoracic-Rehabilitation
CO3.	To apply practical aspects of Cardio-Physiotherapy

Related to Assessments, Investigations and Diagnostic Tests for Cardiovascular and Pulmonary Conditions. Students will be judged on one elective and one non-elective case. They will be expected to assess, diagnose and plan effective treatment plan for both cases.

Course Contents

Unit I

- i) General Principle of Assessment
- ii) Evaluation and Method of Evaluation
- iii) History Taking
- iv) Objective and Subjective Assessment (Auscultation, Palpation, Percussion Etc.)
- v) Documentation
- vi) Invasive and Non Invasive Techniques

Unit II

DIAGNOSTIC TESTS FOR CARDIOVASCULAR CONDITIONS

- i) Examination of Heart: Clinical Examination
- ii) Heart Rate Monitoring
- iii) ECG/Exercise ECG
- iv) Echocardiography
- v) Holter Monitoring
- vi) Exercise Tolerance Testing / Stress Testing
- vii) Cardiac Catheterization
- viii) Lipid Profile, Angiography, Color Doppler

Unit III

DIAGNOSTIC TESTS FOR PULMONARY CONDITIONS

- i) Examination of Lungs: Clinical Examination
- ii) ABG Analysis
- iii) Spirometry
- iv) Bronchography
- v) Lung Function Testing

Unit IV

RADIOLOGICAL EXAMINATION

- i) Chest X-Ray
- ii) Cardiac CT Scan
- iii) Cardiac MRI
- iv) Radio Nuclide Scanning

Reference books:

- Physiology Part I by C.C. Chatterjee, 1st Edition

- Cunnigham's Anatomy, Edition 3rd, Vol 1,2,3
- Elizabeth Dean, 12th edition
- Cash's Chest physiotherapy, 5th Edition
- Alexander Hough,
- Chest Physiotherapy, 1st Edition

Course No.	Subject	Title	Teaching Hours/week L-T-P	Credits
MPT 666	Seminar/ Case Presentations	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

S. No	At the end of the semester, students will be able to:
CO1.	Learn various considerations in cardiovascular conditions and their physiotherapy management
CO2.	Comprehend and present the topics with confidence.

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

Course No.	Subject	Title	Teaching Hours/week L-T-P	Credits
MPT 667	Clinical Training	PC	0-0-10	Qualifying

Course Outcomes:

Sr. No.	At the end of the semester, the students will be able:
CO1.	To perform a comprehensive Physiotherapy assessment of various cardiovascular conditions along with screening of Red and Yellow flags in patients
O2.	To correlate the radiological findings and clinical findings
CO3.	To frame the specific diagnosis based on history, clinical examination and investigations
CO4.	To develop a customized treatment protocol of the patient based on his condition
CO5.	To keep a systematic, meaningful and accurate written record of patient related information

Students will undergo clinical training in recognized physiotherapy unit for a period of 2 hours/day for 5 days in a week (240 hours) .OPD set ups will be under the supervision of senior physiotherapist. A Register/Log book will be maintained by student to document the Evaluation / Functional Analysis and Functional Diagnosis. Reports of minimum 5 cases per assignment and signature to be obtained from respective Section–in–charge at the end of each assignment for submission to the chairperson.

SEMESTER IV

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 668	Dissertation (Based on Clinical /Case presentation including viva-voce)	PC	0-0-24	12

Course Assessment Methods (External: 100): End semester examination is of maximum 100 marks.

Course Outcomes

S. No	At the end of the semester, students will be able to:
CO1.	Enhance knowledge about practical field.
CO2.	Enhance knowledge about research and different types of studies.
CO3.	Gain more confidence level.
CO4.	Enhance knowledge about statistical tests.
CO5.	Understand concepts of research design.
CO6.	Understand various approaches to any research.
CO7.	Gain knowledge of specific topic.
CO8.	Understand different subjects
CO10.	Enhance current knowledge on research topic.
CO11.	Learn Brief introduction of search engines used in research

As part of their requirement for the Master Degree, the student is required to undertake a research study under the guidance of Guide and Co-guide. Research study must be selected only from the chosen specialization i.e Cardiothoracic & Pulmonary Disorders and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voce by examining committee.

Course No	Subject	Title	Teaching Hours/ Week	
			L – T - P	Credits
MPT 669	Seminar	PC	0-0-4	2

Course Assessment Methods (Internal: 30; External: 70) One minor test of 20 marks, class performance measured through percentage of lecture attended (4 marks). Assignment, quiz etc. (6 marks) and end semester examination is of maximum 70 marks.

Course Outcomes

Sr.No	At the end of the semester, the students will be able:
CO1.	To integrate theory and practical knowledge
CO2.	To critically apply these skills into clinical aspects

