VELS

INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Deemed to be University Estd. u/s 3 of the UGC Act, 1956)
PALLAVARAM - CHENNAI
ACCREDITED BY NAAC WITH 'A' GRADE
INSTITUTION WITH UGC 12B STATUS
Marching Beyond 30 Years Successfully

M.P.T
Master of Physiotherapy

Curriculum and Syllabus
(Based on Choice Based Credit System)
Effective from the Academic year
2022-2023

School of Physiotherapy

M.P.T – Master of Physiotherapy

CURRICULUM Total No. of Credits: 100

2022-24 Regulation

I Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CMPT001T	Basic Sciences – Theory	5	0	0	5	40	60	100
		22CMPT001P	Basic Sciences – Viva	0	0	2	1	40	60	100
2	Core	22CMPT002T	Exercise Physiology & Movement Mechanics – Theory	5	0	0	5	40	60	100
		22CMPT002P	Exercise Physiology & Movement Mechanics –Viva	0	0	2	1	40	60	100
3	Core	22CMPT003T	Research Methodology& Biostatistics - Theory	4	0	0	4	40	60	100
4	Core	22CMPT004T	PT Ethics & Entrepreneurship - Theory	4	0	0	4	40	60	100
5	Practical	22PMPT001	Physical Diagnosis & Management - Practical	0	0	6	3	40	60	100
	Total			**18**	**0**	**10**	**22**			

II Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CMPT005T	ADVANCED THERAPEUTIC INTERVENTIONS – Theory	5	0	0	5	40	60	100
		22CMPT005P	Advanced Therapeutic Interventions – Practical	0	0	4	2	40	60	100
2	Core	22CMPT006T	Electro Diagnosis & Electrotherapeutics – Theory	5	0	0	5	40	60	100
		22CMPT006P	Electro Diagnosis & Electrotherapeutics – Practical	0	0	4	2	40	60	100
3.	Elective	22DMPT101	Ergonomics	3	0	0	3	40	60	100
5	Elective	22GMPT151	Women's Health & Child Care	3	0	0	3	40	60	100
	Total			**16**	**0**	**8**	**20**			

III Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Specialty Core	22CMPTD001T___	Basic Fundamentals in Sports – Theory	5	0	0	5	40	60	100
		22CMPTD001P	Basic Fundamentals in Sports – Practical	0	0	4	2	40	60	100
2	Specialty Core	22CMPTK001T	PT Evaluation/ Documentation & Evidence Based Practice in Sports - Theory	5	0	0	5	40	60	100
		22CMPTK001P	PT Evaluation/ Documentation & Evidence Based Practice in Sports -Practical	0	0	4	2	40	60	100
3	Elective	22DMPT102	Basics of Medical Imaging & Bio Instumentation	3	0	0	3	40	60	100
4	Elective	22GMPT152	Community Based Physiotherapy	3	0	0	3	40	60	100

	Total		**16**	**0**	**8**	**20**			

IV Semester

S. No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Specialty Core	22CMPTD002T	Advance PT Intervention in Sports – Theory	5	0	0	5	40	60	100
			Advance PT Intervention in Elective Sports - Practical	0	0	4	2	40	60	100
2	Project	22RDMPTD001	Dissertation	0	0	12	6	40	60	100
3	Elective	22DMPT103	Food and Nutrition	3	0	0	3	40	60	100
4	Elective	22GMPT153	Clinical Diagnosis	3	0	0	3	40	60	100
	Total			**11**	**0**	**16**	**19**			

L – Lectures, T-Tutorial, P – Practical, Cr.'s – Credits, CA – Continuous Assessment Test, SEE- Semester End Examination

MPT Program Outcome:

Graduates of the Master of Physiotherapy program:

During this MPT degree,

1. Will demonstrate communication skills to Work creatively and effectively to uphold the professional standards and relationships with a range of stakeholders like patients, care takers, family members and other clients.
2. Will demonstrate cognitive and creative skills to critically evaluate and apply physiotherapy approaches, paradigms and techniques and utilize appropriate, evidence-based skills, techniques and practice in managing and treating people with injury, disability or illness in a range of health care and/or rehabilitation settings.
3. Will demonstrate technical skills to integrate the core areas of physiotherapy practice with emphasis on demonstrated mastery of evidence-based practice, clinical skills, clinical reasoning and decision making in order to apply creativity and initiative to new situations in professional practice.
4. Will demonstrate the broad application of knowledge and skills to solve problems individually and independently justify diagnostic decisions and management strategies on basic of clinical assessment findings.
5. Will demonstrate technical skills to apply treatment methods and techniques, to address client needs, safely and with appropriate regard to professional and legislative guidelines, standards and requirements.
6. To prepare postgraduate students for professional autonomy with self-regulating discipline.
7. To form a base of professional practice by referral and the first contact mode using evidence-based practice to impart research basis in order to validate techniques and technologies in the practice of physiotherapy.
8. To provide experience in clinical training.
9. To provide honest, competent, and accountable physiotherapy services to the community.
10. Acquires adequate knowledge of the basic medical subjects in the practice of physiotherapy

MPT I SEMESTER (2022 REGULATION)

22CMPT001T BASIC SCIENCES 5005

Course Objective:

The objectives of this course is that after 100 hours of lectures & demonstrations, in addition to clinics, the student will be able to understand the basic knowledge about the applied anatomy and applied physiology of various systems of the body, Psychosocial sciences and Pharmacology

This paper consist of the following 5 modules

1. Applied Anatomy
2. Applied Physiology I
3. Applied Physiology II
4. Psychosocial sciences
5. Pharmacology

UNIT I APPLIED ANATOMY 20

1. Topographic anatomy concerning the neck, arm, leg and back with a focus on vessels, nerves and muscles/fascia and joints.
2. Topographic anatomy concerning thorax, abdomen and the pelvic region with a focus on the abdominal wall, viscera, vessels and nerves.
3. Surface anatomy and palpations concerning extremities, thorax, abdomen and the pelvicregion Patho anatomy of peripheral nerve injuries, various bone pathologies

UNIT II APPLIED PHYSIOLOGY I 20

I) THE HEART AND CIRCULATION

a. Structure and properties of heart muscles
b. The action of the heart
c. Determinants of cardiac performance
d. Normal E.C.G
e. Maintenance of blood pressure
f. Cardiac arrest and heart failure
g. Outline of lymphatic circulation and pulmonary circulation Cardiovascular compensation for postural and gravitational changes

h. Hypertension
i. Edema
j. Central and peripheral venous pressure

II) NERVOUS SYSTEM

a. Outline the structure and function of the central nervous system
b. Outline the autonomic nervous system
c. Types of nerve cells, electrical phenomena in nerve cells
d. Properties of mixed nerves
e. Reflex action, reciprocal innervations
f. Degeneration and regeneration of nerves

UNIT III APPLIED PHYSIOLOGY II **20**

I) RESPIRATION

a. Mechanics of respiration
b. Breath sounds
c. Properties of gases
d. Exchange of gases
e. Gas tension in air at sea level, tracheal air, cellular air, mixed air, plasma, arterial blood and mixed venous blood
f. Lung volume
g. Magnitude of dead space
h. Control of bronchial smooth muscle
i. Lung compliance
j. Nervous control of respiration
k. Chemical control of respiration
l. Voluntary control of respiration
m. Oxygen and CO 2 transport
n. Acid - base reactions in blood
o. Effects of exercise on respiration
p. Artificial respiration

II) MUSCULAR SYSTEM

a. Control of posture
b. Outline of voluntary movement
c. Cutaneous, deep and superficial sensations
d. Synaptic transmission
e. Neuromuscular transmission

f. Properties of muscles, contractile responses, types of contraction, electrical phenomena and tonic reflexes

UNIT IV PSYCOSOCIAL SCIENCES 20

1. Psychology –cognitive science including learning memory, perception, self efficacy,
2. attention and motivation
3. Social science- quality of life, social determinants of health, support system, social
4. policy , disability and function, community participation
5. Psychosocial theories of lifespan development
    a. Theories of psychological development and aging
    b. Relationship with health, injury disease and disablement across life span
6. Learning and education- education principles related to the role of PT as Educator of
7. Clients/patients, families, other professionals and students.

UNIT V PHARMACOLOGY 20

Introduce the students to basic pharmacology of various common medication used and its effects on patients and during physiotherapy.

A. Terminology
B. Classification of drugs
C. Factors influencing the dosage of drugs and its actions.
D. Drug Allergy
E. Principles of drug administration and routes.
F. Definition, action, indications, contra - indications, adverse reactions of the following:
    a) Anti-inflammatory
    b) Anti-epileptic
    c) Sedatives, Hypnotics, Tranquilizers
    d) Muscle relaxants
    e) Alcohol
    f) Pulmonary effects of general an aesthetic agents
    g) Mucolytic agents
    h) Local an aesthetic agents
    i) Narcotic Steroids
    j) Vasodilators
    k) Insulin and oral hypoglycemic agents
    l) Antibiotics – Bactericidal, Bacteriostatic
    m) Chemotherapeutic drugs in leprosy and tuberculosis.

Evaluation Total Hours: 100

Textbooks:

1. Guyton, Text book of Physiology Elsevier, 4 Ed, 2000
2. ToraTora , Textbook of Anatomy & Physiology, Churchill Livingston, 3 Ed, 2004
3. Chatterjee, Text Book of Physiology. JP, 2 Ed, 2001
4. Handbook of educational technology-Ellington henry, Kogan page
5. Essentials of medical pharmacology KD Tripathi 8 th ed.

References:

1. Grays Anatomy, mosby, 2Ed, 1994
2. Derek, Anatomy, Palpation and surface Marking, Elsevier, 4Ed, 1997
3. Sieg, Illustrated essentials of musculoskeletal anatomy, CBS, 2Ed, 1995
4. Nigel, Anatomy and human movement , MCGH, 4 Ed, 2000
5. T.S. Ranganathan , Textbook of anatomy, JP, 3 Ed, 1999
6. Palastanga , Anatomy and human Movement JAYPEE, 2 Ed, 2003
7. Cynthia. C.Norkin, Pamela , K.Levengle Joint structure & function, ELBS, 4 Ed, 2004

Course outcome:

CO1	This provides a detailed introduction on applied anatomy and applied physiology of different systems of the body	K2
CO2	This gives better understanding of physiological mechanisms and organ systems that allow humans to engage in physical activity	K3
CO3	This course provides information on changes taking place on systems by chronic activity and disuse	K3
CO4	This course provides knowledge on psychology including cognitive, learning memory and behavioural sciences	K4
C05	Extensive details regarding the basic pharmacology of various common medication used and its effect on patient and during physiotherapy	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	2	2	3	3	3	3
CO2	3	2	3	3	3	2	3	3	2	3
CO3	2	2	2	3	2	3	2	2	2	2
CO4	3	3	3	3	2	3	3	3	2	3
CO5	3	3	3	3	3	3	2	3	2	3
Average	2.8	2.6	2.6	2.8	2.4	2.6	2.6	2.8	2.2	2.8

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**d Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22CMPT002T EXERCISE PHYSIOLOGY AND MOVEMENT SCIENCE 5005

Course Objective:

The objectives of this course is that after 100 hours of lectures and demonstrations, in addition to clinics, the student will be able to understand the basic knowledge about the applied anatomy and applied physiology of various systems of the body, biomechanics and pathomechanics, nutrition, fitness and PT ethics.

This paper consists of 2 modules

1. Exercise physiology
2. Movement science

UNIT I **20**

Fundamentals of exercise physiology and system changes

- Micronutrients and macronutrients
- Pre competition meal
- Energy transfer during exercise
- Maximum oxygen uptake – oxygen deficit
- Respiratory, cardiovascular and neuromuscular system changes

UNIT II **20**

Exercise training and adaptations

- General training principles
- Adaptations to exercise training
- Factors affecting the aerobic training response
- Methods of training
- Measurements of muscle strength
- plyometric training
- DOMS
- Acclimatization

UNIT III **20**

Skeletal and Muscular consideration of movement

- Pathomechanics of bone, cartilage, tendon and ligament
- Muscle fibre types
- Length – tension relationship and force velocity relationship
- Active and passive insufficiency
- Motor units

UNIT IV **20**

Functional anatomy and related pathomechanics

- Impingement of shoulder and its altered mechanics
- Scapulohumeral rhythm and frozen shoulder
- Scapula dyskinesis
- Rotator cuff muscle weakness

- Pitcher’s elbow
- Pulled elbow injuries
- Tennis elbow and golfer’s elbow
- Ulnar variance
- Functional position of wrist
- Hand functions
- Trigger finger
- Dequervain’s tenosynovitis
- Intrinsic minus and plus position
- Unilateral and bilateral stance with cane use
- Pelvic tilting and muscle weakness
- Extension lag and flexion contractures
- Tibiofemoral and Patellofemoral joint injury
- Coxavalga and coxavara
- Altered mechanics following patellectomy and meniscectomy
- cruciate ligaments
- Angular positioning of the patella
- Genu valgum and genu varum
- Hamstring strengthening and prevention of back injuries
- Functional implications of flexion contractures of the knee
- Pes anserinus
- Patellofemoral joint forces in three different exercises
- Metatarsal length
- Tarsal coalition
- Foot deviations
- Plantar fasciitis
- Tennis leg

UNIT V **20**

Altered mechanics in Spine, Posture and Gait

- Forward head posture
- Craniovertebral angle
- Upper and lower cross syndrome
- Deviations of posture in sagittal and frontal plane
- Kyphosis, scoliosis and lordosis
- Hemi vertebra
- Spondylolisthesis
- Lumbar pelvic rhythm
- Lumbosacral angle

- Squat lift versus stoop lift
- Gait parameters and its abnormalities in various conditions
- Pathological Gait

Evaluation **Total Hours: 100**

Textbooks:

1. Katch, Exercise physiology energy nutrition and human performance ELSEVIER, 4Ed, 2006

REFERENCE

Kinesiology, the mechanics and pathomechanics of human movement – Carol Oatis 2 ndedition.

Course outcome:

CO1	This provides detailed information about the exercises and physiological changes in the different systems	K3
CO2	This explains about the diet recommendation for the sportsmen before exercise and also during training.	K4
CO3	The lectures provides the basic training methods and also the system adaptations on training methods	K2
CO4	This subject explains the patho-mechanics aspect of upper limb, lower limb and spinal structures	K5
CO5	This lectures provides detailed explanation of the effects of altered forces on the joints of the body and its mal-alignment	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	1	2	3	2	3
CO2	3	3	3	2	1	1	1	2	3	3
CO3	3	2	2	2	3	3	3	2	2	3
CO4	2	3	3	3	3	3	3	3	3	3
CO5	2	3	3	3	3	3	3	3	3	3
Average	2.6	2.8	2.8	2.6	2.6	2.2	2.4	2.6	2.6	3

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22CMPT003T RESEARCH METHODOLOGY & BIO STATISTICS 4004

Course Objective

The objective of this course is after 100 hours of lectures the student should be able to have basic knowledge on Research Methodology and Bio Statistics.

Unit I 20

Research Methodology - I

- Introduction
- Importance of research in physiotherapy.
- Ethics in physiotherapy research.
- Introduction to the conceptual, empirical, interpretative, quantitative and qualitative research.
- Conceptual Phase
- Formulation of the problem.
- Concepts and variables.
- Literature review.
- Hypothesis.

Unit II

Research Methodology – II 20

- Empirical/Conducting Phase
- Research design.
- Brief overview of qualitative and quantitative approaches.
- Population and samples
- Collection of data.
- Research data and analysis.
- Interpretative Phase
- Discussion and conclusions.
- Interpreting qualitative results.

Unit III **20**

Research Methodology - III

- Criticizing published results
- Need for criticizing results.
- Guidelines for criticizing results.
- Writing research for publication
- Guidelines for writing results.
- Recent trend in research

Unit IV **20**

Biostatistics – I

Uses of statistical methods in Physiotherapy

1. Measurement, measurement scales, variables & their measurements.
2. Symbolizing data & operations.

Statistical Tools

1. Statistical data
2. Tabulation
3. Calculation of central tendency & dispersion
4. Linear regression & correlation
5. Presentation of data in diagrammatic & graphic form.

Unit V **20**

Biostatistics – II

Probability & sampling

1. Probability as a mathematical system
2. Population & samples
3. Sampling distribution
4. Sampling methods
5. Surveys in research

Vital & Health statistics

1. Uses of vital & health statistics in practice of PT
2. Sources & methods of collection & recording
3. Interpretation of commonly used vital & health statistics & estimate population using arithmetic progression method

Evaluation **Total Hours: 100**

Textbooks:

1. B.L Agarwal, Basic statistics, New Age International Publication.2012.

Reference:

1. P.S.S. Sundar rao, Introduction to biostatistics and Research Methodology, CBS, 1Ed, 2002.
2. C.R Kothari, Research methodology, New Age international publication, 3Ed, 2014.

Course outcome :

CO1	The student will be able to implement hypothesis testing	K3
CO2	Important concepts relating to research design and measurements and scaling techniques.	K4
CO3	To analyze experimental and observational study	K5
CO4	Knowledge of Processing and analyzing data can be gained	K4
CO5	To implement and calculate frequency distribution	K4

CO PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	3	2	3	1	3	1	1	3
CO2	2	1	3	2	3	1	3	1	1	3
CO3	2	1	3	2	3	1	3	1	2	3
CO4	2	2	3	2	3	1	3	1	1	3
CO5	2	2	3	3	3	2	3	2	2	3
Average	2.8	2	2.6	2.6	2.2	1.8	2.2	2.2	1.6	2

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22CMPT004T PT ETHICS &ENTREPRENEURSHIP 4004

Course Objective

- After 100 hours of lecture, students should be able to understand principles of management in personal management, principles of physiotherapy profession, times management and administration including budgeting.

UNIT I: LEGAL AND ETHICAL ASPECTS IN PHYSIOTHERAPY PRACTICE 20

1. Ethical Aspects:

a) Ethical principles for physiotherapy practice,
b) Quality care and Evidence based practice,
c) Informed consent.
d) Patient's/ client's rights.

2. WCPT policy& (ii). World Medical Association Declaration,

3. Relationship with the patient/ client,

4. Relationship with medical practitioner and other health care professionals,

5. Professionalism in physiotherapy and standard physical therapy practice,

6. Ethics in health research

Need for ethical guidelines.

UNIT II LAWS RELATED TO PHYSIOTHERAPY PRACTICE &PROFESSIONALNEGLIGENCE 20

1. Laws Related to Physiotherapy practice.
2. Scope of following law in physiotherapy practice.
    a) Consumer Protection Act 1986 (CPA)
    b) Person with Disability Act
    c) Right to information act
    d) Workman‟s Compensation Act 1922.
3. Professional negligence:

a) Civil Negligence.
b) Criminal Negligence.
c) Contributory Negligence.
d) Vicarious Liability.
e) Medical Negligence in India and CPA 1986.
f) Medical Negligence and criminal Law
g) Prevention of Medical Negligence.
h) Defenses against Medical Negligence.

UNIT III APPLIED ETHICS & PROFESSIONAL ORGANISATIONS 20

1. Applied Ethics: Steps of application in ethical principles in clinical situations, Medical indication, patient preference, quality of life and contextual features.
2. Professional Organizations: Role of following professional organizations in scope of physiotherapy practice and physiotherapy education in India.
    a. World Confederation of Physiotherapy
    b. Indian Association of Physiotherapy.

UNIT IV PRINCIPLES OF MANAGEMENT 20

1. Definition & Branches of Management
2. Principles of health sector Management, General Principles of Management:
3. Theories of Management ,Planning ,Decision making
4. Principles of an Organizational chart, Organization of a department: Planning, space, materials and basic requirements.
5. Personnel Management and Financial Management Functions of Personnel Manager.
6. Job Analysis Job Description, Job Specification, Recruitment, Selection, Placement, Induction or Orientation, Training & Development, Performance Appraisal, Promotion, Job Evaluation.
7. Scope of Finance function, Executive functions and Incidental functions,
8. Financial decisions, Financial issues including budget and income generation.

UNIT V QUALITY MANAGEMENT 20

1. Concepts and dimensions of quality, vision, mission and policy statements, customer focus, customer perception of quality, translating needs into requirements, customer retention, Dimension of product and service quality.
2. Leadership, Motivation and Change Management and Self-Management, Leadership, Qualities, Leadership styles, Motivation, Importance, Theories of Motivation, Maslow's Theory of need hierarchy, Herzber's theory. Concept of change, change as a natural process, importance & causes of change, Resistance to changes.
3. Self-Management: Preparing for 1ST job, time Management, career development.

Evaluation **Total Hours: 100**

Text books:

1. Larry J Nosse, Management Principles for Physical therapist, Lippincott Williams, 2nd 2005

2. Chris croft, Time Management, International Thomson Business press, 1996.

References:

1. Physical Therapy Ethics 2nd Edition by Donald L. Gabard PT PhD, Mike W. Martin PhD
2. Textbook of Medical Ethics by Loewy, Erich H.

Course outcome:

CO1	This course provides basic knowledge on professional ethics and legal issues.	K2
C02	This course explains the role of professional bodies.	K3
CO3	This provides information on management for physiotherapy	K5
CO4	This gives knowledge on job recruitment, organization, and time management.	K5
C05	Rules and Regulations of governing bodies of Physiotherapy in resource and quality management.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	3	2	3	1	3	1	1	3
CO2	2	1	3	2	3	1	3	1	1	3
CO3	3	3	3	3	2	3	2	3	3	3
CO4	2	2	3	2	3	1	3	1	1	3
CO5	3	3	3	3	2	3	2	3	3	3
Average	2.4	2.2	3	2.4	2.6	1.8	2.6	1.8	1.8	3

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22PMPT001 PHYSICAL DIAGNOSIS & MANAGEMENT 0 0 6 3

Course Objective:

After 200 hours of clinical practice, students should be able to

i) Explain the concepts and principles of various Rehabilitation approaches.
ii) Demonstrate assessment of patients using various Principles.
iii) Analyze the patient's problems and come to a clinical diagnosis.

UNIT I INTRODUCTION 20

1. Assessment and treatment planning
2. Value of patient care
3. Significance of history taking
4. Importance of physical diagnosis

UNIT II ORTHOPAEDIC DIAGNOSIS & REHABILITATION 20

1. Musculoskeletal assessment
2. Gait analysis & postural assessment
3. Perambulation and gait training
4. Physical diagnosis and rehabilitation in arthritis & regional conditions
5. Amputation management & rehabilitation

UNIT III CARDIO AND PULMONARY DIAGNOSIS & REHABILITATION 20

1. Cardio & respiratory assessment
2. Exercise prescription
3. Pulmonary rehabilitation
4. Cardiac rehabilitation

5. Community based rehabilitation for pulmonary diseases

UNIT IV NEUROLOGICALDIAGNOSIS&REHABILITATION 20

1. Neuro assessment
2. Assessment and intervention strategies for cognition and perceptual dysfunction for neuro conditions
3. Assessment &rehabilitation for Stroke
4. Assessment & rehabilitation for Spinal cord injury
5. Assessment & rehabilitation for Muscle disease

UNIT V GERIATRICS AND OBG DIAGNOSIS & REHABILITATION 20

1. Assessment & rehabilitation in Geriatric syndromes
2. Exercise prescription for geriatrics
3. Assessment & rehabilitation in Gynacological conditions
4. Significance of exercise antenatal and postnatal stages
5. Exercise prescription in OBG surgeries

Evaluation **Total Hours: 100**

Text books:

1. Janet H carr, a motor re leaning programme for stroke, aspen publishers, 2nd, 1987

2. Berta bobath, adult hemiplegia, butterworth Heinemann, 3rd ed, 1990.

Reference:

1. David J. magee, orthopeadic physical assessment, saunders , 5th ed, 2008.

Course outcome:

CO1	One can understand about the significance & importance of history taking.	K3
CO2	The clear understanding of orthopaedic diagnosis and rehabilitation can be attained	K6
CO3	The clear understanding of cardiac diagnosis and rehabilitation can be attained	K6
CO4	The clear understanding of pulmonary diagnosis and rehabilitation can be attained	K6

CO5	The clear understanding of neurological diagnosis and rehabilitation can be attained	K6

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**d Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22CMPT005T ADVANCED THERAPEUTIC INTERVENTION 5005

Course Objectives:

The objectives of this course is after 200 hours of lectures & demonstrations, in addition to clinics, the student will be able to understand about manual techniques, neurological system, sports, cardio respiratory system, Pilates

Advanced therapeutic Intervention

This paper consists of 5 Modules

1. Manual techniques

2. Neurological system
3. Sports
4. Cardio respiratory system
5. Pilates

UNIT I MANUAL TECHNIQUES: 20

1. Peripheral Joint Mobilization
2. Basic concept of joint motion – Arthrokinematics
3. Indication for joint mobilization
4. Limitation of joint mobilization
5. Contraindication and precaution
6. Procedures for applying passive joint mobilization
7. Mobilization with movement, principles and practice
8. Peripheral Joint mobilization technique.
9. Vertebral joint mobilization
10. Intervertebral mobility testing
11. Spinal manual techniques

UNIT II 20

NEURO MUSCULAR SYSTEM:

1. Bobath's approach (Normal movement concept)
2. Motor Relearning process (MRP)
3. Sensory re -education
4. Hand rehabilitation

UNIT III 20

SPORTS:

1. Isokinetic testing
2. Strength training
3. Gait evaluation (force plates, gait parameters, analysis of jumping and running mechanics)
4. ACSM guidelines for sports
5. Plyometrics
6. Agility training for sports players following lower extremity injury

UNIT IV **20**

CARDIO RESPIRATORY SYSTEM:

1. Proprioceptive neuro muscular facilitation
2. Exercises for PVD
3. Tracheal stimulation
4. Cardiac stress testing
5. ABG
6. Suctioning
7. Patient examination & care in ICU

UNIT V PILATES **20**

1. History
2. Anatomy
3. core stabilization
4. concepts
5. principles
6. mat workouts
7. machine workouts
8. demonstration

Evaluation **Total Hours: 100**

Textbooks:

1. Robin mckenzie textbook of mechanical diagnosis and therapy for cervical, thoracic and lumbar spine volume 1
2. Janet H carr, motor re leaning programme for stroke, aspen publishers, 2 nd, 1987
3. Berta bobath, adult hemiplegia, butterworth Heinemann, 3 rded, 1990.
4. Cardiorespiratory physiotherapy 5 th edition adults and pediatrics – Eleanor main, lindadenehy
5. Sports medicine and rehabilitation– 2 nd edition - Buschbacher R

References:

1. Rudolph Kessler., Management of common musculoskeletal problem, Mosby, 3 rdEd, 2002
2. Maitland textbook of peripheral and vertebral manipulation 4 th edition.
3. Freddy. M. kalternborn textbook of manual mobilization volume 1
4. Clinical sports medicine – 3 rd edition -peter brukner and karim khan
5. Web based search

Course outcome:

CO1	Knowledge about peripheral and vertebral techniques	K4
CO2	Knowledge about neuro rehabilitation techniques	K5
CO3	Knowledge about sports rehabilitation techniques	K5
CO4	Knowledge about cardiac rehabilitation techniques	K5
CO5	Knowledge about Pilates training	K3

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**d Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22CMPT006T ELECTRO DIAGNOSIS & ELECTROTHERAPEUTICS 5005

Course Objectives:

The objective of this course is that after 200 hours of lectures & demonstration in addition to clinics the student will be able to understand the basic knowledge about the indications and

contra – indications, demonstrate the different techniques and the effects of various types of Electrotherapy modalities, Electrophysiology & Electro diagnosis.

UNIT I **20**

1. FARADIC STIMULATION

a. Faradic type currents.
b. Physiological effects, indications, contraindications.
c. Faradic stimulation in weak pelvic floor muscles, Bell's palsy, reduction of limb oedema, disuse atrophy and reduction of arches of foot.

2. DIDYNAMIC CURRENTS:

a. Physiological effects, indications, contraindications, methods of application, dosage.

3. HVPGS

4. IONTOPHORESIS

a. Direct currents.
b. Strength of the solution, common drugs in usage today, apparatus used.
c. Indications, contraindications.
d. Dosage methods: in contact, sub aquatic, iontophoresis technique – treatment of hyperhydrosis, calcific tendonitis, allergic vasomotor rhinitis.
e. Side effects, contraindications, techniques**.**

5. TENS:

a. Principles of TENS.
b. Physiology and modulation of pain
c. Physiological effects, therapeutic effects of TENS.
d. Obstetrical TENS, cancer pain & TENS, TENS for non-healing fractures.

6. INTERFERENTIAL THERAPY:

a. Interferential currents, Rebox, Russian Currents
b. Physics of IFT.
c. Physiological effects and uses of IFT.

UNIT II **20**

1. ULTRASONIC THERAPY:

a. Medical frequencies of ultrasound, production of ultrasound, physical phenomenon of ultrasound.

b. Pulsed ultrasound.
c. Physiological effects of ultrasonic energy.
d. Indications, contraindications, dangers, coupling media, dosage, methods of application, techniques of application**.** Techniques of application in contact method, sub aquatic method users.

2. LASER THERAPY:

a. Cold LASER production, physical characteristics, physiological effects, dosage, pain control.
b. Indications, contraindications.
c. Trigger points.

3. a. SHORTWAVE DIATHERMY:

1. Physics, biophysical and biomechanical effects of SWD, therapeutic effects of SWD, indications, dangers, precautions, application of inductothermy.
2. Pulsed SWD: Biological effects, indications, contraindications and techniques of application, advantages and disadvantages.

b. LONG WAVE DIATHERMY

4. MICROWAVE DIATHERMY:

a. Physics of MWD.
b. Biophysical, biomechanical, therapeutic effects of MWD.
c. Dosage, indications and contraindications.
d. Techniques of MWD.
e. Dangers, precautions, methods of application, advantages and disadvantages.
f. Pulsed MWD.

5. SHOCK WAVE DIATHERMY

a. Principles and uses
b. Physiological & Therapeutic effects

6. INFRA RED RADIATIONS:

a. Physical apparatus for infra-red heating, physiological effects, indications, contraindications.
b. Techniques of application.
c. Advantages & disadvantages.

UNIT III **20**

1. PARAFFIN WAX:

a. Method of application – immersion, brushing, equipments requires.
b. Physiological effects, therapeutic uses, benefits of the therapy.

2. HOT PACKS:

a. Hydro collator packs, temperature maintenance, physiological effects, methods of application, uses, advantages and disadvantages.

3. CONTRAST BATH:

a. Equipment used method of application, indications, contraindications, physiological effects and therapeutic uses.

4. CRYOTHERAPY:

a. Cold packs, ice bags, ice massage, ice towels, compressive cryotherapy, vapocoolant sprays.
b. Therapeutic effects of cryotherapy, uses in sports medicine, spasticity.

5. TRACTION:

a. Types of spinal traction – continuous, intermittent, manual, auto traction, gravity lumbar traction.
b. Indications for spinal traction.
c. Contraindications, effects of traction, mechanical lumbar traction technique, cervical traction technique.

6. MECHANICAL EXTERNAL COMPRESSION:

a. Causes of edema, pathophysiology of edema, types of edema.
b. Methods of external compression – taping, intermittent compression, elastic support bandaging, gradient support, massage, exercise.
c. Physiological effects, therapeutic uses.
d. Patient education.

UNIT IV ELECTRO PHYSIOLOGY 20

1. Excitable Tissues – Nerve:

a. Excitation and conduction.
b. Measurement of electrical events.
c. Ionic basis of excitation and conduction
d. Physiologic basis of nerve conduction tests – their reliability and access.

2. Excitable Tissues – Muscle:

a. Electrical phenomena & ionic fluxes.
b. Contractile responses.

3. Clinical Neurophysiology:

a. History of Clinical Neurophysiology: Introduction to electro diagnostic signals and their measurements.

UNIT V ELECTRO DIAGNOSIS **20**

1. Nerve Conduction Study:

a. Principles of nerve conduction study.
b. Clinical application of NCV
    - Median nerve.
    - Ulnar nerve.
    - Radial nerve.
    - Brachial plexus.
    - Cervical radiculopathy.
    - Lumbar plexus.
    - Lumbo sacral radiculopathy.
    - Anomalous innervations of the extremities.
    - Nerve conduction of non-limb nerves.
    - Late responses.
    - Autonomic nervous system testing.

2. EMG:

a. Introduction to EMG.
b. Technique of EMG.
c. Clinical Application of EMG:
    - EMG findings in neurological disorders.
    - EMG studies in polyneuropathy.
    - Repetitive Nerve Stimulation.
    - Single fiber and macro EMG.
    - Visual evoked potential.
    - Brainstem auditory evoked potential.
    - Somatosensory evoked potential.
    - Motor evoked potential.

Evaluation **TOTAL HOURS: 100**

Text Books:

1. Clayton's Electrotherapy – Therapy and practice – Angela Forster, All India Traveler Bookseller.9th Ed, 2012.

2. John Low and AnnReed ,Electrotherapy Explained –, Butterworth Heinmann Pub. 4th Ed,2003
3. Edward BellisClayton , Nigel Palastanga, Claytons Electrotherapy:Theory and practice, 9thEd, 1985
4. Valma, J.Robertson, Electrotherapy explained, Butterworth ,Heinmann, Elsevier, 4 th Ed,2014.

References:

1. Michelle Cameron , Physical agents in rehabilitation CBS, 2 Ed, 2001
2. G.David Baxter, Laser (therapeutic) theory & Practice, CBS, 2 Ed, 2008.
3. Josheph Arodgold M.D., Electro diagnosis of Neuro muscular disease, Mosby, 2 nd Ed,2007.
4. Basanta Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1 st Ed, 2006.
5. Tim Watson Electrotheray evidence based practice, Churchill Livingston, 12 th Ed, 2008.

Course outcome:

CO1	Knowledge about various types of therapeutic currents and its physiological, therapeutic effects gained.	K3
CO2	Knowledge about pain and pain modulation mechanism gained.	K3
CO3	Knowledge about different types of low and medium frequency currents. Its indication, contraindication, method of application gained.	K4
CO4	Knowledge about Traction external compression, Its indication, contraindication, method of application gained.	K5
CO5	Knowledge about the electrical properties of nerve & muscle gained &Diagnosis of neuromuscular dysfunction by electro-diagnostic test is known.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3

CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22DMPT101 ERGONOMICS 3003

Course objective:

The objective of this course is that after 80 hours of lectures & demonstrations, the student will be able to understand the knowledge about ergonomics issues, evaluation and safe practice standards.

UNIT I 20

Introduction & Bioengineering

1. History of ergonomics
2. Need of ergonomics
3. Domains in ergonomics
4. Equipment design – workstation, tools, workbenches, computers

UNIT II 20

Ergonomic Assessment

1. Ergonomic cycle
2. Evaluation of ergonomic issues
3. Assessment tools
4. Exit assessment

5. Fatigue assessment
6. Measuring human capacities and limitation

UNIT III **20**

Job analysis

1. Requirement of job
2. Profile and candidate selection
3. Pre employment screening
4. Job site analysis
5. Job task analysis

UNIT IV **20**

LEVEL OF INTERVENTION

1. Deconditioning
2. Return to work rehab process
3. Avenues and benefits of ergonomics
4. Work conditioning
5. Work hardening

UNIT V

Current Trends in Ergonomics

1. Software in ergonomics
2. Regulatory bodies
3. Professionals in ergonomics
4. Legal issues and insurance policies
5. Industrial therapy – team concept, rehab discipline and purpose.

Evaluation **Total Hours: 120**

Textbook:

1. Salvendry**,** Handbook of Human Factors and Ergonomics, Mosby, 1Ed, 2012

Reference:

1. Valevie, J Berg rice ergonomics in health care & rehabilitation, butter worth, 1998.

Course outcome:

CO1	Student should have understood the different types of work nature and its impact towards the human body.	K3
CO2	Student should have understood how to perform the ergonomic evaluation &should also be aware of mandatory questions which needed to be asked related to the profession.	K4
CO3	Student should be aware to perform a workplace assessment for all the profession &should have understood about all nature of work how it affects the normal system, body mechanics, and psychological level of the person.	K4
CO4	Student should be able to differentiate the work nature of software and hardware professionals.	K4
C05	Students should have understood what are the legal bodies exsiting in constructing the work place.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	2	3	1	2	3	1
CO2	3	3	3	3	3	3	1	2	3	1
CO3	2	2	2	2	2	3	1	2	2	1
CO4	3	3	3	3	3	3	1	2	2	1
CO5	2	2	2	2	2	3	1	2	3	1
Average	2.6	2.6	2.4	2.4	2.4	3	1	2	2.6	1

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓

Quiz	Field visit	Projects	Seminars	Demonstration/ Presentation
✓	✓		✓	✓

22GMPT151 WOMEN'S HEALTH AND CHILD CARE 3003

Course Objectives:

The objectives of this course is that after 200 hours of lectures & demonstrations, in addition to clinics, the student will be able to understand about clinical gynaecological and obstetric conditions.

UNIT I **20**

1. Anatomy & Physiology of female reproductive organs
2. Puberty & Menarche.
3. Physical and physiological changes during pregnancy.

UNIT II **20**

1. Antenatal education.
2. Antenatal discomforts and its management.
3. Exercise in pregnancy.
4. Mechanism of Labour& its complication
5. Types of delivery, its complications and its management.

UNIT III **20**

1. Postnatal exercise.
2. Postnatal complications and its management including management of scars.
3. Episiotomy and its wound care.
4. Post operative care in gynecological surgery.
5. Breast engorgement.

UNIT IV **20**

1. Gynaecological disorder & its PT Management
   a) Infective conditions
   b) Back ache & abdominal pain
   c) displacement & Genital prolapse
2. Post menopause problem & its Management.
3. Urinary dysfunction – Physiotherapy management.
4. Lymph oedema& Role of Physiotherapy.

UNIT V **20**

1. Baby massage and stretches.
2. Nutrition for toddler.
3. Breast feeding positions.
4. Complimentary diet for infant.

Evaluation **Total Hours: 100**

Text books:

1. Margaret polden, Jill Mantle, Physiotherapy in Obstetrics and Gynecology –Jaypee Brothers, 1st Edition – 2007.
2. Carolyn kisner, therapeutic exercise – foundation & techniques, Jaypee, 6th edition-2012.

References:

1. D.C. Dutta, textbook of obstetrics, central – 2004.
2. G.B. Madhuri, textbook of physiotherapy for OBG, Jaypee 1st edition – 2007.
3. Patricia Downie, Cash's Text Book of General Medical and Surgical Conditions for physiotherapists, Editor Jaypee Brothers, 2nd Edition,1994
4. Cesarean Section – Therapeutic Exercise – Carolyn Kisner, Lynn Allen Colby.
5. Jean M. Irion, Glenn L. Irion, Wom

Course outcomes:

CO1	Knowledge about growth and development of the fetus and female reproductive system.	K2
CO2	Knowledge of breastfeeding and lactation issues.	K3
CO3	Knowledge of antenatal and postnatal physiotherapy interventions.	K5
CO4	Knowledge of physiotherapy management in gynecological conditions.	K5
CO5	Knowledge of physiotherapy management in postsurgical gynecological and obstetric conditions.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	1	3	2	2	2

CO2	3	2	3	2	1	2	3	3	2	3
CO3	3	2	3	3	2	3	1	3	2	2
CO4	2	1	2	3	3	1	1	1	1	1
CO5	3	3	3	2	3	2	3	2	1	2
Average	2.8	2	2,6	2.6	2.2	1.8	2.2	2.2	1.6	2

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22CMPTD001T BASIC FUNDAMENTALS IN SPORTS 5005

Course Objectives

The objectives of this course is that after 200 hours of lectures & demonstrations, in addition to clinics, the student will be able to understand about patho mechanics of human joint, clinical sports conditions and pharmacology in sports conditions.

UNIT I 20

ANATOMY, PSYCHOLOGY AND PHYSIOLOGY

a. Osteology, Myology, Arthrology and Neurology of Skull, Upper Extremity, Lower Extremity and Vertebral column .
b. Psychological factors of sports injuries ·
c. Physiological factors of sports injuries – Type of injuries, Reaction to injury, Response of joint structures to injury, Effects of immobilization, Effects of remobilization, Inflammatory and healing process, micro trauma, stress reactions·
d. sport specific injuries

UNIT II 20

BIOMECHANICS & PATHOMECHANICS

a. Biomechanics of sports and its relationship to muscle, bone and joint injuries
b. Pathomechanics of sport injuries in different sports

c. Physical demand in different sports
d. Physiological effects of stretching & mobilizations prior to the participation in sports
e. Types of exercises and their physiological effects related to sports

UNIT III **20**

CLINICAL CONDITIONS

Student is expected to learn common causes, mechanism, pathophysiology, signs, symptoms, medical and surgical treatments of following sports related injuries and also should know the recent advances in the surgical, medical management of sport related injuries.

1) Epiphyseal injuries:

a. Classification, complications and prognosis of epiphyseal injuries,
b. Osgood Schlatter's disease and traction epiphysitis
c. tendinitis at the insertion of patellar tendon
d. complete avulsion of the epiphysis of the tibial tubercle and shoulder
e. Contributing risk factors – intrinsic factors, and extrinsic factors.

2) Shoulder Girdle injuries:

a. Injuries to the sternoclavicular joint – sprains and dislocations
b. Scapulothoracic joint and acromoclavicular joint sprains
c. Shoulder dislocation, Painful Arc syndrome, rotator cuff injuries, impingementsyndromes and Glenoid labrum lesions.
d. thoracic outlet syndrome.

3) Elbow Joint injuries:

a. Olecranon bursitis, Valgus, extension overload in elbow and Ulnar nerve lesions
b. Ulnar and Radial collateral ligament sprains, Contusions and strains
c. Dislocations, Osteochondritisdissecans and Little Leagues elbowproblems resulting from throwing, medial lesions, lateral lesions, posterior lesions.
d. Elbow injuries from Tennis: Epicondylitis – Incidence, pathology and mechanism of injury.
e. Wrist and Hand Injuries : Colle's fracture, Scaphoid fracture, Gamekeeper's Thumb, DIP joint fracture and dislocation
f. Jersey finger, Boutonniere deformity, Pseudo boutonniere deformity, fractures of the metacarpals, Bennett's fracture, mallet finger
g. Dequervain's tenosynovitis of the thumb, Bowler's thumb, handler palsy, Hamate fracture, Ganglion cysts, Trigger finger and Carpal tunnel syndrome.

UNIT IV **20**

Thigh Injuries: Contusions and strain of the quadriceps musculature, acute strain of the hamstring group, complete rupture of the patellar tendon.

1) Knee Injuries:

a. Knee ligament injuries - first-degree, second-degree and third-degree sprain
b. Anterior and posterior cruciate tears, anteriolateral instability meniscal-lesion,

Articular cartilage lesions and Patello femoral dysfunction.

2) Injuries of the Patella:

a. Patella fracture, acute & recurrent dislocation, subluxation and spontaneous reduction of a dislocated patella
b. Osteochondritis Dissecans, Jumper's knee.

3) Injuries to lower leg, ankle and foot:

a. Tibiofibularsynostosis, rupture of the gastrocnemius & Tennis leg
b. Total & partial rupture of Achilles tendon
c. Tendinopathies – Achilles tendinitis, anterior tibialis tendonitis, Peronealtendonitis. Posterior tibialis tendonitis, Flexor hallucislongus tendinitis, Flexordigitorumlongus tendonitis.
d. Compartmental compression syndromes, Heel bruise, Ostrigonum injury,
e. Calcaneal apophysitis, Tarsometatarsal injuries.
f. Tarsal tunnel syndrome, cuboids syndrome, metatarsal stress fracture, Inter-digitalneuroma (Morton's neuroma), Stair Climbers transient paraesthesia, Turf toe, sesamoitidis.

4) Injuries to the Ankle:

a. Syndesmotic ankle sprain, Inversion sprains, eversion sprains, dorsiflexion sprains
b. tarsal tunnel syndrome, stress fracture of the metatarsal, corns and calluses, blisters, ingrown toenails, peroneal tendonsubluxation.

5) Injuries to the low back: Postural syndrome, Dysfunction syndrome, Derangementsyndrome, Spondylolisthesis.

UNIT V **20**

1) Injuries to the Running Athlete:
   a. Causes of over use injuries – Common running induced injuries to the lower back, hip, Iliotibial tract pain

b. Trochanteric Bursitis, stress fracture of femoral neck, Slipped capital femoral Epiphysis & vague hip pain.
c. Common running related injuries to the knee: Medial Patellar pains, Pes anserine bursitis, patellar tendonitis, retro patellar pain, lateral patellar pain, lateral knee pain, biceps femoral tendinitis.

d. Common running related injuries to the lower leg:

- Tibial stress relation, stress fracture, medial tibial stress syndrome, compartment syndrome – Anterior, posterior lateral, fibular tress reaction and stress fracture, retro calcaneal bursitis, medial arch pain, plantar fascitis

2) Swimming Injuries – 'Swimmer's Shoulder, anterior subluxation of the Glenohumeral Joint, Breast stroker's injury.
3) Role of drugs in physiotherapy
4) Doping / Pro acting

Evaluation **Total Hours: 100**

Textbooks:

1. James a Gould, orthopaedics and sports physical therapy, jp, 3ED, 1997

2. Das, a text book of sports medicine, JP, 1 ED, 2006

3. Karim Khan, Clinical Sports Medicine,3ED,2008.

References:

1. Mcardal, Exercise Physiology , ELBS, 5Ed, 2011

2. Steven roy, Sports medicine, mosby, 4 ed, 1988

Course outcome:

CO1	Students will be able to identify the types, levels of sports injuries and their acute phase of management like immobilization.	K3
CO2	Students will have a wide knowledge about Pathomechanics of sports injuries and flexibility exercises.	K6
CO3	Students will know about Bio mechanics of various sports and their relationship to joint injuries	K5

CO4	Students will be able to insist about different types of sports injuries in upper limb, lower limb &postural syndrome	K5
CO5	To evaluate the various running and swimming injuries	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	2	3	1	2	3	1
CO2	3	3	3	3	3	3	1	2	3	1
CO3	2	2	2	2	2	3	1	2	2	1
CO4	3	3	3	3	3	3	1	2	2	1
CO5	2	2	2	2	2	3	1	2	3	1
Average	2.6	2.6	2.4	2.4	2.4	3	1	2	3	1

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓		✓	✓	✓

22CMPTK001T PT EVALUATION / DOCUMENTATION /EVIDENCE BASED PRACTICE IN SPORTS MEDICINE 5005

Course Objectives

The objectives of this course is that after 240 hours of lectures; demonstrations, in addition to clinics, the student will be able to understand about PT assessment, Diagnosis and evidence based practice related to various sports conditions.

UNIT I 20

Emergency Sports Assessment

Pre-event Preparation.

Primary Assessment – Level of Consciousness, Establishing the airway, Assessment for Bleeding, Fluid loss and Shock, Pupil Check, Assessment for spinal cord injury, Assessment for Head Injury, Assessment for Movement, Positioning the patient, Injury severity.

UNIT II **20**

Secondary Assessment

Pre-participation Evaluation, Objectives of the Evaluation, Setting of the Examination.

UNIT III **20**

Pre-participation History

Examination– a. Eye Examination, Musculoskeletal Examination and Convulsive

Disorders, Pulmonary Examination, Urogenital Examination, Gatrointestinal examination, Dermatological Examination, Examination for Heat Disorders. General Medical Problems Dental Examination, Neurological Examination, Cardiovascular Examination,

b. Application of isokinetics in testing.

UNIT IV **20**

Plyometrics & mobilization

a. Calesthenic exercise

b. circuit training

c. Joint mobilization &manipulation

d. Soft tissue therapy

UNIT V **20**

Nutrition & Athlete

Well balanced diet, Pre-event nutrition, Carbohydrate loading diet, increase & decrease weight

Evaluation **Total Hours: 100**

Textbooks:

1. Das, a text book of sports medicine, JP, 1 ED, 2006.
2. Dey, a text book of sports and exercise physiology JP, 1 ED, 2012.
3. Karim Khan, Clinical Sports Medicine,3ED,2008.

References:

1. James a Gold, orthoppaedics and sports physical therapy, JP, 3ED, 1997.

2. Christopher Norris, sports injuries and management, mc graw hill, 3 ed, 1999.

Course Outcome:

CO1	The students will have a good idea about emergency sports assessment	K3
CO2	They will a be familiar in pre – participation evaluation	K4
CO3	Students will be able to known concept of calesthenic exercises, circuit training and Isokinetics	K5
CO4	Students will know about the throwing mechanism and related injuries	K5
CO5	Students will be having a sound knowledge about well-balanced diet and pre – event nutrition	K6

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	2	3	1	2	3	1
CO2	3	3	3	3	3	3	1	2	3	1
CO3	2	2	2	2	2	3	1	2	2	1
CO4	3	3	3	3	3	3	1	2	2	1
CO5	2	2	2	2	2	3	1	2	3	1
Average	2.6	2.6	2.4	2.4	2.4	3	1	2	2.6	1

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**d Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓	✓	✓	✓	✓

22DMPT102 BASICS OF MEDICAL IMAGING & BIO INSTUMENTATION 3003

Course Objectives:

The objectives of this course is that after 90 hours of lectures & demonstrations, in addition to clinics, the student will be able to understand about medical imaging and bio instrumentation

UNIT I **20**

RADIOLOGY, RADIO DIAGNOSTICS & SONOGRAPHY

Introduction to Radiography: Radio Imaging and Radio Diagnostic:

- Dimension in radiography.
- Radio density.
- A roentgen.
- Analysis of image.
- Positioning, viewing of radiograph, film markers.
- Image quality factors: radiographic density, contrast, distortion, recorded results.

UNIT II **20**

- Common Imaging Studies:
- X Ray – spinal, skull, peripheral.
- Conventional topography.
- Computed tomography (CT).

UNIT III **20**

- Contrast enhanced radiography.
- Radio nucleide scan.
- Magnetic resonance Imaging with Spectroscopy.
- PET.
- Myelography.

UNIT IV **20**

- Nuclear Imaging.
- Pneumo encephalogram.
- EEG.

UNIT V **20**

- Ultrasonogram.
- ECG & Doppler studies.
- MUGA – Nuclear Test.

Evaluation **Total Hours: 100**

TEXT BOOKS:

A text book of MRI basic principle and applications – 5th edition – Brian M Dale

Course outcome

CO1	Knowledge about different views and assessing of X-ray gained.	K4
CO2	Knowledge about various radiological imaging studies gained	K3
CO3	Knowledge about various Magnetic Resonance Imaging gained	K3
CO4	Knowledge about computed tomography studies gained.	K4
CO5	Knowledge about ultra-sonogram	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	1	3	2	2	2
CO2	3	2	3	2	1	2	3	3	2	3
CO3	3	2	3	3	2	3	1	3	2	2
CO4	2	1	2	3	3	1	1	1	1	1
CO5	3	3	3	2	3	2	3	2	1	2
Average	2.8	2	2.6	2.6	2.2	1.8	2.2	2.2	1.6	2

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**d Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22GMPT152 COMMUNITY BASED PHYSIOTHERAPY 3003

Course Objective:

The objective of the course is that after 90 hours of lectures, demonstrations, practical and clinics, the student will be able to demonstrate and understanding of the influence of social and environmental factors of individual and society.

UNIT I **20**

1. Outline the Concept of Disease, Concept of Causation and Natural history of diseases.
2. Spectrum of Disease – Iceberg of Disease
3. Prevention methods for Disease with disability
4. Population studies and epidemiological implications of Impairment and Handicap.

UNIT II **20**

1. Disability, health statistics.
2. Health administration - management concept as applied to physiotherapy.
3. Health and fitness, Environmental health physiotherapy as a drugless system. Public
4. Health education methods of Communications.

UNIT III **20**

1. Child-care – prevention and social medicine.
2. National health programmes and Immunization programmes
3. Maternal care Antenatal and Postnatal physiotherapy
4. Educated children, postnatal complications and prevention of postural defects, fitness Programme.

UNIT IV **20**

1. Industrial physiotherapy – prevention of Repetitive strain injuries, physiological restoration, rehabilitation
   in industrial injuries.
2. Psychosomatic approaches in management of stress disorders.
3. Changes in life style to reduce risk factors for disability, Drug dependence and iatrogenic disorders.

UNIT V **20**

1. Community based Rehabilitation.
2. Nutrition and diet.
3. Care of the aged, geriatric physiotherapy, life span yoga.

Evaluation Total Hours: 120

Text Books:

1. Park's Text Book of preventive and Social Medicine – K Park, 24TH ED, BDB Publishers,2017.

Course outcome:

CO1	Epidemiological implications of impairment and handicap and disability, health statistics	K4
CO2	National health schemes and its benefits.	K5
CO3	Immunization program – malnutrition and early detection of disabling conditions and Intervention.	K5
CO4	Categorizes various rehabilitations and describes its advantages and disadvantages.	K6
CO5	Explains about communicable and non- communicable diseases and its implications.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**d Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22CMPTD002T ADVANCE PT INTERVENTION IN SPORTS 5005

Course Objectives:

The objectives of this course is that after 200 hours of lectures & demonstrations, in addition to clinics, the student will be able to understand about current and latest intervention used for various sports conditions.

UNIT I **20**

Prevention of Athletic Injuries and Treatment of Athletic injuries.

a. General conditioning principle – strength, power, muscular endurance, flexibility, anaerobic metabolism.
b. Warm-up period and Cool down, schedule Protective and supportive equipment – protective equipment: Supportive devices, motion limiting devices.
c. Taping and wrapping techniques.
d. Emergency care and Athletic first-aid – cardiopulmonary emergencies, ABC of resuscitation, Heimlick maneuver Shock Injuries: - Internal injuries, Head and neck injuries, fractures, dislocations.
e. Injury first-aid – ICE or Cold application, compression, elevation, gait instruction, stretcher and wheel chair uses.

UNIT II **20**

a. Physiotherapeutic interventions for relief of pain – Therapeutic modalities and nprocedures – General principles of therapeutic modalities Hydrotherapy, Microwave diathermy, Ultrasound and Laser. Iontophoresis, Phonophoresis, TENS, Cryotherapy, Cold Spray, Contrast Bath, Massage and soft tissue mobilization treatment techniques.
b. Fitness training related to specific sports – Manipulative Therapy, Principles, Concept, Indications and Contraindications, Applications.
c. Injuries Rehabilitation – Goals of rehabilitation, types of exercises – isometric exercise, isotonic exercise, special forms of exercise, manual resistance. Proprioceptive Neuromuscular facilitation, surgical tubing, circuit training, sport-specific skills.
d. Application of isokinetics in Athletic Rehabilitation.

UNIT III **20**

a. Epiphyseal Injuries, Osgood Schlatter's disease, traction, epiphysitis, tendinitis at the inertion of patellar tendon, complete avulsion of the epiphysis of the tibialtubercle shoulder and its Sports Rehabilitation.
b. Shoulder Girdle Injuries: Injuries to the sternoclavicular joint – sprains, dislocations, Scapulothoricic joint lesion, acromioclavicluar joint sprains, dislocation of the shoulder and thoracic outlet symdrome. Painful arc syntrome, rotator cuff injuries, Impingement syndromes,Glenoid Labrum lesions and its sports rehabilitation.
c. Elbow joint Injuries: Olecranon bursitis, Valgus, extension overload in elbow, Ulnar nerve lesions, Ulnar and Radial collateral ligament sprains, Contusions and strains, Dislocations, Osterochondritisdissicans, Little Leaguers elbow and its sports rehabilitation.
d. Wrist and Hand Injuries – Colle's fracture, Scaphoid fracture, Gamekeeper's Thumb, DIP joint fracture and dislocation, Jersey finger, Boutonniere deformity, Pseudo boutonniere deformity, fractures of the metacarpals, Bennett's fracture, mallet finger, Dequervain's tenosynovitis of the thumb, Bowler's thumb, Handler palsy, Hamate fracture, Ganglion cysts, Trigger finger, Carpal tunnel syndrome and its rehabilitation.

UNIT IV **20**

a. Thigh Injuries – Contusions to the quadriceps, strain of the quadriceps musculature, acute strain of the hamstring group, complete rupture of the patellar tendon and its rehabilitation.
b. Knee Injuries – Knee ligament injuries first-degree sprain, second-degree sprain, third-degree sprain, anterior and posterior cruciate tears, anteriolateral instability meniscal-lesion, Articular cartilage lesions, Patello femoral dysfunction and its rehabilitation.
c. Injuries of the Patella – Patella fracture, acute-dislocation, recurrent dislocation, subluxation and spontaneous reduction of a dislocated patella, OsteochondritisDissicans, Jumper's knee and its rehabilitation.
d. Injuries to lower leg, ankle and foot – Tibiofibularsynostosis, rupture of the gastrocnemius, Tennis leg, rupture of the Achilles tendon, tendinopathies – Achilles tendonitis, anterior and postriortibialis tendonitis, Peroneal tendonitis., Flexor hallucislongus tendinitis, flexor digitorumlongustendonitis.Compartmental compression syndromes, Heel bruise, Ostrigonum injury,Calcaneal apophysitis, Tarsometatarsal injuries. Tarsal tunnel syndrome, cuboidssyndrome, metatarsal stress fracture, inter-digital neuroma(Morton's neuromas), Stair Climbers transient parasthesia, Turf toe, sesmoitidis and its rehabilitation.
e. Injuries to the Ankle – Syndesmotic ankle sprain, Inversion ,eversion and dorsiflexion sprains, tarsal tunnel syndrome, stress fracture of the metatarsal, corns and calluses, blisters, ingrown toenails, peroneal tendon subluxation and its rehabilitation.
f. Injuries to the low back – Postural syndrome, Dysfunction syndrome, Derangement syndrome, Spondylolisthesis and its rehabilitation
g. Injuries to the Running Athlete – Common running induced injuries to the lower back, hip Iliotibial tract pain, Trochanteric Bursitis, stress fracture of femoral neck and Slipped capital femoral epiphysis.

UNIT V **20**

a. Common running related injuries to the knee - Medial Patellar pains, Pes anserine bursitis, patellar tendinitis, retro patellar pain, lateral patellar pain, lateral knee pain, biceps femoral tendonitis.
b. Common running related injuries to the lower leg –Tibial stress relation, stress fracture, medial tibial stress syndrome, compartment syndrome – Anterior, posterior, lateral, fibular stress reaction and stress fracture, retro calcaneal bursitis medial arch pain, plantar fascitis.
c. Swimming Injuries – 'Swimmer's Shoulder' anterior subluxation of the Glenohumeral Joint, Breast stroker's injury.
d. Thermal injuries – heat injuries & prevention, healing syndrome, heat cramps, heat fatigue and heat stroke
e. Old injuries - students should know the pre and post operative rehabilitation used in sports physiotherapy.
f. Female and Old Atheletes**.**

Evaluation **Total Hours: 100**

Textbooks:

1. James a Gould, orthoppaedics and sports physical therapy, jp, 3ED, 1997
2. Das, a text book of sports medicine, JP, 1 ED, 2006
3. Karim Khan, Clinical Sports Medicine,3ED,2008.

References:

1. Mcardal, Exercise Physiology , ELBS, 5Ed, 2011.

Steven roy, Sports medicine, mosby, 4 ed, 1988

Course outcome:

CO1	Students will know about how to prevent athletic injuries& emergency sports management	K4
CO2	Students will be able to identify the general conditioning principles warm – up schedule	K4
CO3	Students will be able to know about the proper protective & supportive Devices & taping wrapping techniques	K5
CO4	Students will be able to apply various electrotherapy modalities in sports injuries	K6
CO5	Students will be able to treat all kind of sports injuries that can occur in upper & lower limbs, running & swimming injuries	K6

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	2	3	1	2	3	1
CO2	3	3	3	3	3	3	1	2	3	1
CO3	2	2	2	2	2	3	1	2	2	1
CO4	3	3	3	3	3	3	1	2	2	1
CO5	2	2	2	2	2	3	1	2	3	1
Average	2.8	2	2.6	2.6	1.8	2.2	2.2	2	1.6	1

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓	✓	✓	✓	✓

22DMPT103 FOOD AND NUTRITION 3 0 0 3

Course objective:

The objective of this course is that after 100 hours of L,D,P the student shall be able to understand the basic knowledge about Diet, balanced diet, metabolism, malnutrition, under-nutrition, overnutrition, deficiency disease.

UNIT I SOURCES OF FOOD 20

1) Nutritive value of foods,
2) Food Sources from which Key vitamins are derived.

UNIT II DIGESTIVE SYSTEM 20

1. Digestion and absorption –Digestion at each stage of the digestive system
2. Dietary guidelines- Factors affecting food requirements. Meals for all ages and occupations. Meal plan for women's health.

UNIT III COMPOSITION OF FOOD 20

1. Composition and value of the main foods in the diet - Milk, meat, fish, cheese, eggs,

   margarine and butter

   cereals (wheat, rice, maize, millets, oats) , fruits and vegetables

UNIT IV PROCESSING OF FOOD 20

1. Cooking of food -Transfer of heat by conduction, convection and radiation, changes in food processing,

2. Role of processed food in space.
3. Life style management – Obesity, underweight and benefits of rotein food in lifestyle management

UNIT V **FOOD PREPARATION** **20**

4. Convenience foods- Foods partly or totally prepared by a food manufacturer – dehydrated, tinned, frozen, ready to eat. Intelligent use of these foods.
5. Advantages and disadvantages.

Evaluation **Total Hours: 100**

Text Book:

1. Agarwal, Textbook of human nutrition, JP, 1 Ed, 2014
2. Food science, B Srilakshmi, 3 Ed

Reference:

1. Kenneth F. Kiple, KriemhildConeè Ornelas,The Cambridge world history of food,Cambridge University Press, Ist ed,2000

Course outcome:

CO1	Become familiar about the nutritive values of food.	K2
CO2	Explain about the food sources from which we obtain vitamins.	K3
CO3	Become familiar with various compositions of food.	K3
CO4	Well versed with digestion at each stages of digestive system.	K5
CO5	Become familiar with different cooking methodologies.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	1	3	2	2	2
CO2	1	1	2	2	2	1	2	3	3	3
CO3	1	1	2	2	2	1	2	3	3	3

CO4	3	2	2	3	2	1	3	2	2	2
CO5	3	2	2	3	2	1	3	2	2	2
Average	2.2	1.6	2	2.6	2	1	2.6	2.4	2.4	2.4

Assessment Methods:

CAT 1	CAT 2	Model Exam	d Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓			✓	✓

22GMPT153 CLINICAL DIAGNOSIS 3 0 0 3

Course objective: (Employability)

The objective of this course is that after 100 hours of the student shall be able to understand the basic knowledge about Clinical diagnosing Orthopaedic,Neurologicaland Cardio-respiratory Conditions.

UNIT I CLINICAL DIAGNOSIS OF ORTHOPAEDIC CONDITIONS 20

1. Fracture
2. Dislocation
3. Congenital disorders
4. Deformities
5. Trauma & injury
6. Orthopedic disabilities arising due to neurological conditions

UNIT II CLINICAL DIAGNOSIS OF NEUROLOGICAL CONDITIONS 20

1. Stroke
2. Brain tumors
3. Myopathies
4. Parkinson
5. Cerebellar dysfunction
6. Epilepsy

7. Demyelinating disorders

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UNIT III CLINICAL DIAGNOSIS OF CARDIAC CONDITIONS 20

1. Congenital heart diseases
2. Circulatory disorders
3. Arrhythmias
4. Cardiomyopathies
5. Myocardial infraction

UNIT IV CLINICAL DIAGNOSIS OF RESPIRATORY CONDITIONS 20

1. Abnormal breathing patterns
2. Chronic Obstructive Pulmonary Disease
3. Occupational lung diseases
4. Restrictive Lung diseases
5. Tuberculosis& Tumors

UNIT V CLINICAL DIAGNOSIS OF OBG CONDITIONS 20

1. Prolapse of uterus
2. Hernia
3. Mastectomy
4. Antenatal and Post- natal complications
5. Diastasis recti
6. Urinary incontinence

Total Hours:100

Text Book:

1. Davidson,A Text Book of Medicine, Churchill Livingston, 21 st Ed, 2010.
2. Susan B'O' Sullivan, Physical rehabilitation, Jaypee, 6th ed. – 2014
3. Madhuri , Text book of physiotherapy for cardiothoracic surgery condition ,CBS, 1sted, 2008.
4. Margaret polden, Jill Mantle, Physiotherapy in Obstetrics and Gynecology –Jaypee Brothers, 1st Edition – 2007.

Reference:

1. Magee, Texbook of orthopaedics, ELBS, 7Ed, 2002

Course outcome:

CO1	To be well versed in diagnostic procedure of fracture, dislocation, injuries, and deformities	K5
CO2	To Clearly understand the diagnosis of stroke, myopathies, Parkinson's, and demyelinating disorders	K4
CO3	To be well versed in diagnosis of congenital heart disease, arrythmias, and cardiomyopathies	K4
CO4	To understand the diagnosis of pulmonary conditions	K4
CO5	To understand the clinical diagnosis of urinary incontinence, antenatal and post-natal complication.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**d Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**Field visit**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓	✓		✓	✓