Vels Institute of Science, Technology and Advanced Studies

SCHOOL OF PHYSIOTHERAPY

PO1: Graduates of the Master of Physiotherapy program 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

PO2: Graduates of the Master of Physiotherapy program will demonstrate cognitive and creative skills to critically evaluate and apply physiotherapy approaches, paradigms and techniques and utilise 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.

PO3: Graduates of the Master of Physiotherapy program 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.

PO4: Graduates of the Master of Physiotherapy program 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.

PO5: Graduates of the Master of Physiotherapy program 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.

PO6: Graduates of the Master of Physiotherapy (Coursework) program will demonstrate inter-professional, multi-disciplinary and specific disciplinary knowledge of Various health sector influences on physiotherapy practice.

Department of Physiotherapy

BOARD OF STUDIES MEMBERS

Sl.No.	BOS Members & Address	Designation
1.	**Dr.P. Senthil Selvam,** Head of the Department, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Chairperson
2.	**Dr.S.G. Sudhan,** Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
3.	**Dr.M.S. Sundaram,** Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
4.	**Dr.T.G. Tilak Francis,** Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
5.	**Dr.M. Sandhiya,** Assistant Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
6.	**Dr. Priyakumari,** Assistant Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
7.	**Dr. Jibe George Varghese,** Professor & Vice Principal, Saveetha College of Physiotherapy, Saveetha University, Thandalam, Chennai.	External Member
8.	**Dr. C.V. Senthil Kumar,** Principal, Dr. M.G.R Educational and Research Institute University , Chennai.	External Member
9.	**Dr. R. Sakthivel,** Clinical Therapist, Perungudi.	Alumni

M.P.T
Master of Physiotherapy

Curriculum and Syllabus
(Based on Choice Based Credit System)
Effective from the Academic year
2015-2016

School of Physiotherapy

M.P.T - Master of Physiotherapy

CURRICULUM

Total No. of Credits:100

I Semester

Category	Code	Course	Hours/Week			Credits
			Lecture	Tutorial	Practical	
Core	15MPT001	Basic Sciences – Theory	5	0	0	4
Core	15MPT002	Allied Sciences – Theory	5	0	0	4
Practical	15MPT003	Physical Rehabilitation- Practical	0	0	10	4
Practical	15MPT004	Movement Mechanics – Viva	0	0	5	2
Practical	15MPT005	Clinical Sciences - Viva	0	0	5	2
Total			10	0	20	**16**

II Semester

Core	15MPT006	Basic PT Interventions – Theory & Practical	8	0	2	6
Core	15MPT007	Advance Physiotherapeutic Intervention – Theory & Practical	8	0	2	6
Elective	_____	DSE Elective I	5	0	0	4
Elective	_____	Generic Elective I	5	0	0	4
Total			26	0	4	**20**

III Semester

Elective	_____	Basic Fundamentals –Theory & Viva	8	0	2	6
Elective	_____	PT Evaluation/ Documentation & Evidence Based Practice- Theory & Practical	8	0	4	6
Elective	_____	DSE Elective II	5	0	0	4
Elective	_____	GE Elective II	3	0	0	2
Total			24	0	6	**18**

IV Semester

Elective	_____	Advance PT Intervention - Theory & Practical	8	0	2	6
Project	_____	Dissertation	0	0	15	18
Elective	_____	DSE Elective III	5	0	0	4
Total			13	0	17	**28**

Credits by L.T.P.(Including UG Teaching) **82**

Soft Skill/Clinicals **18**

Total Credits **100**

L – Lectures, T-Tutorial, P – Practical

List of specialty Electives – for III Semester

15BMPT001	Basic fundamentals in Musculoskeletal diseases
15BMPT002	Basic fundamentals in Sports medicine
15BMPT003	Basic fundamentals in Neurology & Pediatric physiotherapy
15BMPT004	Basic fundamentals in Cardiopulmonary disease
15BMPT005	Basic fundamentals in Hand and Ergonomics

List of specialty Electives – for III Semester

15PMPT001	PT Evaluation/ Documentation/EBP in Musculoskeletal diseases
15PMPT002	PT Evaluation/ Documentation/EBP in Sports medicine
15PMPT003	PT Evaluation/ Documentation/EBP in Neurology & Pediatric physiotherapy
15PMPT004	PT Evaluation/ Documentation/EBP in Cardiopulmonary disease
15PMPT005	PT Evaluation/ Documentation/EBP in Hand and Ergonomics

List of specialty Electives – for IV Semester

15IMPT001	Advance PT Intervention in Musculoskeletal diseases
15IMPT002	Advance PT Intervention in Sports medicine
15IMPT003	Advance PT Intervention in Neurology & Pediatric physiotherapy
15IMPT004	Advance PT Intervention in Cardiopulmonary disease
15IMPT005	Advance PT Intervention in Hand and Ergonomics

Dissertation – for IV Semester

15DMPT001	Elective Musculoskeletal diseases
15DMPT002	Elective Sports medicine
15DMPT003	Elective Neurology & Pediatric physiotherapy
15DMPT004	Elective Cardiopulmonary disease
15DMPT005	Elective Hand and Ergonomics

List of Discipline Specific Elective Courses

15MPT101	Clinical testing
15MPT102	Ergonomics
15MPT103	Food and Nutrition
15MPT104	English for communication
15MPT105	Computer & its application in PT
15MPT106	Biostatistics / Research Methodology
15MPT107	Applied Physics

Generic Elective Courses

15MPT151	Cardiopulmonary resuscitation
15MPT152	PT Evaluation
15MPT153	Clinical diagnosis
15MPT154	Applied Chemistry
15MPT155	Hospital Management

Syllabus
Core Courses

15MPT001 BASIC SCIENCES 5 0 0 4

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, biomechanics & patho mechanics, nutrition, fitness & PT ethics.

This paper consist of the following 5 modules

1. Applied Anatomy
2. Applied Physiology
3. Movement Science
4. Exercise Physiology & Nutrition
5. PT Ethics / Education Technology

Course outcomes:

1. This provides a detailed introduction on applied anatomy and applied physiology of different systems of the body
2. This course explains the structure and function, forces that affect motion and the resultant kinematics.
3. This gives better understanding of physiological mechanisms and organ systems that allow humans to engage in physical activity
4. This course provides information on changes taking place on systems by chronic activity and disuse
5. This provides detail lecture on bio mechanics and pathomechanics of each joint.
6. This provides basic guideline to education system , teaching methodology, curriculum framing , guidance and counselling
7. This course helps in learning professional ethics, legal concepts and national bodies

UNIT I APPLIED ANATOMY 20

1. Cytoskeleton
2. Cardiovascular system

3. Respiratory system
4. Muscular system
5. Urinary system
6. Skin & sense organs
7. Lymphatic system
8. Nervous system
9. Skeletal system
10. Endocrine system
11. Digestive system
12. Reproductive system

UNIT II APPLIED PHYSIOLOGY 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 AND MUSCLES

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
g) Control of posture
h) Outline of voluntary movement
i) Cutaneous, deep and superficial sensations
j) Synaptic transmission
k) Neuromuscular transmission
l) Properties of muscles, contractile responses, types of contraction, electrical phenomena and tonic reflexes

III) 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

UNIT III MOVEMENT SCIENCE 20

BIOMECHANICS AND PATHOMECHANICS

1. BASIC MOVEMENT TERMINOLOGY

a. Core areas of study – Anatomy functional, Anatomy, Biomechanics, Kinesiology, Linear motion, angular motion, Kinematics, Kinetics, Static and Dynamic.
b. Anatomical movement description – segmental names, anatomical terms, Movement descriptions – basics and specialized.
c. Relative systems – relative – Absolute. Planes/ Axis.
d. Characters of joint movement – Single and multiple joint movements.

2. SKELETAL CONSIDERATION OF MOVEMENT

a. Functions of skeletal system
b. Types of bones
c. Bio mechanical characteristics of bones: Bone tissue, architecture of bone, strength and stiffness of bone
d. Types of load, Bony articulations
e. Types of joins and its descriptions such as diarthrodial or synovial etc.

3. MUSCULAR CONSIDERATION FOR MOVEMENT

a. Structure of muscle, Physical organization of muscle, Fiber organization, Fiber type, Muscle attachment.
b. Functional characteristics of muscles, muscle fiber potential. Functions of Muscles, Role of Muscle, Mechanical components in the muscle, Net muscle action. Factors influencing muscle force. Angle of attachment of muscle. Length – tension relationship, force velocity relationship, stretch shortening cycle, one and two joint muscle. Extra and intra fusal muscle fibers, Action potential, evoke potential, kinetic potential, Tongue, Power strength & Endurance.

4. NEUROLOGICAL CONSIDERATIONS FOR MOVEMENT

a. General organization of nervous system
b. Motor neurons
c. Structure of the motor neuron

d. Motor unit
e. Functional characteristics of motor unit
f. Measurement of motor unit activities
g. Sensory neurons, Functions of neural control, Reflex arc, myotonic, proprio spinal and supra spinal reflexes, sensory receptors- muscle spindle – nuclear chain fibers. Gamma and fusimotor. Innervations Golgi tendon organ (GTO) joint receptors.

5. FUNCTIONAL ANATOMY:

Classification of joints (Natural, Anatomical & Kinesiological)

a. Upper extremity
b. Lower extremity
c. The trunk (spine)

Upper Limb

Shoulder Joint

a. Gleno humeral
b. Scapulo thoracic
c. Acromioclavicular
d. Sterno - clavicular

Joint type, movement

e. Dynamic & static stability
f. Scapulo humeral rhythm
g. Elevators & Depressors of shoulder girdle

Elbow joint

a. Types motion, axis of motion, mechanism & muscle producing movement.

Radiolunar joint

a. Type, motion, axis of motion muscles producing movement

Wrist joint

a. Type, motion, axis of motion
b. Mechanism of extension, radial deviation
c. Lumbrical mechanism
d. Interossei mechanism
e. Flexor, extensor mechanism
f. CMC, MCP, IPS – type, motion & mechanism
g. Prehension activities

Lower limb

Hip joint

a. Type, axis of motion
b. Pelvic & femoral motion
c. Unilateral, bilateral stance – stability & weight distribution
d. Reduction of forces using canes
e. Muscles producing movement

Knee joint

a. Type, axis of motion

b. Movement of Tibio femoral & patella femoral joint
c. Muscles producing movements

Ankle joint

Types of axis of motion arthro & osteokinematics

a. Subtalar joint
b. Transverse joint
c. Tarsal joint
d. MTP joint
e. IP joint
f. Plantar arches & their functions

Trunk

a. Vertebral column – structure of function & different types of vertebrae
b. Ribs – structure of function of various joints involved in thoracic cage
c. Types of movements taking place during respiration

6. PATHOMECHANICS & PATHOKINETICS OF PARALYTIC DISABILITIES

a. Joints of Upper extremity
b. Joints of Lower extremity. The trunk (spine)

Upper limb

Shoulder joint

Paralysis of trapezius, Serratus anterior, Rhomboids deltoid, supraspinatus, sub clavius, pectoralis major & Latissimus dorsi

a. Operation for paralysis of trapezius, serratus - anterior & deltoid
   Elbow joint
a. Paralysis of elbow extensions , flexors
b. Methods of transposition of forearm muscle
c. Substitution by triceps
d. Nurse maids elbow, stredents elbow
e. Cubitus varus, valgus

Wrist joint

a. Paralysis of finger flexor, extensors, lumbricals, interossei
b. Implantation of flexors & extensors
c. Arthrodesis of wrist with tendon transplantation
d. Trigger finger
e. Dequervains tenosynovitis
f. Mallet finger
g. Claw finger

Hip

a. Coxa vara, coxa valga, dysplasia of hip joint pelvic obliquity
b. Paralysis of hip abduction, adductors, extensors flexors, internal & external rotators
c. Reconstructive procedure of paralysed hip joint – paralytic conditions, shelving operation
d. Substitution of abductors

Knee

a. Genu valgum, genu varum, recurvatum
b. Tibial torsion
c. Patella alta & Breva
d. Lateral dislocation of patella
e. Paralysis of extensors, flexors
f. Fasiodesis , Tenodesis, Osteoplastic arthodesis
g. Reconstruction of paralytic genu valgus
h. Reconstruction of flexor contracture

Ankle & Foot

a. Pronated foot
b. Pes planus
c. Pes cavus
d. Paralysis of dorsiflexors, Plantorflexors, invertors, evertors, intrinsic muscles of foot
e. Transplantation of muscles for paralysis

Trunk

a. Paralysis of neck, trunk flexors, extensors lat flexors & Rotators
b. Disc prolapse
c. Spondylosis , Spondylitis , spondylolysthesis
d. Scoliosis
e. Kyphosis
f. Lordosis
g. Hemivertebra
h. Pigeon chest
i. Barrel chest

UNIT IV EXERCISE PHYSIOLOGY & NUTRITION 20

1. Nutrition – the basis for human performance

a. Carbohydrates
b. Lipids & Proteins
c. Vitamins
d. Minerals and water
e. Optimal Nutrition for exercise.

2. Energy for physical activity –
   a. Energy Value of food
   b. Introduction to energy transfer, energy, transfer in the body phosphate bond energy, energy released from food
   c. Energy transfer n exercise
   d. Measurement of human energy expenditure
   e. Human energy expenditure during rest and physical activity
   f. Energy expenditure during walking, jogging running and swimming

3. System of energy delivery and utilization: the cardiovascular system cardiovascular regulation and integration functional capacity of cardiovascular system.

4. Dynamics of pulmonary ventilation: Regulation of pulmonary ventilation, pulmonary Ventilation during exercise, acid – base regulation.

5. Enhancement of energy capacity
   a. Training anaerobic and aerobic power
   b. Muscular strength Training muscles to become stronger strength measurements and reistance training, structural and functional adaptation to resistance training
   c. Special aids to exercise training and performance

6. Exercise performance and environmental stress
   a. Exercise at medium and high attitude
   b. Exercise and thermal stress – Mechanism of thermo regulation. Thermoregulation and environmental stress during exercise
   c. Sport diving

7. Body composition assessment, physique. Performance, and physical activity, over weight, Obesity and weight control.

8. Exercise, successful, aging and disease prevention.

9. Physical Activity, health aging
   a. Physical activity in the population
   b. Aging and physiologic function
   c. Physical activity, health and longevity
   d. Coronary heart disease.

10. Clinical Exercise physiology for cancer, obesity HT, Diabetes

UNIT V P T ETHICS / PT EDUCATION TECHNOLOGY 20

1. Educational aims.
Agencies of Education.
Current issues and trends in education.

2. Concepts of teaching and learning.
Theories of teaching.
Relationship between teaching and learning.
Psychology of Education.

3. Physiotherapy Curriculum.
Committee, development, types, current trends and curriculum planning.

4. Principles and methods of teaching.
Strategies of teaching.
Organizations, writing lesson plans.
A V Aids.

5. Measurement and evaluation.
Meaning, Process, Standard and Nonstandard Tests.

6. Guidance and counseling.
For students and faculty.

7. Faculty development for PT services.

P T ETHICS

PT Ethical Issues

a. Ethical Rules of IAP and WCPT.
b. Rules & Regulations of IAP.
c. Objective of IAP.
d. documentation

Physiotherapy and Law / Medico legal aspects

a. Medico-legal aspects of physical therapy.
b. Liability.
c. Negligence.
d. Malpractice.
e. Licensure.

Total Hours:100

Textbooks:

1. Guyton, Text book of Physiology Elsevier , 4 Ed, 2000

2. Tora Tora ,Textbook of Anatomy & Physiology , Churchill Livingston, 3 Ed, 2004

3.. Chatterjee, Text Book of Physiology.JP, 2 Ed, 2001

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

8. Axen, Illustrated Principal of exercise physiology, CBS, 1 Ed, 2000

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

10. Frank, Exercise Physiology for health care professionals , mosby, 4 Ed, 1999

11. Power, Exercise Physiology.ELBS, 2 Ed, 2001

12. U. Sathyanarayana, Essentials of Biochemistry –Book and Allied (P) Ltd, Kolkatta.1 Ed, 2002

13. S.D.Seth , Text Book of Pharmacology, Churchill Livingstone.2 Ed, 2005

14. K.D.Tripathi, Essentials of Medical Pharmacology, JayPee Brothers 4 Ed, 2009

15MPT002 ALLIED SCIENCES 5 0 0 4

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 statistics, research, management, bio chemical activities in human body, pathology & pharmacology.

This paper consists of 5 Modules

1. Biostatistics and Research Methodology
2. Management / Administration / Marketing
3. Bio-chemistry
4. Micro biology & Pathology
5. Pharmacology

Course outcomes:

1. The students can able to understand and make use of several statistical tools necessary for various statistical analysis
2. Become beware of importance of research in the physiotherapy field and latest trends in the research field.
3. Understands the principles, policies, administration, record maintenance, performance analysis of health sector management.
4. Analyse the policies, procedures, recruitment, department planning and principles of physiotherapy practice.
5. Recognizes the difference between the metabolic pathways of carbohydrate, lipid and protein metabolism
6. Learn about the different energy resource, enzymes, and biochemical changes during the muscle contraction.
7. Know about the aetiology, concepts, classification, spread and pathology of the disease including tumours.
8. Knowledge about the microorganism, natural & acquired immunity, treatment and prevention of the various infections
9. Extensive details regarding the basic pharmacology of various common medication used and its effect on patient and during physiotherapy.
10. Identifies the action, indications, contra-indications, adverse reactions of the medications.

UNIT I BIO STATISTICS & RESEARCH METHODOLOGY 20

I Uses of statistical methods in PT

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

II 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.

III Probability & sampling

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

IV 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

V Research Methodology

I. Introduction

Importance of research in physiotherapy.
Ethics in physiotherapy research.
Introduction to the conceptual, empirical, interpretative, quantitative and qualitative research.

II. Conceptual Phase

Formulation of the problem.
Concepts and variables.
Literature review.
Hypothesis.

III. Empirical/Conducting Phase

Research design.
Brief overview of qualitative and quantitative approaches.
Population and samples
Collection of data.
Research data and analysis.

IV. Interpretative Phase

Discussion and conclusions.
Interpreting qualitative results.

V. Criticizing published results

Need for criticizing results.
Guidelines for criticizing results.

VI. Writing research for publication

Guidelines for writing results.
Recent trend in research

UNIT II MANAGEMENT/ADMINISTRATION/MARKETING 20

Management studies for Physiotherapy

1. Definition – Branches of management- Principles of health sector management.
2. General principles of management: Theories of management.
3. Management studies related to local health care organization management & structure-planning delivery with quality assurance & funding of service delivery – information technology – Time management –career development in physiotherapy - preparing for 1st job etc.,
4. Personnel management: Policies and procedures. Basic concepts and theories.
5. Resource and quality management: planning with change and coping with change.
6. Performance analysis – physical structure / reporting system (man power / status / functions / quantity & quality of services / turn over – cost benefit – revenue contribution.
7. Administration – principles – based on the Goal & functions – at large hospital set up / domiciliary services / private clinic / academic.
8. Methods of maintaining records –
9. Financial issues including budget and income generation.
10. Principles of an organizational chart
11. Organization of a department: Planning, space, manpower, materials and basic Requirements and recruitment, policies and procedures.
12. Infrastructure in various departmental / segmental

P T Department Management

a. Policies and procedures.
b. Recruitment.
c. Department Planning
d. Principles of practice

UNIT – III BIO-CHEMISTRY 20

I. Energy Source

Carbohydrates.
Fats.
Proteins.

II. Enzymes

Specificity and factors affecting enzyme activity, intracellular and extracellular enzymes, clinical significance of alkaline phosphatase, acid phosphatase, cholinesterase and creatine phosphokinase.

III. Metabolic pathways related to carbohydrate lipid and protein metabolism

Disorders of metabolism and related bio-chemical changes.

IV. Bio-chemical changes during muscle contraction

V. PH

Controlling factors and bio-chemical analysis.

VI. Physical stress and lactate levels

UNIT IV MICROBIOLOGY / PATHOLOGY 20

PATHOLOGY

A. Introduction: Concepts of disease, classifications of lesions.
B. Bacterial, viral and parasitic infections a general outline.
C. Inflammation and repair, Degeneration, necrosis and gangrene.
D. Haemorrhage, shock, embolism, thrombosis.
E. Tuberculosis, leprosy, typhoid.
F. Deficiency diseases.
G. Tumours: Aetiology & spread. Common tumour.
H. Blood: Anaemia, Heart and blood vessels, Common congenital anomalies, Rheumatic & coronary heart diseases.
I. Respiratory system: Pneumonias, Bronchiectasis, Emphysema, Chronic bronchitis, Asthma.
J. Bone and joints: Autoimmune disease, Septic arthritis, Osteomyelitis.
K. Skin: Leprosy.
L. Urinary system.
M. Central nervous system: CNS infections, vascular disorders.
N. Rheumatoid Arthritis.
O. Scleroderma and Psoriasis.
P. Diseases of muscle including Poliomyelitis, Myopathies.
Q. Volkmann's ischemia.

MICROBIOLOGY

A. Introduction and history of microbiology.
B. General lectures on micro-organisms:
   1. Classification.
   2. Shape and arrangement.
   3. Special characteristics - spores, capsules, enzymes, motility, reproduction.
      a. Disinfection and antiseptics.
      b. Sterilisation and asepsis.
      c. Antibacterial agents - fundamental aspect. Susceptibility test

C. Immunity - natural and acquired.
   1. Infection - source of infection.
      - portals of entry,
      - spread of infection
   2. Non- specific immunity
   3. Allergy and hypersensitivity.
   4. Outline of common pathogenic bacteria and the diseases produced by them.

Treatment and prevention.
   a. Respiratory tract infections.
   b. Meningitis.
   c. Enteric infections.
   d. Anaerobic infections
   e. Urinary tract infections.
   f. Leprosy, tuberculosis and miscellaneous infections.
   g. Wound infections.
   h. Sexually transmitted diseases.
   i. Hospital acquired infections.

D. Pathogenic Yeasts and fungi.
E. Virology -Virus infections, with special mention of
   Hepatitis, Poliomyelitis & Rabies.

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:

   1) Anti-inflammatory
   2) Anti-epileptic
   3) Sedatives, Hypnotics, Tranquilizers
   4) Muscle relaxants
   5) Alcohol

6) Pulmonary effects of general anaesthetic agents
7) Mucolytic agents
8) Local anaesthetic agents
9) Narcotic Steroids
10) Vasodilators
11) Insulin and oral hypoglycemic agents
12) Antibiotics – Bactericidal, Bacteriostatic
13) Chemotherapeutic drugs in leprosy and tuberculosis.

Evaluation

Total Hours:100

Textbooks:

1. Poddar S., Introduction to Research in Health Sciences, Churchil Livingstone, 3rd edition, 1988

2. Currier D.P., Elements of Research in physical therapy, Williams & Wilkins, Baltimore, 3rd edition 1990

3. Sundar Rao & Richard, An introduction to biostatistics, JP, 2nd edition, 2008

4. Elaine Lynne, Management in Health Care, Macmillan Publisher, 3rd Edition,2000.

5. Willam A. Reinke, Health Planning for Effective Management, Oxford University Press,1stEdition,1996

References:

1. Ashok Neeraja, Nursing Education, JP, 3rdEdition, 2011

2. Madhavan Nair, Education Methods, Jaypee, 4thEdition, 2009

3. Carolin Hicks, Research for physiotherapist, Mosby, 2ndEdition, 2006

4. Barbara, Statistical methods for healthcare research, Churchill Livingston, 1stEdition, 1995

5. Barlene: Documenting functional outcomes in physical therapy., McGrawhill, 4thEdition, 1999

15MPT003 PHYSICAL REHABILITATION 0 0 10 4

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.

Course outcomes:
1. One can understand about the significance & importance of history taking.

2. The clear understanding of orthopaedic rehabilitation can be attained

3. The clear understanding about the knowledge of cardiac rehabilitation can be attained

4. The clear understanding of pulmonary rehabilitation can be attained

5. The clear understanding of neurological rehabilitation can be attained

6. The clear understanding of geriatrics rehabilitation can be attained

UNIT I INTRODUCTION 40

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

UNIT II ORTHOPAEDIC REHABILITATION 40

1. Musculoskeletal assessment
2. Gait analysis
3. Perambulation and gait training
4. Rehabilitation management in arthritis
5. Amputation management

UNIT III CARDIO AND PULMONARY REHABILITATION 40

1. Cardio respiratory assessment
2. Exercise prescription
3. Pulmonary rehabilitation
4. Community based rehabilitation for pulmonary diseases patients
5. Vital signs

.

UNIT IV NEURO LOGICAL REHABILITATION 40

1. Neuro assessment
2. Stroke
3. Spinal cord injury
4. Assessment and intervention strategies for cognition and perceptual dysfunction for neuro patients

UNIT V GERIATRICS AND OBG 40

1. Role of physiotherapy in womens health and OBG
2. Significance of exercise prenatal, antenatal and postnatal stages
3. Common gynecological problems
4. Geriatric rehabilitation

Evaluation

Total Hours: 200

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.

15MPT004 MOVEMENT MECHANICS 0 0 5 2

Course Objective

After 100 hours of clinical practice, students should be able to explain & demonstrate functional anatomy, biomechanics, pathomechanics & gait pattern of various clinical conditions

Course outcomes:

1. One can understand about the kinetics & kinematics of body

2. The functional anatomy of upper extremity, lower extremity trunk can be well understood

3. The biomechanical knowledge of various – musculoskeletal system can be understood

4. The pathomechanics of upper limb lower limb & trunk can be well known

5. The gait & its determinants can be very well understood

6. The abnormal & pathological gait are well known

UNIT I INTRODUCTION 20

1. Kinetics
2. Kinematics
3. Planes and axis
4. Linear and angular motion
5. Classification of joints

UNIT II FUNCTIONAL ANATOMY 20

1. Upper extremity
2. Lower extremity
3. Trunk

UNIT III BIO MECHANICS 20

1. Bio-mechanical characteristics of bone, soft tissue, articulation etc
2. Trabecullar system
3. Muscular consideration of movement
4. Neurological consideration of movement

UNIT IV PATHOMECHANICS 20

1. Pathokinetics of upper limb
2. Pathokinetics of lower limb
3. Pathokinetics of trunk

UNIT V GAIT **20**

1. Determinants of gait
2. Gait cycle
3. Locomotive training and aids
4. Pathological gait

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.

15MPT005 CLINICAL SCIENCES 0 0 5 2

Course Objective

After 100 hours of clinical practice, students should be able to explain & demonstrate biochemistry, pathology, microbiology& pharmacology involved in various clinical conditions

Course outcomes:

1. The energy source can be well understood

2. The biochemical analysis & standard levels can be known

3. The knowledge of pathology related to various condition can be gained

4. The allergic & immunity for various agents can be well understood

5. The pharmacology for various conditions diseases can be understood

UNIT I INTRODUCTION 20

1. Introduction and energy source
2. General outline of infection
3. Common terminologies used in pharmacology
4. Introduction of microbiology

UNIT I BIOCHEMISTRY 20

1. Food and nutrition
2. Enzymes
3. Metabolic pathways
4. Biochemical analysis
5. Physical stress and lactate levels

UNIT III PATHOLOGY 20

1. Inflammation and repair
2. Deficiency diseases
3. Autoimmune diseases
4. COPD

UNIT IV MICROBIOLOGY **20**

1. Dysfunction and antiseptic
2. Sterilization
3. Allergy and hyper sensitivity
4. Immunity

UNIT V PHARMACOLOGY **20**

1. Classification of drugs
2. Drug allergy
3. Routes of drug administration
4. Indication, contraindication and adverse effects of drugs

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.

15MPT006 BASIC PHYSIOTHERAPEUTIC INTERVENTIONS 8 0 2 6

Course objective:

The objectives of this course is that after 200 hours of lectures & demonstrations, in addition to clinics, the student will be able to understand the basic knowledge about kinesiotherapeutics, ergonomics, electrotherapy, community rehabilitation & condition related to OBG.

Basic Physiotherapeutic Intervention

This paper consists of 5 modules

1. Kinesiotherapeutics
2. Ergonomics
3. Electrotherapeutics
4. Community Based Rehabilitation
5. OBG

Course Outcomes:

1. Implementation of various therapeutic approaches and manual techniques. Designs an exercise program to recover correct posture and activities.
2. Multiple levels of ergonomic consulting, workstation assessment, pre employment screening and functional capacity evaluation is assessed for an individual or in a group.
3. The student will be able to intervene appropriate electrotherapeutic modalities.
4. The student will able to assess and provide geriatric individualized exercise prescription.
5. The students will be able to improve the self esteem and quality of life of the people in the community.
6. To assess, evaluate and formulates the PT management for various obestrics and gynecological conditions.
7. Developmental assessment and early intervention.
8. The students establishes regular and continuous exercises habit for promoting physical therapy and changing sedentary life style and preventing chronic disease

UNIT I KINESIOTHERAPEUTICS 40

Introduction, definitions, principles and basics in exercise therapy

1. Therapeutic techniques, active exercises, passive movements, relaxation, coordination exercises, suspension, PRE, Massage, Stretching – active and passive, PNF
2. Various equipments in exercise therapy and its applications
3. Hydrotherapy – uses, principles, types
4. Therabands – types, application
5. Swiss ball
6. Muscle energy techniques
7. Cardiolates
8. Plyometrics
9. Posture and Gait
10. Gait lab analysis
11. Mobility aids

UNIT II ERGONOMICS 40

Introduction to Ergonomics, definition, area and scope of ergonomics

1. Environmental factors
2. Work care spectrum and role of PT
3. Job analysis, job site analysis, job task analysis
4. Pre employment screening, exit assessment
5. Work hardening
6. Education and education programme
7. Documentation
8. Practical ergonomics for different sections of the society.
9. Functional assessment for worker: Working class labour, hard labour, very hard labour, Chair class, Executive class and Bureaucratic class.
10. Explain the scope of Ergonomics in Modern Industrial society.

UNIT III ELECTROTHERAPEUTICS 40

1. **INTRODUCTION TO PHYSICAL AGENTS:**
    a. Definition, Categories, History of Physical Agents.
    b. History of physical agents in Rehabilitation.
    c. Effects of Physical Agents.

2. **a. SHORTWAVE DIATHERMY:**
    a. Physics, biophysical and biomechanical effects of SWD, therapeutic effects of SWD, indications, dangers, precautions, application of inductothermy.
    b. Pulsed SWD: Biological effects, indications, contraindications and techniques of application, advantages and disadvantages.

b. LONG WAVE DIATHERMY

3. 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.

4. 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.
e. Techniques of application in contact method, sub aquatic method users.

5. INFRA RED RADIATIONS:

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

6. 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 hyper hydrosis, calcific tendonitis, allergic vasomotor rhinitis.
e. Side effects, contraindications, techniques.

7. 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.

8. DIDYNAMIC CURRENTS:

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

9. INTERFERENTIAL THERAPY:

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

10. 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.

11. LASER THERAPY:

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

12. CRYOTHERAPY:

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

13. PARAFFIN WAX :

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

14. SHOCK WAVE DIATHERMY

- Principles and uses

15. HOT PACKS:

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

16. CONTRAST BATH:

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

17. 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.

18. MECHANICAL EXTERNAL COMPRESSION:

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

19. HVPGS

UNIT IV COMMUNITY BASED PHYSIOTHERAPY 40

1. Psycho – social and socio-economical aspects of community health development

2. Population studies and epidemiological implications of Impairment and Handicap and Disability, health statistics.

3. Health administration - management concept as applied to physiotherapy.

4. Health and fitness, Environmental health physiotherapy as a drugless system. Public health education methods and appropriate media, Communications and Interactions. Community based rehabilitation.

5. Nutrition and diet.

7. Child- care – prevention and social medicine.

8. Immunization programmes – malnutrition and early detection of disabling conditions and Intervention.

9. Maternal care
Antenatal and Postnatal physiotherapy

10. Educated children, postnatal complications and prevention of postural defects, fitness Programme.

11. Industrial physiotherapy – prevention of injuries, physiological restoration, rehabilitation in industrial injuries.

12. Care of the aged, geriatric physiotherapy, life span yoga.
13. Psychosomatic approaches in management of stress disorders.

14. Changes in life style to reduce risk factors for disability, Drug dependence and iatrogenic disorders.

UNIT V PHYSIOTHERAPY IN OBG 40

1. Anatomy & Physiology of female reproductive organs.

2. Puberty & Menarche.

3. Physiological changes during pregnancy.
4. Labour & its complication.

5. Antenatal & Postnatal care.

6. Modalities in OBG.

7. Relaxation techniques in prenatal education.

8. Exercise in pregnancy.

9. Pregnancy discomforts & Management.

10. Post menopause problem & its Management.

11. Gynecological disorder & its PT Management
   i. Infective conditions
   ii. Back ache & abdominal pain
   iii. Displacement & Genital prolapse

12. Post operative care in gynecological surgery.

13. Urinary dysfunction – Physiotherapy management.

14. Lymph oedema & Role of Physiotherapy.

Evaluation

Total Hours:200

Textbooks:

1. Jennings, Medical Electronics Applications , ELSEVIER, 1 Ed, 2012

2. Deirdre M.Walsh, Tens clinical application & related therapy , mosby, 3 Ed, 2009

3. Michelle Cameron , Physical agents in rehabilitation CBS, 2 Ed, 2001

4. Margaret Polden & Jill Mantle , Physiotherapy in Obstetrics and Gynecology , mosby, 2 Ed, 2004

References:

1. Cynthia Norkin ,Biomechanics of Human Joints , ELBS, 5th Ed, 2010.

2. Kapand Ji, Biomechanics of Human Joints . Elsevier, 6th Ed, 2010

3. Brunstorms , Clinical Kinesiology , CBS , 3rd Ed, 2007

4. Frankel Nordin, Biomechanics of Joints MCGH, 1 Ed, 1995

5. John low & Ann reed, Electrotherapy explained principles , Churchill Livingston, 4 Ed, 2003

6. Roger.M.Nelson , Clinical electrotherapy, CBS, 2 Ed, 2001

7. Sheila Kirchen , Claytons electrotherapy , Elsevier, 1 Ed. 2009

8. Joseph Khan , Principles & Practice of Electrotherapy , mosby, 1 Ed, 1997

9. Susan.L.Michlorirz , Thermal agents in Rehabilitation , Mosby, 3 Ed, 2001

10 G.David Baxter, .Laser(therapeutic) theory & Practice , CBS, 2 Ed, 2008

15MPT007 ADVANCEDPHYSIOTHERAPEUTIC INTERVENTION 8 0 2 6

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 electro physiology & diagnosis , medical imaging, manual techniques and current trends in pilates.

Advanced Physiotherapeutic Intervention

This paper consists of 5 Modules

1. Electro Physiology
2. Electro Diagnosis
3. Basics of Medical Imaging
4. Manual Techniques
5. Pilates

Course outcomes:

1. Knowledge about generation of various electrical impulses in human body gained.
2. Knowledge about ECG, Echocardiogram, and Doppler studies gained.
3. Knowledge about clinical application of EMG and NCV gained.
4. Knowledge about various electro-diagnostic test gained.
5. Knowledge about different views and assessing of X-ray gained.
6. Knowledge about various radiological imaging studies gained
7. Knowledge about manual techniques of joint mobilization and procedure of application gained.
8. Knowledge about Pilates, its concepts and application gained.

UNIT I ELECTRO PHYSIOLOGY 40

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.

1. Excitable Tissues – Muscle:

a. Skeletal muscle:
1. Electrical phenomena & ionic fluxes.
2. Contractile responses.
3. Physiological basis of ECG.
   Normal & abnormal ECG.

b. Smooth Muscle:
1. Electrical properties.
2. Electrical events at synapse, chemical transmission of synaptic activity.
3. Electrical and ionic events in receptors.

2. Clinical Neurophysiology:

1. History of Clinical Neurophysiology:
Introduction to electro diagnostic signals and their measurements.
2. Nerve Conduction Study:
a. Principles of nerve conduction study.
b. Median nerve.
c. Ulnar nerve.
d. Radial nerve.
e. Brachial plexus.
f. Cervical radiculopathy.
g. Lumbar plexus.
h. Lumbosacral radiculopathy.
i. Anomalous innervations of the extremities.
j. Nerve conduction of non-limb nerves.
k. Late responses.
l. Autonomic nervous system testing.

UNIT II ELECTRO DIAGNOSIS 40

1. EMG:
a. Introduction to EMG.
b. Technique of EMG.

2. Clinical Application of EMG and NCV:
a. EMG findings in neurological disorders.
b. EMG & NCV studies in polyneuropathy.
c. Repetitive Nerve Stimulation.
d. Single fiber and macro EMG.
e. Visual evoked potential.
f. Brainstem auditory evoked potential.
g. Somatosensory evoked potential.
h. Motor evoked potential.
3. Electroencephalogram.
Principle & physiological basis.
4. Echo cardiogram & Doppler studies.

UNIT III BASICS OF MEDICAL IMAGING 40

RADIOLOGY, RADIO DIAGNOSTICS & SONOGRAPHY

1. Introduction to Radiography: Radio Imaging and Radio Diagnostic:
a. Dimension in radiography.
b. Radio density.
c. A roentgen.
d. Analysis of image.
e. Positioning, viewing of radiograph, film markers.
f. Image quality factors: radiographic density, contrast, distortion, recorded results.

2. Common Imaging Studies:
a. X Ray – spinal, skull, peripheral.
b. Conventional topography.
c. Computed tomography (CT).
d. Contrast enhanced radiography.
e. Radio nucleide scan.
f. Magnetic resonance Imaging with Spectroscopy.
g. PET.
h. Myelography.
i. Nuclear Imaging.
j. Pneumo encephalogram.
k. EEG.
l. Ultrasonogram.
m. ECG & Doppler studies.
n. MUGA – Nuclear Test.

UNIT IV MANUAL TECHNIQUES 40

1. Introduction :

a. Definition of terms
b. Clinical reasoning process in manipulation therapy

2. Peripheral Joint Mobilization

a. Basic concept of joint motion – Arthrokinematics
b. Indication for joint mobilization
c. Limitation of joint mobilization
d. Contraindication and precaution
e. Procedures for applying passive joint mobilization
f. Mobilization with movement, principles and practice
g. Peripheral Joint mobilization technique.

UNIT V **PILATES** **40**

a. History
b. Anatomy
c. core stabilization
d. concepts
e. principles
f. mat workouts
g. machine workouts
h. demonstration

Evaluation

Total Hours:200

Textbooks:

1.Josheph Arodgold M.D. .,Electro diagnosis of Neuro muscular disease , mosby, 2nd ed, 2007

2. ShinJ.oh, Clinical electrography case studies JP,2nd ED, 2009

References:

1. Cyriax, Massage , mc graw hill. 1 ed, 2002

3.Rudolph Kessler., Management of common musculoskeletal problem , mosby, 3rd ed, 2002

4. Carolyn kiseener , Therapeutic exercise - Elsevier, 4th ed, 2011

4. James A. Gould, Orthopaedic and sports physical therapy - CBCS, 2nd Ed, 2001

ELECTIVE COURSES

15BMPT001 BASIC FUNDAMENTALS IN MUSCULOSKELETAL DISEASES 8 0 2 6

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 bio mechanics of human joint, clinical orthopaedics conditions and pharmacology in orthopaedic conditions.

Course Outcomes:

1. One can able to understand about the concept of Muscle and joint Biomechanics.

2. Pain and its transmission can be well understood.

3. Students can able to understand about the concept of Pathology involved in fracture & soft tissue injuries.

4. Pathology related to rheumatology conditions can be understood well.

5. Theories behind geriatric rehabilitation and age related changes in geriatrics can be well understood.

6. One can know about the pharmacology with respect to orthopaedic conditions.

UNIT I **40**

Anatomy / Biomechanics

1. Arthrology: Classification, structure and function of joints of appendicular and axial skeleton.
2. Myology: Classification, structure and function of the skeletal muscular system.

UNIT II **40**

Physiology

1. Pain: manifestation, transmission and modulation.
2. Histology:

- Inflammation and healing of soft and bony tissue.
- Repair and regeneration of tissue.
- Circulation and Oedema.

UNIT III **40**

Pathology

1. Fractures: Classification, injury mechanisms, healing and pathology behind fractures and dislocations.
2. Soft tissue: injuries/ disorders of the upper and lower limbs.
   Classification, injury mechanisms, healing, patho-physiology of muscle strain, ligament sprain, meniscal damage, tendonitis.
3. Rheumatology: Disease process, incidence, course and prognosis and pathology of various arthritis.

UNIT IV **40**

Geriatrics

Theories of geriatric rehabilitation.

Physiological changes during aging process.

UNIT V **40**

Pharmacology in Orthopedic Conditions

- Analgesics
- NSAID
- Corticosteroids
- Immunosuppressive drugs
- Anti-Rheumatic drugs
- Chemotherapeutic drugs

Total Hours: 200

Text Book

1. Mayil vahanan Natrajan, Text book of orthopaedics and trumatology, Lippincott, 7th Ed, 2011
2. Jayant Joshi, Essentials of Orthopaedics and applied physiotherapy, Elsevier, 2nd ed, 2011.

References

1. John Crawford Adams , Outline of Orthopaedics –, ELBS/Churchill Livingstone.2007
2. Turek's orthopaedics , Mosby, 4Ed, 2004
3. John Crawford Adams, Outline of orthopaedics, Churchill Livingston, 13th Edition, 2001.
4. William A Mc Ardle, Exercise physiology, Lippincott, 7th ed, 2010.

15BMPT002 BASIC FUNDAMENTALS IN SPORTS MEDICINE 8 0 2 6

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.

Course outcomes:

1) Students will be able to identify the types, levels of sports injuries and their acute phase of management like immobilization.

2) Students will have a wide knowledge about Pathomechanics of sports injuries and flexibility exercises.

3) Students will know about Bio mechanics of various sports and their relationship to joint injuries

4) Students will be able to insist about different types of sports injuries in upper limb C Shoulder, shoulder girdle Elbow, wrist & hand

5) Students will be able to identify various lower limb sports injuries – (Thigh knee, patella, lower leg & ankle

6) student will know about postural syndrome, Spondylolisthesis

7) to evaluate the various running injuries

8) students will be familiar about swimming injuries

UNIT I **40**

ANATOMY, PHYSIOLOGY & PATHOMECHANICS – Psychological factors of sports injuries · 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 · Rules & regulations of sports, sport specific injuries · Pathomechanics of sport injuries · Physical demand in different sports · Flexibility exercises.

UNIT II **40**

NEUROPHYSIOLOGY – Physiological effects of stretching & mobilizations prior to the participation in sports · Types of exercises and their physiological effects related to sports · Biomechanics of sports and its relationship to joint injuries · Uses & application of biomechanics of different sport events (like throwing mechanics, swimming mechanics) · Aquatic: Physical properties of water, Physiological effects of water immersion and its therapeutic values · Embryological development of musculoskeletal system · Osteology: Structure of bone, ossification of bones, Skull bones, Facial bones, Bones of Upper Extremity, Lower Extremity, Pelvis, Vertebral column, Ribs · Myology: Structure of muscle, Types of muscle, Muscle fibres, origin, insertion, action, nerve supply of Muscles of Face, Upper Extremity, Lower Extremity, and Trunk · Arthrology: Structure of joint, types of joints, detailed structure and formation of all the joints. Neurobiology of joint · Neurology: Peripheral Nerves: Dermatomes and Myotomes · Physiology: Joint physiology [Movements]. Muscle physiology. Pathomechanics of Fractures, deformed joints.

UNIT III **40**

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

2) Shoulder Girdle injuries – injuries to the sternoclavicular joint – sprains, dislocations, Scapulothoracic joint lesions, acromoclavicular joint sprains, anterior dislocations of glenohumeral joint, recurrent anterior dislocations of shoulder, posterior dislocation of shoulder, thoracic outlet syndrome. Painful Arc syndrome, rotator cuff injuries, impingement syndromes, Glenoid labrum lesions.
3) Elbow Joint injuries – Olecranon bursitis, Valgus, extension overload in elbow, Ulnar nerve lesions, Ulnar and Radial collateral ligament sprains, Contusions and strains, Dislocations, Osterochondritis dissicans, Little Leagures elbow, problems resulting from throwing, medial lesions, lateral lesions, posterior lesions.

4) Elbow injuries from Tennis – Epicondylitis – Incidence, pathology and mechanism of injury.

5) 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.

UNIT IV **40**

1) Thigh Injuries – Contusions to the quadriceps, strain of the quadriceps musculature, acute strain of the hamstring group, complete rupture of the patellar tendon.

1) 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.

2) Injuries of the Patella – Patella fracture – acute-dislocation, recurrent dislocation, subluxation and spontaneous reduction of a dislocated patella, Osteochondritis, Dissicans, Jumper's knee.

3) Injuries to lower leg, ankle and foot – Tibiofibular synostosis, rupture of the gastrocnemius, Tennis leg, total rupture of the Achilles tendon, partial rupture of Achilles tendon, tendinopathies – Achilles tendinitis, anterior tibialis tendonitis, Peroneal tendonitis. Postertibialis tendonitis, Flexor hallucis longus tendinitis, Flexor digitorum longus tendonitis. Compartmental compression syndromes, Heel bruiese, Os trigonum injury, Calcaneal apophysitis, Tarsometatarsal injuries. Tarsal tunnel syndrome, cuboids syndrome, metatarsal stress fracture, Inter-digital neuroma(Morton's neuroma), Stair Climbers transient parasthesia, Turf toe, sesmoitidis.

5) Injuries to the Ankle – Syndesmotic ankle sprain, Inversion sprains, eversion sprains, dorsiflexion sprains, tarsal tunnel syndrome, stress fracture of the metatarsal, corns and calluses, blisters, ingrown toenails, peroneal tendon subluxation.

6) Injuries to the low back – Postural syndrome, Dysfunction syndrome, Derangement syndrome, Spondylolisthesis.

UNIT V **40**

Injuries to the Running Athlete – Causes of over use injuries – Common running induced injuries to the lower back – Common running induced injuries to the hip – Iliotibial tract pain. Trochanteric Bursitis, stress fracture of femoral neck. Slipped capital femoral epiphysis, vague hip pain.

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.

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.

Swimming Injuries – 'Swimmer's Shoulder, anterior subluxation of the Glenohumeral Joint, Breast stroker's injury.

Role of drugs in physiotherapy

Doping / Pro acting

Evaluation

Total Hours: 200

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

References:

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

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

15BMPT003 BASIC FUNDAMENTALS IN NEUROLOGY & PEDIATRIC PHYSIOTHERAPY

8 0 2 6

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 neurological conditions and pharmacology in neuro conditions.

Course outcomes:

1. Knowledge about general principles of treatment

2. Knowledge of neural tissue mobilization

3. Knowledge of various approaches like bobath ,brunstromn, pnf ,vojta

4. Knowledge of motor control and learning

5. Knowledge of physiotherapy management in perceptual and sensory dysfunction

6. Knowledge about adaptive equipments.

7. Knowledge of physiotherapy management in neurological and pediatric conditions

UNIT I **40**

Medical conditions

Pain, primary muscle disesase of CNS, polio, leprosy, infective diseases of CNS,GBS, meningitis, encephalitis,diseases of posture ,co-ordination & balance, degenerative diseases,CVA, dementia,stroke syndromes, nerve injuries, CRPS, ADL problems due to posture, body images,stifness,subluxation,contractures,spasticity,rigidity,movement disorders, gait,geriatric conditions related to neurology .

UNIT II **40**

Surgical conditions

Space occupying lesions of brain and spinal cord ,CNS tumors,beningn &malignant,

Spinal injuries.

UNIT III **40**

Growth and development of child

Developmental disorders, pediatric nursing and nutrition,

Neural tube defects,congenital disorders,primary muscle diseses, skeletal &bone disorders

Haemophilia,pediatric pulmonary ,cardiac conditions,surgical conditions and other disorders.

UNIT IV **40**

Mile stones development of child

Reflexes, community physiotherapy, therapeutic recreation

UNIT V **40**

Aids, appliances and support systems

Use of orthotics and appliances in neurological and pediatric conditions

Special tests

EMG/NCV

S-D curve

Test for balance & co-ordination

Pinch test

Strength test

Dextrity test

Aphasia test

Memory test

Test for higher functions

MRI

Ct scan

Pet scan

Total Hours: 200

Textbooks:

1. Carpenter, Mental Health & Learning disability — EURETT. 2 Ed, 1998

2. Ropper, principles of Neurology, JP, 10 Ed, 2014

References:

1. Catherine A Trombly. Occupational Therapy for physical dysfunction, Williams & Wilkins.4Ed, 1998

2. Brain and Bannister's Clinical Neurology, Sir Ruger Bannister, Oxford.7Ed, 1992

3. Introduction to nervous System – Hokmes Bullock, WH Freeman and company.

15BMPT004 BASIC FUNDAMENTALS IN CARDIOPULMONARY DISEASE 8 0 2 6

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 cardio respiratory conditions and pharmacology in cardio respiratory conditions.

Course Outcomes:

1. To understand the development and maturation of heart and lungs
2. To know the abnormalities of heart and lungs
3. To understand the pulmonary Physiology at various stress levels
4. To understand the cardiovascular Physiology at various stress levels
5. To study the clinical aspects of cardio pulmonary diseases
6. To know the drug actions and its composition
7. To understand the drugs used in cardio vascular diseases
8. To understand the drugs used in pulmonary diseases

UNIT I **40**

ANATOMY AND PHYSIOLOGY OF CARDIO – PULMONARY SYSTEMS:

1. Development of cardio – respiratory system
   a) The embryonic cardiovascular system
   b) The embryonic respiratory system

2. The mature cardiovascular and respiratory systems
   a) The thorax
   b) The respiratory system
      - Muscles of respiration
      - Lungs
      - Pulmonary vessels
      - Upper respiratory tract
      - Lower respiratory tract
   c) The cardiovascular system
      a. Blood vessels
      b. Heart

3. Congenital abnormalities and ageing

UNIT II **40**

RESPIRATORY PHYSIOLOGY AND APPLIED ASPECTS:

1. The autonomic nervous system
   - Neurotransmitters and receptors

2. The gas transport system
   - Ventilation
   - Dead space
   - Restriction of gas
   - Mechanical properties
   - Compliance and surface tension
   - Resistance to gas flow
   - Diffusion
   - Oxygen carriage
   - Dissolved oxygen
   - Oxygen bound to hemoglobin
   - Oxy-hemoglobin dissociation curve
   - Total oxygen content
   - CO_2 carriage
   - CO_2 in plasma and erythrocytes
   - Perfusion and gravity
   - Cardiac output and pulmonary vascular resistance
   - Ventilation – Perfusion interactions and shunts
   - Respiration , control of breathing
   - Acid – Base balance
   - Chemical and non – chemical mediation of ventilation

3. Applied respiratory physiology

   - Hypoxia
   - Respiratory failure
   - O_2 therapy
   - Dyspnea
   - Cyanosis
   - Periodic breathing
   - Voluntary hyperventilation
   - Breath holding
   - Hyperbaric breathing
   - Hypercapnia
   - Hypocapnia
   - Lung defense mechanism
   - RDS in neonates
   - Respiration in hold
   - Air pollution, occupational exposure, environmental pollutants carrying lung cancer, cigarette smoking
   - Chest wall deformities

UNIT III **40**

CARDIAC PHYSIOLOGY AND APPLIED ASPECTS:

a) Properties of cardiac muscle
b) Cardiac cycle
c) Cardiac output
d) Haemo-dynamics
e) Heart rate
f) Cardiovascular reflex and other control mechanisms
g) Systemic arterial blood pressure
h) Regional circulation
i) Applied cardiovascular physiology
j) Investigating techniques and physiological basis
k) Physiological adjustments
l) Physiological conditions

UNIT IV **40**

Definitions, causes, patho-physiology, clinical features, investigations of the following condition

1. COPD
2. Restrictive lung disease
3. Chest wall deformities
4. Chest wall injuries
5. Congenital heart diseases (CHD)
6. Ischemic heart diseases
7. Peripheral vascular diseases
8. Cardiac and pulmonary surgical conditions

UNIT V **40**

CARDIOVASCULAR AND RESPIRATORY PHARMACOLOGY:

1. Introduction to pharmacology
   a) Pharmokinetics
   b) Pharmacodynamics

2. Cardiac Drugs
   a) Anti – ischemic drugs
   b) Anti – arrhythmic drugs
   c) Anti – hypertensive therapy
   d) Pharmacologic management of lipid disorders
   e) Cardiac drugs used in critical care
   f) Diabetes

3. Pulmonary Drugs
   a) Broncho – dilator therapy
   b) Ancillary pulmonary medications

Total Hours: 200

Textbooks:

1. Frances J.Brannon, Cardio pulmonary rehabilitation, Basic theory & application – mosby, 4th ed, 2001
2. Joanne watching, Cardio pulmonary physical therapy, a clinical manual – CBCS, 3 ED, 2003
3. Ellen Hillegass steven sadowsky., Essentials of cardio pulmonary physical therapy, ELSEVIER, 2 ED, 1994

References:

1. Crofton & doogles Respiratory Diseases Vol – I & II, SEATON.1 Ed, 2003
2. Downie , Cash text book of chest, Heart & Vascular disorders ,ELBS, 1 Ed, 2005
3. Berne , Cardio – Vascular Physiology ,Mosby, 4Ed, 2012

15BMPT005 BASIC FUNDAMENTALS IN HAND AND ERGONOMICS 8 0 2 6

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 hand conditions.

Course outcomes:

1. One can able to appreciate the basic anatomy of upper guardant & Identify the Cutaneous covering and connective tissue of the hand
2. One can able to Identify and appreciate the kinetics and kinematics of upper guardant & Understand pathomechanics of upper guardant
3. Student will be able to Appreciate the process of healing in skin, tendon and soft tissue & Understand the role of hand therapist in wound healing
4. Student will be able to Understand the role of pharmacological agents & Utilize the Appropriate investigative procedures for diagnosis
5. Student will be able to define ergonomics
6. Student will be able to appreciate the principles

UNIT I **40**

ANATOMY OF UPPER QUADRANT

1. Skeletal system
2. Joints
3. Musculature
4. Nerve supply
5. Vascular system
6. Cutaneous covering & connective tissue of the hand

UNIT II **40**

BIO MECHANICS OF UPPER QUADRANT:

1. Shoulder girdle
2. Elbow joint
3. Wrist and hand

PATHO MECHANICS OF UPPER GUADRANT:

4. Shoulder pathomechanics
5. Elbow & forearm pathomechanics
5. Wrist and hand pathomechanics

UNIT III **40**

WOUND HEALING

1. Historical perspective
2. The biological process of wound healing
3. Skin wound healing
4. Tendon healing
5. The therapist and wound healing

UNIT IV **40**

PHARMACOLOGY IN HAND CONDITIONS

- Analgesics
- NSAIDS
- Corticosteroids
- Immune suppressive drugs

- Anti – Rheumatic drugs
- Chemotherapeutic drugs
- Sympatholytic drugs in reflex sympathetic dystrophy

INVESTIGATIVE PRACEDURES

- Clinical laboratory tests
- Interpretation of x-ray, CT and MRI
- Arthroscopy
- PET / SPECT Imaging

UNIT V **40**

Principles of ergonomics

Define Ergonomics

Principles of Ergonomics

Total Hours: 200

Textbook:

1. Judith Boschienen , The Hand , CBCS, 2nd ed, 1999.

References:

1. Barbara, Concepts in Hand Rehabilitation- mosby , 4th ed, 1997.

2. Tubiana , Hand Atlas – JP, 1st ED, 2011.

15PMPT001

PT EVALUATION, DOCUMENTATION & EVIDENCE BASED PRACTICE IN MUSCULOSKELETAL DISEASES **8 0 4 6**

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 orthopaedic conditions.

Course Outcomes:

1. Proper assessment and documentation of Orthopedic conditions can be well known to the students.

2. Observation and Palpation related to Orthopedic problems can be understandable for the students.

3. Students can be well versed with the clinical examination about musculo skeletal problems.

4. Related Neuro muscular assessment can be well known to the students.

5. Functional and disability scales are knowledgeable to the students

6. Student can well understand about the importance of special test and Investigations in orthopaedics.

UNIT I **48**

Assessment Process and Documentation

1. Overview of process: SOAP, severity, irritability and nature, generation of clinical impressions/ hypothesis, problem lists, goal setting, prognosis, treatment options, treatment selection.
2. Professional Issues: Communication skills, explanation, informed consent, professionalism in handling, etc.
3. Subjective Assessment: Sources of information (patient, referrals, medical notes) gathering subjective data, closed and open questioning, data required, relevance of data assessment, interpretation of data. 'Special Questions" – Red and Yellow Flags and relevance to assessment.
4. Using Subjective Data: to direct objective assessment via selection of appropriate tests must do, should do, could do).
5. Objective Assessment: Gathering objective data, alternate means of collecting data, optimizing starting positions, validity of data, interpretation of data to exclude or suggest involvement of structures.
6. Documentation and Recording: use of abbreviations, medico-legal implications, appropriate data.

UNIT II **48**

1. Clinical Observation: Bony and soft tissue symmetry and other findings
2. Palpation of joints and soft tissue.
3. Pain assessment and scales for evaluation in acute and chronic pain

UNIT III **48**

Clinical Kinesiology

1. Assessment of AROM / PROM: Quality and Quantity using goniometry, use of overpressure.

2. Muscle strength testing: static and through range muscle tests using MRC scale.

3. Muscle flexibility testing.

4. Assessment of Tone, tightness of musculoskeletal tissues

5. Passive Accessory and Physiological Movements

UNIT IV **48**

1. Neurological Assessment

– Myotomes, Dermatomes and Reflexes.
- Base neural provocation tests.

2. Limb length measurement

3. Assessment of

- Posture
- Gait
- Balance

UNIT V **48**

1. Functional and Environmental assessment
2. Physical Disability evaluation
3. Special tests
4. Investigation:

X-Ray, MRI, CT Scan report reading and analysis

Interpretation from other investigative tools used such as lab test, bone scan, bone biopsy

Total Hours: 240

Text book

1. David J Magee, Orthopaedic Physical assessment, Saundres, 5 th ed, 2008

References

1. John Crawford Adams , Outline of Orthopaedics –, ELBS/Churchill Livingstone.2007

2. Turek's orthopaedics , Mosby, 4Ed, 2004

6) John Crawford Adams, Outline of orthopaedics, Churchill Livingston, 13th Edition, 2001.
William A Mc Ardle, Exercise physiology, Lippincott, 7th ed, 2010

15PMPT002 PT EVALUATION / DOCUMENTATION /EVIDENCE BASED PRACTICE IN SPORTS MEDICINE **8 0 4 6**

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.

Course Outcomes:

1. The students will have a good idea about emergency sports assessment
2. They will a be familiar in pre – participation evaluation
3. Students will be able to asses the various systems in the a pre – preparation to the sports
4. Students will be able to apply Isokinetics in testing
5. Students will know about the throwing mechanism and related injuries
6. Students will know about the concept of calesthenic exercises and circuit training
7. Students will be having a sound knowledge about well balanced diet and pre – event nutrition
8. Students will know about the carbohydrate loading diet

UNIT I **48**

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 **48**

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

UNIT III **48**

Pre-participation History
Examination – 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, Application of isokinetics in testing.

UNIT IV **48**

Plyometrics,
Calesthenic exercises, circuit training, throwing mechanism & injuries

UNIT V **48**

Nutrition & Athlete

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

Total Hours: 240

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

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.

15PMPT003 PT EVALUATION / DOCUMENTATION/EVIDENCE BASED PRACTICE IN NEUROLOGY & PEDIATRIC PHYSIOTHERAPY 8 0 4 6

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 neuro conditions.

Course outcomes

1. Detailed knowledge of assessment

2. knowledge of motor and sensory assessment

3. Should have knowledge of various scales of neurological conditions

4 . Should have knowledge of various measuring techniques of neurological conditions

5. Should have detailed knowledge of various scales and measuring techiniues of paediatric conditions

6. Should have knowledge of common scales like MMT, NOMAS, QWB

UNIT I **48**

Assessment &Evaluation,Investigations

Assessment of motor,sensory,perception,posture,balance,co-ordination,higher centre,

Voluntary control,gait,soapnotes,functional mobility&impairment.

UNIT II **48**

Scales & Measurement Of Neurological Conditions

Measurement of cognitive&impairment,disability,evaluation,motor impairment,Motor club,river mead, motor index trunk control ,motor assessment scale,ashworth scale,isometric muscle strength,dynamometer,balance and co-ordination,measurement of adl,pulses profile,environmental assessment,multiple sclerosis assessment, Spinal cord injury assesment , pain, posture ,gait.

UNIT III **48**

Scales & measurement of pediatric conditions

Alberta infant motor scale (AIMS)

Bayley scales of infant development

Berg balance test

Denver developmental screening test

Functional independence measure (FIM)

Functional reach test (FRT)

Gross motor function measure (GMFM)

Infant developmental screening scale (IDSS)

Infant motor screen (IMS)

Leg length discrepancy tape measure

UNIT IV **48**

Manual muscle test (MMT)

Neonatal oral motor assessment scale (NOMAS)

Nine minute walk test (screening tool)

Oral motor/feeding rating scale

Peabody developmental motor scales second edition (PDMS-2)

UNIT V **48**

Quality of well-being scale (QWB)

Timed up and go (TUG)

Visual analog scale

Vulpe assessment battery-revised (VAB-R)

Youth quality of life instrument-research version (YQOL-R)

Total Hours: 240

Textbook:

1. Sophie levitt, treatment of cerebral palsy & motor delay, wiley – Blackwell, 5th ed – 2013.

References:

1. Susan B'O' Sullivan, physical rehabilizatation, jaypee, 6th ed. – 2014

2.Patricia. A. Downie, cash's text book of neurology for physiotherapist – jaypee, 4th ed – 1993.

15PMPT004 PT EVALUATION/DOCUMENTATION/ EVIDENCE BASED PRACTICE IN CARDIOPULMONARY DISEASES **8 0 4 6**

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 cardio respiratory conditions.

Course Outcomes

a. To understand the evidence based assessment of cardio vascular system
b. To understand the evidence based assessment of pulmonary system
c. To know the evaluation of specific conditions of heart and lungs
d. To learn the principles and purpose of laboratory evaluation
e. To learn the cardio pulmonary evaluation in ICU
f. To learn the assessment of cardio pulmonary Fitness
g. To understand the diagnosis and differential diagnosis
h. To know the measurement and documentation methods

UNIT I **48**

CLINICAL ASSESSMENT OF CARDIO PULMONARY SYSTEM

1. Introduction, evidence based evaluation
2. Subjective evaluation , history : history of illness, past medical history, present medical history, occupational history, social history, history of personal habits (smoking), family history, previous treatment history
3. Physical examination,
   a). Inspection – evaluation of general appearance, topographic anatomical land marks, specific evaluation of head and neck, chest wall configuration, chest wall deformities, evaluation of cough, and sputum, anemia, cyanosis, clubbing, respiratory pattern

   b). Palpation – evaluation of mediastinum and tracheal deviation, chest wall expansion, fremitus, accessory respiratory muscles, chest pain, diaphragmatic movement, edema

   c). Mediate percussion – resonance and diaphragmatic excursion

   d). Auscultation – stethoscope, nomenclature and interpretations of breath and heart sounds, the examination technique, interpretation of examination

4. Evaluation:
   Evaluation of a patient with coronary artery disease, review of medical records and extraction of pertinent data, interview and examination of patient, preliminary assessment of clinical status, determination of candidacy for further evaluation, evaluation of functional activities, activities of daily living, monitored ambulation, low level exercise test, definitive assessment regarding candidacy for exercise therapy, individually monitored aerobic exercise and strengthening program, maximal exercise test.

UNIT II **48**

LABORATORY EVALUATION

1) Principles
   a). Analysis and guideline for interpretation of ABG, PFT
   b). Bronchoscopy, bronchogram, ventilation- perfusion scan
   c). Treadmill test, exercise tolerance test, ECG, Echo, angiography, Doppler study chest Radiography, bacteriological and cytological tests, MUGA tests
2) Purpose
   Contraindications, termination points
   BMI, MET, VO_2 estimation

UNIT III **48**

CARDIO PULMONARY EVALUATION IN ICU

Assessment of ventilators, respiratory rate, respiratory pattern, pulse rate, temperature, blood pressure, fluid and electrolyte balance, chest tube drainage and fluid collection system, arterial blood gas analysis, ECG monitoring intra arterial lines, Pulmonary artery balloon floatation catheter, intravenous lines, central venous pressure

CARDIO PULMONARY FITNESS ASSESSMENT

Medical review diagnosis – medication – risk factors, investigations , surgical procedure , Home environment physical examination etc…

UNIT IV **48**

DIAGNOSIS

Physical diagnosis and differential diagnosis
Scales: Dyspnea, odema, PAL index, NYHA heart failure, functional scales

UNIT V **48**

MEASUREMENTS AND DOCUMENTATIONS

Measurements and documentation, measurements, types of measurement, selecting, measurement, performing measurements, interpreting measurements, documentation, purpose of documentation, types of documentation, general guidelines for content and organization

i) Subjective information,
ii) Objective information,
iii) Assessment,
iv) Plan

Total Hours: 240

Textbooks:

1. Brompton , A-Clinical guide to chest PT –, 2nd ed,1992, Jaypee

2. Ellen Hillegass & Steven sadowsky., Essentials of cardio pulmonary physical therapy, Elsevier, 2 Ed, 1994

References:

1. Patricia Downie , Cash's Text Book of chest heart and vascular disorders for Physiotherapists Jaypee, 4th ed, 1993,

2. Joanne Watchie , Cardio-pulmonary physical therapy,Jaypee,3rd ed, 1998,

15PMPT 005 PT EVALUATION, DOCOMENTATION & EVIDENCE BASED PRACTICE IN HAND AND ERGONOMICS 8 0 4 6

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 hand conditions.

Course outcomes:

1. Student will be able to Evaluate and appreciate component in hand evaluation & enumerate the implication of treatment

2. Student will be able to appreciate the concept of sensory physiology & Write a summary on sensory testing

3. One can able to Reason the functional evaluation process of hand & Appreciate functional evaluation methods employed in hand

4. One can able to Define and demonstrate RULA

5. Student will be able to understand the clinical concepts in wound and edema assessment & Define disability indere, ADL scales and make disability evaluation

6. Student will be able to Document and record the clinical proceedings & Reason the strategies for selecting a management approach and factors influencing decision

UNIT I **48**

Evaluation of the Hand

a. General considerations
b. Components of hand evaluation
c. Specific components of hand evaluation
d. Differential diagnosis
e. Selective tissue tension testing
f. Strength
g. Circulation
h. Nerve compression
i. Assessment of clinical findings
j. Implications of treatment

UNIT II **48**

Sensibility testing

a. Concepts of sensory physiology
b. Classification of sensory tests
c. Selecting appropriate sensory tests
d. Performing specific sensory tests
e. Correlating sensibility with hand functions
f. Writing a sensibility testing summary

UNIT III **48**

a. History of functional testing
b. Clinical reasoning and the functional evaluation processes
c. Terminology associated with functional patterns of movement
d. Methods of functional evaluation.
e. RULA

UNIT IV **48**

CONCEPTS IN CLINIC AL ASSESSMENT AND DISABILITY EVALUATION

a. Wound assessment
b. Edema assessment
c. Disability evaluation: Disability index, ADL and instrumental ADL scales and upper extremity functional evaluation scales

UNIT V **48**

DOCUMENTATION AND RECORDING

a. Documentation and recording: use of abbreviations, medico legal implications
b. Clinical reasoning – the development of muscle – skeletal dysfunction, refinement – of data collection and analysis, strategies for selecting a management approach and factors influencing decision

Total Hours: 240

Textbook:

1. Judith Boschienen , The Hand , CBCS, 2nd ed, 1999.

References:

1. Barbara, Concepts in Hand Rehabilitation- mosby , 4th ed, 1997.

2. Tubiana , Hand Atlas – JP, 1st ED, 2011.

15IMPT001 ADVANCE PT INTERVENTION IN MUSCULOSKELETAL DISEASES

8 0 2 6

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 orthopaedic conditions.

Course Outcomes:

1. One can able to understand about the various concepts of Physiotherapy interventions in fracture and other acute traumas.

2. Deformities and its Physiotherapy management can be well understood.

3. Students can able to understand about the concept of Geriatric rehabilitation.

4. Latest Physiotherapy interventions related to orthopedic conditions can be understood well.

5. Theories behind ergonomic principles of back care can be well understood.

6. One can know about the splints used for orthopaedic deformities.

UNIT I **40**

Traumatology

A. Fractures:

Principles of fracture management.

Principles of Physiotherapy management in treating fracture cases.

Physiotherapy management of complications of fracture.

Regional fractures (involving upper limb, lower limb, spine) and their complete physiotherapy management.

B. Dislocation:

Principles of physiotherapy Management in dislocation and recurrent dislocations.

C. Soft Tissue injuries:

Principles of physiotherapy Management in soft tissue injuries.

D. Amputations:

Pre-operative, post-operative, prosthetic Management in amputations.

Prevention and Treatment of complications of Amputation

UNIT II **40**

Orthopaedics

A. Arthritis:

Principles of physiotherapy Management in Arthritis.

B. Deformities:

Principles of physiotherapy Management in treating following deformities:

- Congenital deformities

- Acquired deformities

- Spinal deformities

UNIT III **40**

Geriatrics

- Principles of Geriatric Rehabilitation

- Rehabilitation following Arthritis in the elderly patients

- Rehabilitation following Fracture in elderly patients

- Rehabilitation following Geriatric amputation

UNIT IV **40**

Treatment Modalities

Physical, physiological and physiotherapeutic principles, Indications and contraindications, application techniques and dangers of following treatment techniques

- Balanced ligamentous tension (BLT)
- Counterstrain
- Cranial osteopathy
- High Velocity Low Amplitude Thrust (HVLAT)
- Joint mobilization
- Manipulation Techniques
- Lymphatic pump
- Muscle Energy Technique (MET)
- Myofascial Release
- Neuromuscular therapy (trigger point therapy)
- Soft tissue technique

UNIT V **40**

Ergonomics:

Ergonomic Principles

Ergonomics in back care

External aids:

Splints,Appliances and adaptive devises used

Total Hours: 200

Text book

1.David J Magee, Orthopaedic Physical assessment, Saundres, 5 th ed, 2008

References

1. John Crawford Adams , Outline of Orthopaedics –, ELBS/Churchill Livingstone.2007

2.Turek's orthopaedics , Mosby, 4Ed, 2004

3John Crawford Adams, Outline of orthopaedics, Churchill Livingston, 13th Edition, 2001.
William A Mc Ardle, Exercise physiology, Lippincott, 7th ed, 2010

15IMPT002 ADVANCE PT INTERVENTION IN SPORTS MEDICINE 8 0 2 6

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.

Course outcomes:

1. Students will know about how to prevent athletic injuries
2. Students will be able to identify the general conditioning principles
3. Students will be able to know about the warm – up schedule
4. They will have broad idea about the application of proper protective & supportive devices like taping & wrapping techniques
5. Students will be able to do the emergency sports management
6. Students will be able to apply various electrotherapy moadities in sports injuries
7. Students will be able to treat all kind of sports injuries that can occur in upper & lower limbs
8. Students will be able to treat the all running related injuries & swimming injuries.

UNIT I **40**

a. Prevention of Athletic Injuries — skeletal muscle – Type 1 and Type 2 fibres, General conditioning principle – strength, power, muscular endurance, flexibility, anaerobic metabolism.

b. Warm-up period – warm up schedule, stretching, proprioceptive neuromuscular facilitation techniques.
c. Protective and supportive equipment – protective equipment: Supportive devices, motion limiting devices.
d. Treatment of Athletic injuries.

e. Taping and wrapping techniques.

f. Emergency care and Athletic first-aid – cardiopulmonary emergencies, ABC of resuscitation, Heimlick maneuver Shock Injuries: - Internal injuries, Head and neck injuries, fractures, dislocations.

g. Injury first-aid – ICE or Cold application, compression, elevation, gait instruction, stretcher and wheel chair uses.

UNIT II **40**

a. Physiotherapeutic interventions for relief of pain – Therapeutic modalities and procedures – General principles of therapeutic modalities Hydrotherapy, shortwave diathermy, Microwave diathermy, Ultrasound. Iontophoresis, Phonophoresis, TENS, Cryotherapy, Cold Spray, Contrast Bath, Paraffin Wax Bath, Ultraviolet radiation , Massage - Indication, contraindication, therapeutic and physiologic effects, 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 **40**

a. Epiphyseal Injuries, Osgood Schlatter's disease, traction, epiphysitis, tendinitis at the inertion of patellar tendon, complete avulsion of the epiphysis of the tibial tubercle shoulder, contributing risk factors, intrinsic factors, extrinsic factors.

b. Shoulder Girdle Injuries: Injuries to the sternoclavicular joint – sprains, dislocations, Scapulothoricic joint lesion, acromioclavicluar joint sprains, anterior dislocation of glenohumeral joint, recurrent anterior dislocations of the shoulder, posterior dislocation of the shoulder, thoracic outlet symdrome. Painful arc syntrome, rotator cuff injuries, Impingement syndromes, Glenoid Labrum lesions.

c. Elbow joint Injuries: Olecranon bursitis, Valgus, extension overload in elbow, Ulnar nerve lesions, Ulnar and Radial collateral ligament sprains, Contusions and strains, Dislocations, Osterochondritis dissicans, Little Leaguers elbow, problems 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, 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.

UNIT IV **40**

a. Thigh Injuries – Contusions to the quadriceps, strain of the quadriceps musculature, acute strain of the hamstring group, complete rupture of the patellar tendon.

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.

c. Injuries of the Patella – Patella fracture, acute-dislocation, recurrent dislocation, subluxation and spontaneous reduction of a dislocated patella, Osteochondritis Dissicans, Jumper's knee.

d. Injuries to lower leg, ankle and foot – Tibiofibular synostosis, rupture of the gastrocnemius, Tennis leg, total rupture of the Achilles tendon, partial rupture of Achilles tendon, tendinopathies – Achilles tendonitis, anterior tibialis tendonitis, Peroneal tendonitis. Posterior tibialis tendonitis, Flexor hallucis longus tendinitis, flexor digitorum longus tendonitis. Compartmental compression syndromes, Heel bruise, Os trigonum injury, Calcaneal apophysitis, Tarsometatarsal injuries. Tarsal tunnel syndrome, cuboids syndrome, metatarsal stress fracture, inter-digital neuroma(Morton's neuromas), Stair Climbers transient parasthesia, Turf toe, sesmoitidis.

e. Injuries to the Ankle – Syndesmotic ankle sprain, Inversion sprains, eversion sprains, dorsiflexion sprains, tarsal tunnel syndrome, stress fracture of the metatarsal, corns and calluses, blisters, ingrown toenails, peroneal tendon subluxation.

f. Injuries to the low back – Postural syndrome, Dysfunction syndrome, Derangement syndrome, Spondylolisthesis.

g. Injuries to the Running Athlete – Causes of over use injuries – Common running induced injuries to the lower back – Common running induced injuries to the hip – Iliotibial tract pain. Trochanteric Bursitis, stress fracture of femoral neck. Slipped capital femoral epiphysis, vague hip pain.

UNIT V **40**

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 heat ,stroke

e. old injuries Apart from the above, students should know the pre and post operative rehabilitation used in sports physiotherapy.

Evaluation **Total Hours: 200**

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

References:

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

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

15IMPT003 **8 0 2 6**

ADVANCED PHYSIOTHERAPEUTIC INTERVENTION IN NEUROLOGY & PAEDIATRIC PHYSIOTHERAPY

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 neuro conditions.

Course outcomes:

1. Knowledge about general principles of treatment

2 .knowledge of neural tissue mobilization

3 .knowledge of various approaches like bobath ,brunstromn, pnf ,vojta

4 .knowledge of motor control and learning

5 .knowledge of physiotherapy management in perceptual and sensory dysfunction

6. Knowledge about adaptive equipments.

7 . Knowledge of physiotherapy management in neurological and pediatric conditions

UNIT I **40**

General principles &treatment
Nervous tissue mobilization

UNIT II **40**

Theoretical basis of Treatment and concept
Bobath, John stone, PNF, Brunstromm, Rood, conductive Education, MRP, Gordon, Vojta technique, NDT

UNIT III **40**

Horak theories, motor control and learning

UNIT IV **40**

Integrated treatment

Physiotherapy management in sensory &perceptual dysfunction

Management of co-ordination problems

Management of balance dysfunctions

Management of movement dysfunction

UNIT V **40**

Physiotherapy in neurological & pediatric dysfunction

Implication of feedback mechanism in PT management

Adaptive equipment for physical challenged type's equipment roles selection etc.

Total Hours: 200

Textbooks:

1. Carpenter, Mental Health & Learning disability — EURETT. 2 Ed, 1998

2. Ropper, principles of Neurology, JP, 10 Ed, 2014

References:

1. Catherine A Trombly. Occupational Therapy for physical dysfunction –, Williams & Wilkins.4Ed, 1998

2. Brain and Bannister's Clinical Neurology, Sir Ruger Bannister, Oxford.7Ed, 1992

3. Introduction to nervous System – Hokmes Bullock, WH Freeman and company,1st Ed,2000

15IMPT004 ADVANCE PT INTERVENTION IN CARDIO PULMONARY DISEASE 8 0 2 6

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 cardio respiratory conditions.

Course Outcomes

1. To learn the advanced techniques in managing cardio pulmonary conditions
2. To learn the advanced techniques in general fitness
3. To understand the latest management strategies in ICU
4. To learn the cardio pulmonary management of paediatric and geriatric conditions
5. To understand the management of Non communicable diseases
6. To know the adjuncts related to cardiovascular Physiotherapy care
7. To know the adjuncts related to pulmonary physiotherapy care
8. To understand the basis of cardio pulmonary rehabilitation and ergonomic concerns

UNIT I **40**

ADVANCED TECHNIQUES:

1. Physiological basis and clinical application of airway clearance techniques
2. Exercise testing and training for primary and secondary cardio pulmonary dysfunction
3. Respiratory muscle weakness and training
4. PNF patterns, PILATES, Core Stability
5. Exercise training & prescription

UNIT II **40**

CARDIO PULMONARY PHYSICAL THERAPY IN INTENSIVE CARE

1. Comprehensive patient management in ICU
2. ICU management of cardio pulmonary dysfunction
3. Advanced and basic life support

UNIT III **40**

CARDIO PULMONARY PHYSICAL THERAPY IN SPECIAL CASES

1. The neonatal and paediatric patients
2. The ageing patient
3. Patient with neuromuscular and musculoskeletal dysfunction
4. Obesity
5. The transplant patient
6. Hypertension
7. Diabetes mellitus and carcinoma

UNIT IV **40**

ADJUNCTS TO CARDIO- PULMONARY PHYSICAL THERAPY

1. Humidification
2. Nebulizers
3. IPPB
4. Aerosol therapy
5. Bronchodilator
6. Incentive Spirometer
7. Ventilators, suction

UNIT V **40**

CARDIO PULMONARY FITNESS

1. Cardiac rehabilitation
2. Pulmonary rehabilitation
3. Ergonomic issues related to Cardio vascular & respiratory system
4. fitness & nutrition

Evaluation

Total Hours: 200

Textbooks:

1. Frances J.Brannon, Cardio pulmonary rehabilitation, Basic theory & application – mosby, 4 ed, 2001
2. Joanne watche, Cardio pulmonary physical therapy, a clinical manual – CBCS, 3 ED, 2003
3. Ellen Hillegass steven sadowsky., Essentials of cardio pulmonary physical therapy, Elsevier, 2 ED, 1994

References:

1. Crofton & doogles Respiratory Diseases Vol – I & II, Seaton.1 Ed, 2003

2. Downie, Cash text book of chest, Heart & Vascular disorders ,ELBS, 1 Ed, 2005

3. Berne, Cardio – Vascular Physiology ,Mosby, 4Ed, 2012

15IMPT005 ADVANCE PT INTERVENTION IN HAND & ERGONOMICS 8 0 2 6

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 hand conditions.

1. Student will be able to apply the techniques and manage wound edema and scar conditions & gain knowledge and master the application of desensitization and sensory re-education protocols

2. One can able to provide hand care

3. Student will be able to apply the physical agents and electrotherapy techniques in hand rehabilitation

4. Student will be able to understand the importance and application splinting technique & appreciate the concepts in phases of splinting

5. Student will be able to Apply hand therapy in various conditions involving shoulder, elbow, wrist and hand & Perform pre and post operative hand therapy following surgical procedures of upper quadrant

6. Student will be able to appreciate occupational hand disorders and apply hand therapy techniques including cybax and other work simulators

UNIT I **40**

- Concepts in clinical treatment
- Wound management
- Edema management
- Scar management
- Desensitization protocols
- Sensory re – education protocols
- Motor reeducation
- Restoration of ROM – muscle strength and endurance therapeutic exercise: maintaining and restoring mobility in the hand
- Hand protection & hand core.

UNIT II **40**

Physical agents and electrotherapy techniques in hand rehabilitation

- Cryotherapy
- Superficial heating agents
- Ultrasound
- Electrical stimulation

UNIT – III **40**

SPLINTING

- Data – Gathering phase
- Design - fabrication phase

UNIT IV **40**

Hand dysfunction & hand therapy in:

Arthritis – degenerative, rheumatoid & post traumatic poliomyelitis, brachial plexus injuries. Peripheral nerve injuries entrapment neuropathy, hansen's disease, diabetes, spinal cord injuries, stroke, parkinson's, injections of the hand, burns, dupuytrens, callosities, reflex sympathetiC disorder, cumulative trauma disorder, hypersensitivity. Crush injuries, zones of hand injuries, ligamenbous injuries, volar plate injuries, tendon injuries, fracture & dislocations, amputation, volkman's ischaemic contracture.

Surgical procedures: pre & post operative hand therapy: Tenton repair, tendon transfers, tenolysis, soft tissue repair/release,. Various grafting procedures, amputations, re plantation and arthroplasty.

UNIT V **40**

Occupational hand disorders

- Applied ergonomics of hand
- Cumulative trauma disorders
- Nature & prevalence of injury
- Specific solution, preventive measures & hand therapy techniques including cybex and other work simulators

Total Hours: 200

Textbook:

1. Judith Boschienen , The Hand , CBCS, 2nd ed, 1999

References:

1. Barbara, Concepts in Hand Rehabilitation- mosby , 4 ed, 1997

2. Tubiana , Hand Atlas – JP, 1 ED, 2011

DISSERTATION **0 0 15 18**

Course Objectives

This dissertation of clinical study / review of literature is designed to develop the aptitude among students towards further reading and selecting references and present a written Dissertation, or conduct a comparative study of the value / efficacy of physiotherapy Procedure in selective group of patients and normal subjects or justify the chosen Procedure.

Every candidate shall submit to the Registrar of the university in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within 4 months from the date of commencement of the course on or before the dates notified by the university. The synopsis shall be sent through the proper channel (Duly approved by the guide, HOD, Principal and Ethical committee) such synopsis will be reviewed and the university will register the dissertation topic. The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions. Every candidate pursuing MPT degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The result of such a work shall be submitted in the form of dissertation. Any change in the dissertation topic or guide shall be informed to the authorities of this university for its approval. No change in the dissertation topic or guide shall be made within nine months for commencement of university examination.

The printed text of dissertation should not be less than 50 pages/2500 words and shall not exceed 75 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing (Font 12, times New Roman) on one side of paper (A4 size, 8.27" X 11.69") and hard bound properly (No spiral binding). Four copies of dissertation thus prepared shall be submitted to the Controller of the Examination, three months before final examination

on or before the dates notified by the university duly certified by the guide, head of the department and head of the institution.

A candidate who has submitted his/her dissertation once is not required to submit a fresh dissertation if he/she reappears for the examination in the same branch on the subsequent occasion, provided the dissertation has been accepted by the examiners

Total Hours: 300

Discipline specific electives

Discipline Specific Elective-I

15MPT101 CLINICAL TESTING 5 0 0 4

Course objective

The objective of this course is that after 100 hours of lectures & demonstrations, the student will be able to understand the knowledge about importance of special test and its implication to various conditions / problems / diseases.

Course Outcomes:

1. To understand the concept of clinical testing and its significance

2. To clearly explain the special tests of need

3. To be well versed in implications and significance of special tests

4. To be well versed in special tests of upper limb joints

5. To understand the special tests of spinal joints

6. To clearly explain the special tests of lower limb joints

UNIT I **20**

Clinical test and its Significance

1. Introduction to clinical tests
2. Importance of clinical testing

UNIT II **20**

Implications of Special Tests

1. Special test of need
2. Implication and Significance of Special Tests

UNIT III **20**

Upper Limb Joints

Special test of upper limb joints
-Shoulder Joint
-Elbow Joint
-Wrist Joint

UNIT IV **20**

Spinal Joints

Special test of spinal Joints
-Cervical Joint
-Thoracic Joint
-Lumbar Joint

UNIT V **20**

Lower Limb Joints

Special tests of lower limb joints
-Hip Joint
-Knee Joint
-Ankle Joint

Total Hours: 100

Textbook:

1. MC Rae , Clinical orthopedic examination – ELBS, 2 Ed, 2003

Reference:

1. David Magee , Orthopedic physical assessment , MC GrawHill, 3Ed, 2005

Discipline Specific Elective -II

15MPT102 ERGONOMICS 5 0 0 4

Course objective

The objective of this course is that after 100 hours of lectures & demonstrations, the student will be able to understand the knowledge about ergonomics issues, evaluation and safe practice standards.

Course outcomes:

1: Student should have understood the different types of work nature and its impact towards the human body.

2: 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.

3: Student should also be aware of pre examination procedures and examination for a person before appointing them in to the work.

4: 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.

5: Student should be able to differentiate the work nature of software and hardware professionals.

6: Students should have understood what are the legal bodies exsiting in constructing the work place.

UNIT I **20**

Introduction

1. History of ergonomics
2. Need of ergonomics
3. Domains in ergonomics

UNIT II **20**

Ergonomic Assessment

1. Ergonomic cycle

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

UNIT III **20**

Job analysis

1. Requirement of job
2. Profile and candidate selection
3. Pre employment screening

UNIT IV **20**

Analysis

1. Job site analysis
2. Job task analysis
3. Avenues and benefits of ergonomics
4. Work hardening

UNIT V **20**

Current Trends in Ergonomics

1. Software in ergonomics
2. Regulatory bodies
3. Professionals in ergonomics
4. Legal issues and insurance policies

Total Hours: 100

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.

Discipline Specific Elective –III

15MPT103 FOOD AND NUTRITION 5 0 0 4

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, over nutrition, deficiency disease.

Course outcomes:

1. Become familiar about the nutritive values of food.
2. Explain about the food sources from which we obtain vitamins.
3. Become familiar with various compositions of food.
4. Well versed with digestion at each stages of digestive system.
5. Become familiar with different cooking methodologies.
6. Know and explain about food preparations by food manufacturer.
7. Explain thoroughly about the advantages and disadvantages of various convenience foods.

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. Planning and serving of family meals. Meals for all ages and occupations.

UNIT III COMPOSITION OF FOOD 20

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.
2. Principles involved in the different methods of cooking – boiling, stewing, grilling, baking, roasting, frying, steaming, pressure cooking, cooking in a microwave oven.

UNIT V FOOD PREPARATION 20

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

2.Advantages and disadvantages. **Total Hours:100**

Text Book:

1. Agarwal, Textbook of human nutrition, JP, 1 Ed, 2014

Reference:

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

Discipline specific elective IV

15MPT104 ENGLISH FOR COMMUNICATION 5 0 0 4

Course Objective:

At the end of 100 hours of lectures the student will be able to:

1. Speak fluently, intelligibly and appropriately to teachers, Colleagues, Doctors, Patients and friends at the college, Hospital and hostel etc. about academic or (occupational) areas of interest.
2. Develop flexibility in reading; improve speed and rate of comprehension while tackling textbooks or reference material.
3. Write official letters to the warden, principal and other officials in the bank, post office etc.
4. Write reports about patients care.
5. Overcome the common errors in pronunciation and grammatical and idiomatic usage.

Course outcomes:

1. Become fluent in speaking and enhance the ability to communicate effectively with colleagues, doctors, patients etc.
2. Well versed with comprehension skills and vocabulary enhancement.
3. Become familiar with writing various official letters, writing patients reports and summarise scientific sessions.
4. Understand about the grammatical and idiomatic usages.
5. Well versed with various methods of teaching by involving in group activities, role plays etc.
6. Gain knowledge about various methods of evaluation.

UNIT I SPOKEN COMMUNICATION 20

1. Learning to read the phonetic symbols
2. Stress
3. Intonation
4. Rhythm
5. Commonly mispronounced words
6. Correct pronunciation of important commonly used words in clinical practice
7. Note taking in lecture classes

UNIT II VOCABULARY AND READING 20

1. Special features of English vocabulary
2. Common errors in choice of word
3. Semi technical vocabulary
4. Collecting material from library on scientific topics
5. Comprehensive exercises

UNIT III WRITING 20

1. Writing letters regarding permission, Leave, opening bank account etc.
2. Note making from lecture / reading material
3. Writing reports on patient care
4. Summarizing scientific passages

UNIT IV GRAMMATICAL AND IDIOMATIC USAGE 20

1. Correction of errors
2. Types of interrogative sentences
3. Active – Passive voice
4. Tense
5. Principles of precision, Clarity and specificity

UNIT V 20

1. METHODS OF TEACHING

Lecture, pair work, group activities, role plays, simulations, debates, quiz, exercises and essay writing.

2. METHODS OF EVALUATION

Oral presentations
Panel Discussions
Summary/Essay writing
Comprehension exercises

Evaluation

Total Hours: 100

Text books:

1. Bhaskar, W.W.S. and Prabhu, N.S, English through reading, Macmillan & Co of India Ltd, 4 Ed, 1993

2. Gimson A.E., An introduction to the pronunciation of English, Wing King Tong Co Ltd.5 Ed,1995

3. Randolph and Green Baum, A University Grammar of English ,Quick,Group (FE) Ltd.3Ed,1997

4. Thomson, A.J., And Martinel A.V.V - Practical English Grammar –.,Oxford University press, Delhi,2003

References:

1. Water F.V.A , Proficiency Course in English,Hodder and Stronghton Pub., London,1994

2. Tone Daniel, I.M. , English Pronouncing Dictionary,Dent and sons Ltd. London.2004

3. O' Connor, I.D., Better English Pronunciation , Cambridge University.2009

Discipline specific elective II

15MPT105 COMPUTER & ITS APPLICATION IN PHYSIOTHERAPY 5 0 0 4

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 computer & its language, components, functions and networks

Course outcomes:

1. Able to explain various types of computers.
2. Become familiar with various aspects of computer.
3. Become familiar with various operating systems.
4. Know and explain about various aspects of looping.
5. Able to handle various computer applications.
6. Able to use effectively computer graphics and other computer applications for better understanding in the field of physiotherapy and clinical studies.

UNIT I INTRODUCTION TO COMPUTERS 20

Introduction to computers
Types of computers
Characteristics and Hardware aspects of computer.

UNIT II **OPERATING SYSTEMS** **20**

Operating systems
Definition &Types of operating systems
MS DOS
UNIX
LINUX
Memories ,RAM,ROM,Secondary Memory.

UNIT III **LOOPING** **20**

Decision making and Looping
Which statement
Do statement
FOR statement Arrays
String handling functions
User defined functions.

UNIT IV **COMPUTER PACKAGES** **20**

Computer packages
MS Office
MS word
MS Excel
MS PowerPoint
Advantages and uses.

UNIT V **COMPUTER NETWORKS & GRAPHICS** **20**

Introduction to computer networks – Definition LAN, WAN advantage of Internet – worldwide web. Computer Graphics: Definition – display devices – graphical input and output devices – multimedia – definition and application – computer applications in physiotherapy and clinical studies.

PRACTICALS

Exercises based on the following are to be dealt:
1. Computer operating systems like UNIX, MS-DOS etc.
2. Simple program In C.
3. MS-Office (MS-Word, MS-Excel, MS-Access, MS-PowerPoint)

Evaluation

Total Hours: 100

Text Books:

1. C.Nellai Karunan, MS Office, CBS,4th Ed, 2006

2. Hunt N and Shelly J., Computers and commonsense, Prentice - hall of India New Delhi,2011

References:

1. E.Balaguruswamy – Programming in ANSI –C Tata Mc.Graw Hill-1997

2. Byron Gottfield – Programming with C, Prentice - hall of India,2nd Ed, 2000

3. Popst and Perrum, computer aided drug design, Academic press New york.1999

4. Writh, systematic programming- an introduction, Prentice Pub,3rd Ed,2005

5. Tanen Baum, Computer networks,2 Ed, 2012

6. Rajaraman ,Computer Graphics, Mc Graw Hill, 6 Ed, 2009

Discipline specific elective -VI

15MPT106 BIOSTATISTICS / RESEARCH METHODOLOGY 5 0 0 4

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.

Course outcomes:

1. The student will be able to implement hypothesis testing
2. Important concepts relating to research design and measurements and scaling techniques.
3. To analyze experimental and observational study
4. Processing and analyzing data
5. To implement and calculate frequency distribution.
6. Interpretation and Report Writing
7. Desire to face the challenge in solving the unsolved problems and to be of service to society

UNIT I INTRODUCTION TO BIOSTATISTICS 20

1. Introduction to Biostatistics
2. Frequency distribution
3. Measures of central tendency
4. Measures of dispersion

UNIT II STATISTICAL TOOL 20

1. Probability
2. Correlation & regression
3. Statistical inference

UNIT III COMMUNITY AND HOSPITAL STATISTICS 20

1. Vital statistics
2. Health statistics

UNIT IV RESEARCH METHODOLOGY 20

1. Introduction to research methodology
2. Steps in research process

UNIT V RESEARCH REPORT 20

1. Writing research report
2. Pilot Study

Evaluation

Total Hours:100

TextBook:

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

Reference:

1.Sundar rao, Introduction to biostatistics and Research Methodology, CBS, 1Ed, 2002

Discipline Specific Elective -VII

15MPT107 APPLIED PHYSICS 5 0 0 4

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 the forces acting in human body, gravity, electricity and magnetism.

Course outcomes:

1. Students will know about the human body functions applied by the force gravity
2. Recognize how observation, experiment & theory work together to continue to expand the frontiers of knowledge of the physical universe
3. Analyze interpret and evaluate scientific hypotheses and theories, laws using rigorous methods
4. Students can understand the basic scientific principles, theories & laws as was as an awareness of the changing nature of science
5. Students aid gain knowledge about the current elasticity to differentiate the mode of transmission
6. They will understand and know how the applied the electrical in students to the human.
7. Students will know about the personality styles applied by physics movement etc.,

UNIT – I INTRODUCTION 20

1. Forces in human body
2. Gravity, LOG, COG
3. Levers of the body
4. Anatomical pulleys
5. Body torque
6. Types of motion, Planes of motion, Axis, Direction and quality of motion

UNIT – II **MUSCLES** **20**

1. Elasticity- Hook's law.
2. Stress / strain curve
3. Angle of pull & the mechanical efficiency of muscle
4. Types of muscle work

UNIT – III **HYDROTHERAPY AND HEAT** **20**

1.Laws of hydrotherapy & its application
2.Heat & its application

UNIT – IV **ELECTRICITY** **20**

1.Static electricity
2.Current electricity
3.Working & importance of current in clinical practice
4. Electro Magnetic spectrum

UNIT – V **MAGNETISM** **20**

1. Definition
2. Properties of magnets
3. Electromagnetic induction
4. Magnetic forces and field

Text Books:

1. Claytons , Electrotherapy Explained – CBS, 9 Ed, 2013
2. John Low and Anee Reed , Electrotherapy Explained –, Butterworth Heinmann pub, 1Ed, 2000

Reference:

1. Dena Gardiner, Principles of Exercise therapy, Bell and Hymes, 4th Ed, 1981.

Generic Electives

Generic elective I

15MPT151 CARDIOPULMONARY RESUSCITATION 5 0 0 4

Course objective:

Upon successful completion of 100 hrs the student will be able to apply first aid and perform cardiopulmonary resuscitation (CPR).

Course Outcomes:

1. To be well versed in defining CPR
2. To understand the Principles of CPR
3. To be well versed in checking and positioning the victims
4. To clearly explain the procedures in CPR
5. To understand the concept of signals of a heart attack
6. To clearly explain the concept of Adult, Child and infant CPR

UNIT I INTRODUCTION TO CPR 20

1. Definition of CPR
2. Health concerns as it relates to performing Community CPR or First Aid.

UNIT II PRINCIPLES OF CPR 20

1. Check, Call, and Care techniques.
2. Good Samaritan Laws and getting permission from victims.

UNIT III INDICATIONS FOR CPR 20

1. Checking an unconscious victim.
2. Positioning victims.

UNIT IV **PROCEDURES IN CPR** **20**

1. Steps in determining care of a victim. Examples: rescue breathing, CPR, etc.

2. Matt work on all skills related to Community CPR.

UNIT V **TYPES OF CPR** **20**

1. Signals of a heart attack.

2. Adult, child, and infant CPR.

Total Hours:100

Textbook:

1. Chandra, Handbook of Interventional Cardiology, JP, 1 Ed, 2015

Reference:

1. Davidson, A Text Book of Medicine, Churchill Livingston, 21 st Ed, 2010.

Generic Elective -II

15MPT152 **PT EVALUATION** **3 0 0 2**

Course objective

The objective of this course is that after 60 hours of lectures & demonstrations, the student will be able to understand the knowledge about Physiotherapy evaluation of various conditions including orthopeadics, neurology, cardio respiratory, sports and Hand conditions.

Course Outcomes:

1. To understand the importance of evaluation and screening

2. To be well versed in clinical decision making

3. To clearly explain the methods of evaluation and general evaluation formats

4. To be well versed in PT evaluation in orthopedic conditions

5. To understand PT evaluation in cardio-pulmonary conditions

6. To be well versed in PT evaluation in Neurological conditions

7. To clearly explain the concept of PT evaluation in sports and Hand conditions.

UNIT- I **INTRODUCTION** **12**

1. Importance of evaluation
2. Importance of screening
3. Clinical decision making
4. Methods of evaluation
5. General evaluation formats

UNIT – II **ORTHOPEDIC EVALUATION** **12**

1. PT Evaluation in orthopedic conditions
2. Range of motion
3. Limb length measurement
4. End feels

UNIT – III **CARDIOPULMONARY EVALUATION** **12**

1. PT Evaluation in Cardiopulmonary conditions
2. Normal & abnormal heart sounds
3. ECG waveforms – normal & abnormal
4. Auscultation techniques

UNIT – IV **NEUROLOGICAL EVALUATION** **12**

1. PT Evaluation in Neurology conditions
2. Myotomes
3. Dermatomes
4. Reflex testing
5. Tone assessment

UNIT – V **SPORTS AND HAND EVALUATION** **12**

1. PT Evaluation in Sports & Hand conditions
2. Common sports injuries
3. Hand function
4. Ergonomic measures

Total Hours:60

Text Books:

1. David Magee , Orthopedic physical assessment , MCgH, 3Ed, 2005
2. Frown Felter, Cardiopulmonary evaluation, ELBS, 2 Ed, 1997

Reference:

1. Lindsay, Neurology Assessment – Mosby, 3 Ed, 2009
2. David, Sports Injuries assessment and Rehab – CBS, 1 Ed, 2004

Generic Elective – III

15MPT153 CLINICAL DIAGNOSIS 5 0 0 4

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 Clinical diagnosing Ortho, Neuro and Cardio-respiratory Conditions.

Course Outcomes:

1: To understand the concept of clinical testing and its significance

2: To clearly explain the special tests of need

3: To be well versed in implications and significance of special tests

4: To be well versed in special tests of upper limb joints

5: To understand the special tests of spinal joints

6: To clearly explain the special tests of lower limb joints

UNIT I CLINICAL DIAGNOSIS OF ORTHOPAEDIC CONDITIONS 20

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

UNIT II CLINICAL DIAGNOSIS OF NEUROLOGICAL CONDITIONS 20

1. Stroke
2. Brain tumours
3. Psychiatric disorders

4. Cerebellar dysfunction
5. Epilepsy
6. Demyelinating disorders

.

UNIT III CLINICAL DIAGNOSIS OF CARDIAC CONDITIONS 20

1. Congenital heart diseases
2. Circulatory disorders
3. Arrhythmias
4. Cardiomegaly

UNIT IV CLINICAL DIAGNOSIS OF RESPIRATORY CONDITIONS 20

1. Abnormal breathing patterns
2. COPD
3. Occupational lung diseases
4. TB & Tumours

UNIT V CLINICAL DIAGNOSIS OF OBG CONDITIONS 20

1. Prolapse of uterus
2. Hernia
3. Mastectomy
4. Antenatal complications
5. Post natal complications

Total Hours:100

Text Book:

1. Davidson, A Text Book of Medicine, Churchill Livingston, 21 st Ed, 2010.

Reference:

1Magee, Textbook of orthopedics, ELBS, 7Ed, 2002

Generic Elective - IV

15MPT154 APPLIED CHEMISTRY 5 0 0 4

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 the ATP production, energy source & body and other biochemical activity / changes that occur in our body.

Course outcomes:

1. Student will know about the energy source that invalid in human body
2. Student will know about the acidic reaction & mechanism
3. They will know about the metabolism of the body and how the process occur
4. Student will know about the nutrition and the deficiency
5. Student will know about the clinical tester to identify the internal function of the organs
6. Student will know how the chemical reaction occur in our human body

UNIT – I INTRODUCTION 20

1. Energy source of body
2. Carbohydrates
3. Protein
4. Fat

UNIT – II ENERGY SYSTEMS 20

1. ATP Production
2. Aerobic & Anaerobic Metabolism
3. .Lactic acid production
4. Lactic acid clearance mechanism

UNIT – III METABOLISM 20

1. Protein metabolism – Digestion, absorption, Urea cycle
2. Carbohydrate metabolism
3. Fat metabolism

UNIT – IV **NUTRITION** **20**

1. Composition of food
2. Balanced diet
3. Nutritional deficiency disorders
4. Major dietary constituent & their importance

UNIT – V **CLINICAL BIOCHEMISTRY** **20**

1. Metabolic equivalence
2. Types of energy expenditure
3. Liver function test
4. Renal function test
5. Lipid profile in serum

Total Hours:100

Text Book:

1. B.E. Deb, Basics in Bio chemistry – JP, 2Ed, 1997

Reference:

2. Chatterjee, Text book of medical biochemistry, JP, 8 Ed, 2012

Generic Elective - V

15MPT155 **HOSPITAL MANAGEMENT** **5 0 0 4**

Course objective

Students can explore public policy, community relations, human resource management, hospital finance, fundraising, physician relations and collective bargaining after completing 100 hrs of lecture.

Course Outcomes:

1. To understand the concept of principles of management

2. To be well versed in the types of management

3. To clearly explain the research methods for management

4. To be well versed in Hospital Architecture, planning and Design

5. To understand the concept of materials management

6. To be well versed in Ethics and laws in Hospital management

UNIT I PRINCIPLES OF MANAGEMENT 20

1. Principles of Management
2. Organizational Behaviour

UNIT II TYPES OF MANAGEMENT 20

1. Accounting and Finance for Managers
2. Marketing Management
3. Human Resource Management
4. Quantitative Techniques for Management

UNIT III IMPORTANCE OF MANAGEMENT 20

1. Research Methods for Management
2. Corporate Communication
3. Operations Management

UNIT IV HOSPITAL MANAGEMENT 20

1. Hospital Architecture, Planning And Design
2. Materials Management
3. Hospital Operation – I (Patient Care)
4. Hospital Operation – II (Supportive Services)

UNIT V ETHICS & LAWS IN HOSPITAL MANAGEMENT 20

1. Bio-Sciences & Epidemiology
2. Hospital Information System
3. Health Laws & Policies
4. Hospital Environment and Ethics

Total Hours:100

Textbook:

1. Wallace J. Hopp , Hospital Operations: Principles of High Efficiency Health Care, Pearson higher education Publication, 2nd Ed,2012

Reference:

1. Goyal & Sharma, Hospital Administration and Human Resource Management, PHI Publisher, 2013