GURU KASHI UNIVERSITY

Masters of Physiotherapy
(MUSCULOSKELETAL)
Session: 2024-25

Department of Physiotherapy

GRADUATE ATTRIBUTES

The graduates will be capable of strengthening their abilities for widening knowledge and skills through meaningful learning experiences using Advanced Techniques and critical thinking to develop expertise in their area and offer exclusive services in clinical practice; they will be able to delineate the cognitive and psychomotor skills deemed essential for completing this program and to perform as a competent Orthopaedic Physiotherapist who will be able to evaluate plan and execute Physiotherapy treatment independently following Evidence-based Practice.

PROGRAMME OUTCOMES

- Application and understanding of knowledge of sciences pertaining to musculoskeletal system with sound clinical reasoning
- Comprehension of detailed knowledge of musculoskeletal injuries and rehabilitation
- Evaluation of mechanics of musculoskeletal injuries
- Professional ethic towards client respect, dignity and confidential responsibility
- Evaluation of disability of patients pertinent to musculoskeletal conditions and to be able to prescribe exercises based on dosimetry
- To be an Active Participant of Evidence-based practice model

Program Structure of MPT (Musculoskeletal)

Semester –I						
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credit**
MPM101	Review of Basic Sciences	Core	4	0	0	4
MPM102	Review of Basic Therapeutics	Core	4	0	0	4
MPM103	Musculoskeletal Disorders	Compulsory Foundation	2	0	0	2
MPM106	Physio therapeutics Lab	Skill Based	0	0	2	1
MPM107	Assessment and Evaluation in Musculoskeletal Disorders Lab	Skill Based	0	0	2	1
MPM110	General Psychology	Multidisciplinary	3	0	0	3
Discipline Elective (Any one of the following)						
MPM108	Hand Rehabilitation	Discipline Elective	3	0	0	3
MPM109	Foot Rehabilitation					
Discipline Elective (Any one of the following)						
MPM111	Applied Biomechanics and Ergonomics	Discipline Elective	3	0	0	3
MPM112	Applied Physiotherapy					
Total			**19**	**0**	**04**	**21**

Semester –II						
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credit**
MPM201	Advanced Therapeutics	Core	4	0	0	4
MPM202	Physiotherapy for Traumatic Musculoskeletal Conditions	Core	4	0	0	4
MPM203	Rehabilitation, Orthotics and Prosthetics	Compulsory Foundation	2	0	0	2
MPM204	Skill Enhancing Studies	Entrepreunship	2	0	0	2
MPM205	Clinical Biomechanics Lab	Skill Based	0	0	4	2
MPM207	Advanced Manipulative Skills Lab	Skill Based	0	0	4	2
MPM211	Outcome Measures	VAC	2	0	0	2
MPM299	XXX	MOOC	-	-	-	2
Discipline Elective (**Any one of the following)**						
MPM208	Advanced Functional and Physical Diagnosis	Discipline Elective	3	0	0	3
MPM209	Advanced Manipulative Skills					
Total			**17**	**0**	**08**	**23**

Semester –III						
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credit**
MPM301	Research Methodology	Core	4	0	0	4
MPM303	Ethics and IPR	Core	4	0	0	4
MPM397	Proficiency in Teaching	Elective Foundation	2	0	0	2
MPM398	Research Proposal	Core	0	0	8	4
MPM305	Computer Lab	Skill Based	0	0	2	1
MPM308	Vertebral Rehabilitation	VAC	2	0	0	2
MPM399	XXX	MOOC	-	-	-	2
Discipline Elective (Any one of the following)						
MPM309	Medical and Surgical Management of Musculoskeletal Conditions.	Discipline Elective	3	0	0	3
MPM310	Anthropometry					
Open Elective Course						
	xxx	IDC	2	0	0	2
Total			**17**	**0**	**10**	**24**
Open Elective Courses (For other departments)						
OEC073	Drug Abuse	OE	2	0	0	2

Semester –IV						
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credit**
MPM401	Dissertation	Research Skill	-	-	-	20
MPM402	Exercise Prescription	AEC	1	0	0	1
Total			**1**	**0**	**0**	**21**
Grand Total			**56**	**0**	**16**	**88**

Evaluation Criteria for Theory Courses

A. Continuous Assessment: [25 marks]
   CA1-Surprise Test (Two best out of three)- (10 Marks)
   CA2-Assignment(s)- (10 Marks)
   CA3-Term Paper/Quiz/Presentations- (05 Marks)
B. Attendance: [05 Marks]
C. Mid Semester Test: [30 Marks]
D. End Semester Exam: [40 Marks]

SEMESTER-I

Course Title: REVIEW OF BASIC SCIENCES
Course Code: MPM101
Total Hours: 60

L	T	P	Credits
4	0	0	4

Course Outcomes

On the completion of the course the students will be able to

1. Analyse structure and classification of various bones and joints of the body.
2. Acquire knowledge about central nervous system and various plexus of the body.
3. Acquire knowledge about the pathology of the body.
4. Identify various drugs acting on central nervous system, muscle relaxants, steroids and local anesthetics.

Course Content

UNIT I **14 Hours**

Human Anatomy: Osteology: Basic terminology, composition, function, classification of Bone. Structural details of bones of whole body; Arthrology: Definition and Classification of Joints, movements of Joints; Description of Joints of Upper and Lower Extremities with their Ligaments, Vertebral Column; Myology: Classification and Structure of Muscles, Description of all major muscles with their origin, Insertion, nerve supply and action.

UNIT II **16 Hours**

Human Physiology: Musculoskeletal System- bones, cartilages, muscles, ligaments etc; Muscle Physiology; Structure and function of muscle fibers; Mechanism of muscle contraction; Exercise Physiology; Respiratory Responses to Exercise; Ventilation at rest and during exercise; Ventilation and the Anaerobic Threshold; Alveolar Ventilation and Dead Space; Lung Volumes and Capacities; Oxygen Cost of Breathing; Second Wind; Cardiovascular Responses to Exercise: Control and Regulation of Heart and Circulation at rest and during exercise; Exercise and Acid Base Balance; Acid and Base Buffers; pH; Respiratory Regulation of Ph; Alkali Reserve; Hormonal responses to exercise: Growth hormone (GM); Thyroid and Parathyroid Hormones; Anti diuretic Hormone; (ADM) and Aldosterone; Insulin and Glucagon; The catecholamine; Epinephrine and norepinephrine; Sex hormones; Glucocorticoids (Cortisol) and Adrenocorticotrophic; Prostaglandins and Endorphins

UNIT III **13 Hours**

Cardiovascular system: Structure & Properties of heart; Cardiac Cycle; The regulation of heart's performance; Cardiac output; The arterial blood pressure; The physiology of vascular system; Lymphatic circulation; Respiratory system: Functional anatomy; Ventilation & control of ventilation; Alveolar air; Regulation of the breathing; Pulmonary function test; Pharmacology: Drugs used in pain; Local anesthetics; Steroids; Muscle relaxants; Drug acting upon central nervous systems & autonomic nervous system; Topically acting drugs.

UNIT IV **15 Hours**

Pathology: Cell Injury; Inflammation; Repair; Immune system; Musculoskeletal system; Bones; Hereditary & Metabolic diseases; Osteoporosis; Rickets; Osteomalacia; Osteitis fibrosa cystica; Renal Osteodystrophy; Gout; Crystal Synovitis; Infections; Osteomyelitis; Tuberculosis; Joints; Degenerative joint disease; Bursitis; Skeletal muscles; Muscle atrophy; Myositis ossificans; Muscular dystrophy; Myasthenia gravis; Hemophilia and other bleeding disorders; Delayed Healing responses in soft tissue injuries; Biochemistry:Diet- it's nutritional and calorific value of various foods balance diet, energy requirement of various individuals

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Cash'TB for Ortho and rheumatology for physiotherapist by Downie*
- *Orthopaedic rehabilitation by Brookman*
- *Walker, B. R., &Colledge, N. R. (2013). Davidson's principles and practice of medicine.*
- *Mohn & Gaectier (1995). Guided to clinical Neurology. Churchill Livingstone.*
- *Thompson, A. (2013). Tidy's Physiotherapy. Varghese publishing House.*
- *Maheshwari, J., &Mhaskar, V. A. (2019). Essential orthopaedics: (including clinical methods). Jaypee Brothers Medical.*

Web Sources

- *https://www.verywellhealth.com/what-is-a-plexus-5079595*
- *https://my.clevelandclinic.org/health/diagnostics/17966-pulmonary-function-*

testing

- *https://www.ncbi.nlm.nih.gov/books/NBK538180/*
- *https://www.life.illinois.edu/mcb/458/private/lectures/ppt_pdf/Path_ggf_3_2020.pdf*

Course Title: REVIEW OF BASIC THERAPEUTICS
Course Code: MPM102
Total Hours: 60

L	T	P	Credits
4	0	0	4

Course Outcomes

On the completion of the course the students will be able to

1. Discover about various assessment techniques in exercise therapy.
2. Acquire knowledge about low, medium and high frequency currents.
3. Identify various electro diagnostic techniques.
4. Develop skills to prescribe orthosis and prosthesis for the patients.

Course Content

UNIT I **16 Hours**

Exercise Therapy: Assessment techniques like MMT & Goniometry; Stretching and mobilization; Re-education and strengthening; Balance and Co-ordination exercises; Gait analysis and training (both normal & pathological gait); Relaxation & soft tissue manipulation; Posture; PNF; Traction; Hydrotherapy.

UNIT II **15 Hours**

Electrotherapy: General review of low, medium & high frequency currents and their modifications like Diadynamic and Russian currents; Ultrasound; UVR and IRR; Cryotherapy; Intermittent pneumatic compression; Other thermal modalities (Heat and Cold); Laser Therapy.

Unit III **14 Hours**

Biomechanics and Pathomechanics: Introduction to Kinesiology and Biomechanics; Principle of Biomechanics, Nature and importance of Biomechanics in Physiotherapy; Introduction to Biomechanics, Analysis of human motion. Analytical tools and techniques — Isokinetic dynamometer, Kinesiological EMG, Electronic goniometer,

Force platform, Videography; Shoulder, Elbow, Wrist and Hand; Pelvis, Hip, Knee, Ankle & Foot; Spine; Posture & Gait analysis

UNIT IV **15 Hours**

Bio Engineering: Principles of Orthotic- types, indications, contraindications, assessment (checkout), uses and fitting- region wise; Fabrication of simple splints and self-help devices for upper and lower extremity- indications and applications; Orthotics for the Upper Limb; Orthotics for the Lower Limb; Orthotics for the Spine; Principles of Prosthetics- types, indications, contraindications, assessment checkout, uses and fitting — region wise; Principles of Vocational Problems, including Evaluation and Vocational Goals for People with Disability.

Transaction mode

Flipped teaching, Open learning, Group discussion**,** Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested readings

- *Powers, SK and Howley, ET (2001). Exercise Physiology. Mc Graw Hill*
- *McArdle, WD, Katch, FI & Katch, VL (2001) Exercise Physiology. 5th ed. Lippincott, Williams & Wilkins.*
- *Short Textbook of Prosthetics and Orthotics by R Chinnathurai, P Sekar, M Ramaa Kumar, K Nithya Manoj, C Senthil Kumar*
- *Therapeutic Exercise for Sports Injuries (2017). Dr. Fatemeh Karami Borzabad, Dr. C. Venkatesh.*

Web Sources

- *https://www.uofmhealth.org/conditionstreatments/rehabilitation/orthotics-and-prosthetics*
- *https://neprisstore.blob.core.windows.net/sessiondocs/doc_8bcc0054-946f-4820-82e0-ca169a8823b7.pdf*
- *https://accessphysiotherapy.mhmedical.com/content.aspx?bookid=475&sectionid=40791200*

Course Title: MUSCULOSKELTAL DISORDERS
Course Code: MPM103

L	T	P	Credits
2	0	0	2

Course Outcomes **Total Hours- 30**

On the completion of the course the students will be able to

1. Analyse various diseases which can have an impact on the performance of an individual.
2. Develop skills to diagnose deformities and mal-alignments.
3. Acquire knowledge about pathology and prognosis of contagious diseases affecting bones.
4. Detect the various spinal deformities.

Course Content

UNIT I **08 Hours**

Fractures: Definition, types, signs and symptoms. Fracture healing. Complications of fractures, conservative and surgical approaches; Principles of management – reduction (open, closed, immobilization etc.); Subluxation/ dislocations – definition, signs and symptoms, principles of management (conservative and operative); Upper Limb Fractures and Dislocations:Causes, clinical features, mechanism of injury, complications, conservative and surgical management of the major long bone fractures and joint injuries, Fractures of the clavicle; Lower Limb Fractures and Dislocations: Causes, clinical features, mechanism of injury, complications, conservative and surgical management of the major long bone fractures and joint injuries; Spinal Fractures and Dislocations: Mechanism of injury, clinical features, complications (quadriplegia) and management of Spinal injuries and rib cage fractures (collar, cast, brace, traction), management of complication (bladder and bowel, quadriplegia); Congenital disorders of vertebral column & vertebral deformities.
Rheumatoid arthritis; Ankylosis Spondylosis; Reiter's disease; Polymyalgia rheumatica; Inflammatory disorders of vertebrae, vertebral Joints, soft tissues.

UNIT II **08 Hours**

Shoulder injuries: impingement, rotator cuff injuries, glenoid labrum injuries, instability of shoulder, AC Joint injuries, referred pain and other less common causes of shoulder pain; Specific rehabilitation protocols: Acute, recovery and functional phase.
Acute elbow injuries; Forearm compartment pressure syndromes.
Hip & Groin Pain: History examination & investigation; Causes and management of adductor muscle strains (including recurrent), osteitis pubis, adductor tendinopathy, obturator neuropathy and trochanteric bursitis & other less common conditions.

Knee injuries: Review of functional anatomy; History examination & investigation; Causes and management of meniscal injuries, collateral ligament injuries cruciate ligament injuries, articular cartilage damage, acute patellar trauma and chronic instability; Rehabilitation protocols of the above-mentioned injuries; Causes & Management of Patellofemoral syndrome, Patellofemoral instability, Patellar tendinopathy, Fat pad impingement, acute & chronic Partial tears, Osgood Schlatter's Disease, Sinding -Larsen-Johansson Syndrome and Quadriceps tendinopathy; Causes & Management of iliotibial band friction syndrome, excessive lateral pressure syndrome, biceps femoris tendinopathy, precancerous tendinopathy, popliteus tendinopathy, Biceps Femoris tendinopathy& Baker's cyst.

UNIT III **07 Hours**

Metabolic and endocrine disorders: Osteoporosis; Osteomalacia and Rickets; Hyper parathyrodism; Causes, assessment of a patient with Low Back pain, & stiffness disorders; Traumatic Injuries of vertebral column: General & regional injuries; Neuromuscular disorders: Poliomyelitis; Cerebral palsy; Muscular dystrophy; Pelvic injuries; Spinal cord Injuries: Types, Classifications, Pathology, Level, Examination, Management & Physiotherapy.

UNIT IV **07 Hours**

Orientation and General principles of Orthopaedic surgery: Arthrodesis; Osteotomy; Arthroplasty; Bone grafting; Internal and external fixations; Distraction and limb reconstruction; Correction of bone deformities and joint contractures; Tendon transfers; Nerve suturing and grafting; Causes & Management of Inflammatory shin pain and Compartment Syndromes Acute bony injuries: Peri osteal Contusion & fractured tibia & fibula; Causes and Management of gastrocnemius & soleus muscle strain; Claudication type of calf pain; Causes and management of Achilles tendinopathy, Achilles tendon rupture, Retro calcaneal bursitis, Sever's disease and Posterior impingement syndrome.

Transaction Mode

Demonstration method, Video based teaching, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- *Management Principles for Physiotherapist by Nosse, Lorry J*
- *Essential of Orthopaedic for physiotherapists by Ebnezar*
- *Physical therapy of the low back by Twomey, Churchill, Livingstone, London 1995*
- *Myofascial and pain dysfunction by Travell, Villimans and Wilkins, Baltimore 1983*
- *Orthopaedic Physical therapy by Donatteli, London Churchill Livingstone*

Web Sources

- *https://www.physiopedia.com/Long_Term_Musculoskeletal_Conditions*
- *https://my.clevelandclinic.org/health/diseases/22176-pelvic-fractures*
- *https://www.sciencedirect.com/journal/burns*
- *https://www.physio-pedia.com/Spinal_Cord_Injury*

Course Title: PHYSIOTHERAPEUTICS LAB
Course Code: MPM106

L	T	P	Credits
0	0	2	1

Total Hours: 15

Course Outcomes

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

1. Analyze the principles of bedside assessment of bed ridden patient.
2. Design proficiently the application and demonstration of Manual therapy and Exercise Physiology
3. Evaluate the outcome of the assessment for musculoskeletal tissues
4. Comprehend the effects of poor posture and its evaluation.

Course Content

Bedside Evaluation and Therapeutic Skills.
Electro physiology, Electro diagnosis, Manual therapy, Exercise Physiology.
Assessment of Tone, flexibility, tightness of musculoskeletal tissues.
Postural assessment methods.
Common deviations from the normal posture.

Transaction Mode

Demonstration method, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis. The Principle of Exercise Therapy -Gardiner (2005) - C.B.S. Delhi.*
- *Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a guide to goniometry. FA Davis.*
- *Gardiner, M. D. (1973). Principles of Exercise Therapy: M Dena Gardiner.*

Web Sources

- *https://www.physio-pedia.com/Electrodiagnosis*
- *https://www.ucsfhealth.org/education/electrophysiology-procedure*
- *https://www.physio4all.com/therapies/manual-therapy/*
- *https://www.physio-pedia.com/Sports_Screening:_Postural_Assessment*

Course Title: ASSESSMENT AND EVALUATION IN MUSCULOSKELETAL DISORDERS LAB

L	T	P	Credits
0	0	2	1

Course Code: MPM107
Total Hours: 15
Course Outcomes

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

1. Develop observation and palpation skills.
2. Chart out muscle strength and joint range of motion.
3. Acquire expertise in using functional scales for assessment.
4. Analyze special tests to draw an appropriate diagnosis.

Course Content

Assessment and evaluation based on Maitland and Cyriax Concepts, Physical disability evaluation and ICF classification.
Clinical Gait assessment, Postural assessment, Functional assessment, Geriatric assessment, Assessment of amputee.
Balance, tone, flexibility, sensory and motor assessment, Muscle testing, limb length and reflex testing.
Examination of spine, Examination of upper limb (shoulder, elbow, wrist & hand) and Examination of lower extremity (pelvis, hip, knee, ankle and foot).

Transaction mode

Group discussion, Video based teaching, open learning, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- *Magee, D. J. (2014). Orthopedic physical assessment-E-Book. Elsevier Health Sciences.*
- *Johanson, M. A., Donatelli, R., Wooden, M. J., Andrew, P. D., & Cummings, G. S. (1994). Effects of three different posting methods on controlling abnormal subtalar pronation. Physical Therapy, 74(2), 149-158***.**
- *Maheshwari, J., & Mhaskar, V. A. (2019). Essential orthopaedics:(including clinical methods). Jaypee Brothers Medical Publishers.*
- *Brotzman, S. B., & Manske, R. C. (2011). Clinical orthopaedic rehabilitation e-book: An evidence-based approach-expert consult. Elsevier Health Sciences.*

Web Sources

- *https://www.physio-pedia.com/Maitland%27s_Mobilisations*
- *https://fairfieldphysiotherapy.com.au/postural-assessment-need-one/*
- *https://www.physio-pedia.com/Balance*
- *https://musculoskeletalkey.com/sensory-motor-and-reflex-examination/*

Course Title: GENERAL PSYCHOLOGY
Course Code: MPM110

L	T	P	Credits
3	0	0	3

Total Hours: 45 Hours

Course Outcomes

On the completion of the course the students will be able to

1. Develop Scientist-Practitioner approach and identify the economic, cultural and political factors affecting structure of society.
2. Comprehend the importance of gender inequality and inculcate advanced clinical skills in the field of mental health.
3. Recognize the social norms, values and become proficient in-patient counseling and support.
4. Describe the major approaches to understanding behavioral processes involved in learning and memory

Course Content

UNIT I **11 Hours**

Definition of psychology, basic information in relation to schools, methods and branches of psychology; Schools: Structuralism, functionalism, behaviourism psychoanalysis; Methods: Introspection, observation, inventory and experimental method; Branches: General, child, social, industrial, clinical, counseling, educational; Psychology and physiotherapy; Development and Growth Behaviour; Life span - Infancy, childhood, adolescence, adulthood, middle age, old age; Heredity and environment – its importance and role in physical and psychological development; Emotions: Definition and differentiate from feelings, Three levels of analysis of emotions, (physiological level, subjective state, and overt behavior), Theories of emotion, Stress and management of stress.

UNIT II **12 Hours**

Motivation: Motivation cycle (need, drive, incentive, reward), Classification of motives, Abraham Maslow's theory of need hierarchy; Learning: Factors effecting learning, Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory, The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods; Personality: Definitions: List of components, Physical characteristics, character, abilities,temperament, interest and attitudes, Discuss briefly the role of heredity, nervous system, physical characteristics, abilities,family and culture of personality development, Basic concepts of Freud: unconscious, conscious, Id, ego and superego, List and define the oral, anal and phallic stages of personality department list and define the 8 stages as proposed by Erickson, 4 concepts of learning as proposed by Dollard and Miller; drive, cue, response and reinforcement.

UNIT III **11 Hours**

Intelligence: Theories of intelligence, Distribution of intelligence, Assessment of intelligence; Sensation, Perception and Attention: Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants), Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense, Illusion and hallucination: different types.

UNIT IV **11 Hours**

Frustration: sources of frustration, Conflict: types of conflict, Management of frustration and conflict; Stress: Anxiety, Tension, Physiological symptoms, psycho-somatic problems, copying strategies, professional stress burnout, Behavior modification: Application of various conditioning and learning principles to modify patient behavior, Clinical Psychology: psychological reactions of a patient during admission and treatment. Anxiety, shock denial, suspicion. loneliness, shame, guilt, rejection, fear, withdrawal, depression, egocentric, justify and loss of hope.

Transaction Mode

Open learning, Problem solving, Flipped teaching, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- *Carson, R.C., Butcher, J.N., &Mineka, S. (2001). Abnormal psychology in modern life (11th ed). New York. Allynand Bacon.*
- *Kaplan, H.I., Saddock, B.J. &Gribb, J.A. (1994). Synopsis of Psychiatry. New Delhi. B.I Waruly.*
- *Barlow, D.H. & Durand, V.M. (1999). Abnormal psychology: An integrative approach (2nd ed.). Pacific Grove: Brooks/Cole.*
- *Davison, G.C. &Neals J.M. (1996). Abnormal psychology (Revised ed.). New York: John Wiley.*
- *Baron, Robert A Psychology, Printer Hall of India Pvt Ltd. New Delhi.*

Web Sources

- *https://www.webmd.com/anxiety-panic/guide/anxiety-disorders*
- *https://www.sciencedirect.com/topics/medicine-and-dentistry/child-psychopathology*
- *https://www.merriam-webster.com/dictionary/family*

Course Title: HAND REHABILITATION

L	T	P	Credits
3	0	0	3

Course Code: MPM108
Total Hours: 45
Course Outcomes

On the completion of the course the students will be able to

1. Evaluate the sensory and motor functions of the hand.

2. Develop an in-depth knowledge of Hand to help assess and manage hand impairments.
3. Implement special tests to draw an appropriate diagnosis.
4. Comprehend the uses of Orthosis and Prosthesis.

Course Content

UNIT I **11 Hours**

Functions of Hand as Sensory and Motor Organ: Pathomechanics of hand; Classification of hand injuries and principles of hand rehabilitation (Functional and Vocational Training).

UNIT II **11 Hours**

Tendon Injuries of Hand; Nerve injuries and entrapments; Crush Injuries of Hand; Acute Injuries of the wrist; History, examination, investigation and management of fractures of distal radius and ulna, scaphoid and hook of the hamate and dislocation of the carpal bones; Chronic Injuries of the wrist; History, examination, investigation and management of common injuries; Hand and finger injuries; History, examination, investigation and management of hand injuries: fracture of the meta carpals & Phalanges, dislocation of MCP Joints and finger joints, ligament &tendon injuries and laceration & infections of the hand.

UNIT III **12 Hours**

Burns in hand; Spastic hand; Rheumatoid hand; Hand in Hansen's disease; Reflex sympathetic dystrophy.

UNIT IV **11 Hours**

Prosthetic hand; Orthosis for hand and their uses; Management of Orthosis and Prosthesis.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Hand Rehabilitation by Christine, Churchcill, Livingstone London 1995*
- *Cash's Textbook for Ortho and Rheumatology for physiotherapist by Downie*
- *Orthopaedic Physical therapy by Donatteli, London Churchill Livingstone*

Web Sources

- *https://www.physio-pedia.com/Hand_Function*
- *https://www.physiopedia.com/Biomechanics_of_Hand_and_Wrist_Defomities_in_Rheumatoid_Arthritis*
- *https://www.mayoclinic.org/diseasesconditions/burns/diagnosistreatment/drc-20370545*
- *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7543843/*

Course Title: FOOT REHABILITATION
Course Code: MPM109
Total Hours: 45

L	T	P	Credits
3	0	0	3

Course Outcomes

On the completion of the course the students will be able to

1. Evaluate the Pathomechanics of the foot.
2. Develop an in-depth knowledge of foot to help assess and manage foot impairments.
3. Implement special tests to draw an appropriate diagnosis.
4. Comprehend the uses of Orthosis and Prosthesis.

Course Content

UNIT I **11 Hours**

Pathomechanics of foot; Classification of foot injuries and principles of foot rehabilitation.

UNIT II **11 Hours**

Tendon Injuries; Crush Injuries; Acute Ankle Injuries; Functional Anatomy; Clinical Approach to the patient with Acute Ankle Injuries: History examination & investigation; Causes & Management of Lateral and medial ligament injuries and Persistent pain after ankle sprain; Ankle Pain; Clinical Approach to the patient with Medial, Lateral & medial calcaneal nerve entrapment, Peroneal & Tibialis Anterior tendinopathy, Sinus

tarsi syndrome Anterior, Antero lateral impingement; Foot Pain; Clinical Approach to the patient with Rea foot Midfoot & Forefoot Pain: History examination & Investigation.

UNIT III **12 Hours**

Aetiology and Management of the following Conditions: Hallux Rigidus; Spastic Foot; Diabetic Foot; Bunions; Plantar Fasciitis; CTEV.

UNIT IV **11 Hours**

Prosthetic foot; Orthosis for foot and their uses; Management of Orthosis and Prosthesis

Transaction mode

Flipped teaching, Open learning, Group discussion**,** Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested readings

- *Baxter's The Foot and Ankle in Sport- David Porter, Lew Schon, 2020 David Porter, Lew Schon*
- *Rehabilitation of the Foot- Sammarco, V. James, 1995*
- *Sarrafian's Anatomy of the Foot and Ankle: Descriptive, Topographic, Functional- Armen S. Kelikian*
- *Bone and Joint Disorders of the Foot and Ankle: A Rheumatological Approach- Maurice Bouysset*

Web Sources

- *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC164367/*
- *https://medlineplus.gov/diabeticfoot.html*
- *https://orthoinfo.aaos.org/en/diseases--conditions/sprained-ankle*
- *https://www.physio-pedia.com/Plantar_Fasciitis*

Course Title: APPLIED BIOMECHANICS AND ERGONOMICS
Course Code: MPM111

L	T	P	Credits
3	0	0	3

Total Hours: 45

Course Outcomes

On the completion of the course the students will be able to

1. Explain the principles of reaction forces and friction in various contexts, including static and dynamic equilibrium.
2. Explain the principles of EMG, including muscle contraction recording and processing, and the relationship between EMG and biomechanical variables.
3. Apply knowledge of pathomechanics to assess and develop treatment plans for individuals with different pathologies.
4. Create and implement ergonomic job designs and worksite programs to enhance workplace safety and efficiency.

Course Content

UNIT I **12 Hours**

Fundamental Mechanics: Reaction forces, Friction, Equilibrium: static and dynamic, Simple machines: Levers, pulleys and wheel and axle, Segmental dimensions, Poisson's effect, Static and cyclic load behaviors, Load: Load sharing and load transfer, Motion : types , location , magnitude and Direction, Angular motion and its various parameters, Linear motion and its various parameters, Projectile motion; Muscle Mechanics: Structure and composition of muscle, Fiber length and cross-section areas, Mechanical properties, EMG changes during fatigue, Changes in mechanical properties because of aging, exercise and immobilized of immobilization, Clinical application; Ligament and Tendon mechanics: Structure, composition and mechanical properties, Cross-sectional area measurement, Muscle tendon properties, Temperature sensitivity, Changes in mechanical properties because of ageing, exercise and immobilization, Mechanoreceptors; Bone Mechanics: Structure and composition of bone, Stress, Strain, Modulus of Rigidity & Modulus of elasticity, Mechanical properties of Trabecular system, Mechanical properties of cortical bone, Bone Remodeling, Response of bone to aging & exercise & immobilization, Mechanics to prevent fracture in bone.

UNIT II **11 Hours**

Measurement Instruments; Pressure transducers and Force Plates, Gait Analyzer, Isokinetic device, EMG (Electro physiology of muscle contraction, recording, processing), Relationship between EMG and Biomechanical Variables; Mechanical energy, Work and power, Definitions, Positive and negative muscles work, Muscle mechanical power, Causes of inefficient , movement co-contractions, Isometric contractions,against gravity jerky movement, energy generation at one joint and absorption at another, energy flow, Energy Storage

UNIT III **11 Hours**

Gait: Gait parameter: kinetic, kinematics, time- space, Pathological gait, Running, Stair climbing Changes in gait following various surgeries/diseases/disorders; Pathomechanics, Bone and joint Patho-mechanics Neural Patho-mechanics, Cardio Patho –mechanics Pulmonary Patho - mechanics, Vascular Patho-mechanics

UNIT IV **11 Hours**

Ergonomics: Definitions, Physiological and bio-mechanical risk factors, Job design, Developing and implementing work site programme, Ergonomics in home ,child care and leisure activities, Addressing problems at computer workstation.

Transaction mode

Flipped teaching, Open learning, Group discussion**,** Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested readings

- *Introduction to kinesiology/Hoffman , Shirf*
- *Kinesiology: the Mechanics & Pathomechanics of human*
- *Movement/by Carol A. Oatis. / Oatis , Carol A.*
- *Joint Structure and Function Cynthia Norkins*
- *Joint Structure and Function : a comprehensive Analysis./ Levangie, Pamela K*
- *Fundamentals of Biomechanics, Orkaya, N*

Web Sources

- *https://www.physio-pedia.com/Ergonomics*
- *https://www.physio-pedia.com/Biomechanics*
- *https://www.physio-pedia.com/Ergonomics_for_Daily_Life*

Course Title: APPLIED PHYSIOTHERAPY
Course Code: MPM112

L	T	P	Credits
3	0	0	3

Total Hours: 45

Course Outcomes

On the completion of the course the students will be able to

1. Demonstrate proficiency in manual muscle testing to evaluate muscle strength and identify weaknesses.
2. Develop and implement interventions to correct postural abnormalities and improve overall alignment.
3. Apply PNF techniques to improve muscle function and coordination in patients with neurological impairments.
4. Apply thethermal modalities to improve tissue extensibility, reduce pain, and enhance functional outcomes.

Course Content

UNIT I **12 Hours**

Assessment techniques: Manual Muscle Testing ang Goniometry, Stretching and Mobilization, Re-education and strengthening, Balance and Coordination Exercise, Gait Analysis and Training (Both Normal and Pathological Gaits)

UNIT II **11 Hours**

Relaxation and soft Tissue Manipulations, Posture, PNF and Neuromuscular Coordination, Hydrotherapy, Joint Mobilization

UNIT III **11 Hours**

General Review of Low, Med and high currents and their modifications like Di-dynamic and Russian Currents etc., Laser

UNIT IV **11 Hours**

Cryotherapy, UVR and IRR, SWD, MWD, HydroCollator, Wax therapy Fluido-therapy

Transaction mode

Flipped teaching, Open learning, Group discussion**,** Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested readings

- *The principles of exercise therapy / Gardniner , M Dena .*

- *Therapeutic exercise : foundations and techniques / by Carolyn Kisner and Lynn Allen Colby . / Kisner,*
- *Electrotherapy explained : principles and practice / by John low , Ann Reedand Mary Dyson ./ low , John Clayton's electrotherapy / edited by Sheila Kitchen and Sarah Bazin ./ Kitchen, Sheila*
- *Muscles testing and function / by Florence Peterson Kendall (et,al) / Kendall , Florence Peterson*
- *Therapeutic modalities for physical therapists / by William E.Prentice ,William Quillen and Frank Underwood / Prentice , William E.*

Web Sources

- *https://www.physio-pedia.com/Therapeutic_Exercise*
- *https://www.physio-pedia.com/Introduction_to_Therapeutic_Exercise*
- *https://www.physio-pedia.com/Current_Concepts_in_Electrotherapy*

SEMESTER-II

Course Title: ADVANCED THERAPEUTICS
Course Code: MPM201
Total Hours: 60

L	T	P	Credits
4	0	0	4

Course Outcomes

On the completion of the course the students will be able to

1. Acquire knowledge about the recent developments and innovations in the field of musculoskeletal physiotherapy.
2. Apply physiotherapy treatment using hi-tech equipments
3. Advocate manual therapy treatment to the patients.
4. Design a rehabilitation protocol by inculcating advanced therapeutic techniques.

Course Content

UNIT I **16 Hours**

Group therapies: Combined movement therapy; Group exercises; Manual therapy; Myofascial release; Positional release technique; Muscle energy technique; Relaxation technique; Massage therapy.

UNIT II **15 Hours**

Mobilization; Soft Tissue Release; Butler mobilization; Mulligan Concept; Cyriax Concept; Maitland mobilization; McKenzie technique.

UNIT III **14 Hours**

Kinesiotaping; Vacuum Therapy; EMG; Biofeedback.

UNIT IV **13 Hours**

Ambulation; Transfer techniques; Wheelchair: Design, types, management, modifications, prescription; Hydrotherapy.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Maitland, G. D. (1986). Vertebral manipulation. Elsevier Health Sciences. Muscle Energy Technique, Leon chaitow, Churchill Livingstone.*
- *Chaitow, L. (2007). Positional Release Techniques E-Book. Elsevier health sciences.*
- *Hing, W., Hall, T., Rivett, D. A., Vicenzino, B., & Mulligan, B. (2014). The Mulligan Concept of Manual Therapy-eBook: Textbook of Techniques. Elsevier Health Sciences.*

Web Sources

- *https://musculoskeletalkey.com/introductiontocombinedmovementtheory/*
- *https://us.humankinetics.com/blogs/excerpt/what-is-positionalrelease-therapy*
- *https://www.physio-pedia.com/Muscle_Energy_Technique*
- *https://www.physio-pedia.com/Mulligan_Concept*

Course Title: PHYSIOTHERAPY FOR TRAUMATIC MUSCULOSKELETAL CONDITIONS
Course Code: MPM202
Total Hours: 60

L	T	P	Credits
4	0	0	4

Course Outcomes

On the completion of the course the students will be able to

1. Discover the various musculoskeletal conditions resulting from trauma.
2. Acquire knowledge about the various orthopaedic surgeries.
3. Analyze the complications associated with fractures.
4. Design post injury and post-surgery rehabilitation programme.

Course Content

UNIT I **16 Hours**

Fractures: Principles of management – reduction (open, closed, immobilization etc.); Principles of management (conservative and operative) for Subluxation/ dislocations; Conservative and surgical management of the major long bone fractures and dislocation of Upper Limb; Conservative and surgical management of the major long bone fractures and dislocation of Lower Limb; Management of Spinal fractures and rib cage fractures (collar, cast, brace, traction), management of complication (bladder and bowel, quadriplegia); Physiotherapy assessment in fracture cases (Upper limb, Lower Limb and Spine) Principles of PT management in fracture cases – guidelines for treatment during immobilization and after immobilization period. Physiotherapy management in complications (early and late); Prosthetic Training.

UNIT II **15 Hours**

Pre- and post-operative physiotherapy assessment, goals, precautions and PT management for the following orthopedic surgeries: Rotator Cuff Tendon Repair; SLAP Repair; Acromioclavicular Joint Repair; Biceps Tendon Surgery; Cubital Tunnel Release; Tommy John surgery; Synovectomy; Spinal stabilization surgeries; Hip Resurfacing; Watson-Jones anterior approach; Meniscectomy; Patellectomy; Regional Arthroplasty; Arthrodesis; Regional Arthroscopy; Osteotomy; Meniscus Repair; ACL Reconstruction; Arthrodesis; Ankle Fusion; Lateral Ankle Ligament Reconstruction; Brostrom Procedure.

Pre- and post-operative physiotherapy assessment, goals, precautions and PT management for the following corrective surgeries:Bone grafting; Bone Lengthening; Tendon transfers; Soft Tissue release- tenotomy, myotomy, lengthening; Nerve Repair and grafting.

UNIT III **14 Hours**

Pre- and post-operative physiotherapy assessment, goals, precautions and PT management for the following conditions: Shoulder injuries: impingement, rotator cuff injuries, glenoid labrum injuries, instability of shoulder, AC Joint injuries, referred pain and other less common causes of shoulder pain; Acute elbow injuries; Forearm compartment pressure syndromes; Hip & Groin Pain-Adductor muscle strains (including recurrent), osteitis pubis, adductor tendinopathy, obturator neuropathy and trochanteric bursitis & other less common conditions; Knee injuries-Meniscal injuries, collateral ligament injuries cruciate ligament injuries, articular cartilage damage, acute patellar trauma and chronic instability; Causes & Management of Patellofemoral syndrome, Patellofemoral instability, Patellar tendinopathy, Fat pad impingement, acute &chronic Partial tears, Osgood Schlatter's Disease, Sinding -Larsen-Johansson Syndrome and Quadriceps tendinopathy; Iliotibial band friction syndrome, excessive lateral pressure syndrome, biceps femoris tendinopathy, precancerous tendinopathy, popliteus tendinopathy, Biceps Femoris tendinopathy& Baker's cyst.

UNIT IV **15 Hours**

Pre- and post-operative physiotherapy assessment, goals, precautions and PT management for the following conditions: Peri osteal Contusion & fractured tibia & fibula; Gastrocnemius & soleus muscle strain; Claudication; Achilles tendinopathy, Achilles tendon rupture, Retro calcaneal bursitis, Sever's disease and Posterior impingement syndrome; Burns- classification, degrees, Rule of Nine, PT assessment, aims, pre and postoperative PT management; Amputation- level of amputation of upper limb and lower limb, PT assessment, aims, pre and postoperative PT management, stump care, stump bandaging, pre and post prosthetic management including check out of prosthesis, training, complications and its management.

Transaction mode

Flipped teaching, Open learning, Group discussion**,** Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested readings

- *Maheshwari, J., & Mhaskar, V. A. (2019). Essential orthopaedics:(including clinical methods). Jaypee Brothers Medical Publishers.*

- *Brotzman, S. B., & Manske, R. C. (2011). Clinical orthopaedic rehabilitation e-book: An evidence-based approach-expert consult. Elsevier Health Sciences.*
- *Thompson, A. (2013). Tidy's Physiotherapy. Varghese publishing House.*
- *Sullivan, S. (2013). Physical Rehabilitation Assessment and Treatment. Jaypee brothers, Delhi*

Web Sources

- *https://www.physio-pedia.com/Osteotomy*
- *https://www.healthline.com/health/meniscectomy*
- *https://www.spine-health.com/glossary/arthrodesis*
- *https://www.physio-pedia.com/Amputations*

Course Title: REHABILITATION, ORTHOTICS AND PROSTHETICS
Course Code: MPM203
Total Hours: 30

L	T	P	Credits
2	0	0	2

Course Outcomes

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

1. Evaluate various disabilities based on standardized guidelines and classification.
2. Analyze the different models of rehabilitation and the role of rehabilitation team members
3. Design and implement a rehabilitation programme as per the needs of an individual.
4. Synthesize appropriate orthosis and prosthesis for the patients.

Course Content

UNIT I **08 Hours**

Rehabilitation: Conceptual framework of rehabilitation; Role of Physiotherapist in the rehabilitation team;Role of Rehab Nurse; Model of service delivery.

UNIT II **07 Hours**

Preventive aspects of disability: Epidemiology of disability; Legal Aspect in Disabilities; Govt and NGO participation in disability

UNIT III **08 Hours**

Socio-economic independency; Principles and methods of vocational and social rehabilitation; An outline of the principles and process of disability evaluation

UNIT IV **07 Hours**

Orthotics & Prosthetics: Principles of Orthotics; Principles of prosthesis; Prosthetics and orthotics used for various conditions; Prescription of prosthetics and orthotics

Transaction Mode

Demonstration method, Video based teaching, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- *Sullivan, S. & Schmitz (2013). Physical Rehabilitation – Assessment and Treatment. F. A. Davis.*
- *Lusardi, M. M., Jorge, M., & Nielsen, C. C. (2013). Orthotics and prosthetics in rehabilitation. Elsevier Health Sciences.*

Web Sources

- *https://www.physio-pedia.com/Rehabilitation_Team_Members*
- *https://www.physio-pedia.com/Rehabilitation_Frameworks*
- *https://www.who.int/health-topics/disability*
- *https://www.physio-pedia.com/Category:Prosthetics_and_Orthotics*

Course Title: SKILL ENHANCING STUDIES
Course Code: MPM204
Total Hours: 30

L	T	P	Credits
2	0	0	2

Course Outcomes

On the completion of the course the students will be able to

1. Acquire Administrative and Management Skills.
2. Apply the Concepts and Methods of Teaching and Learning in their practice.
3. Manage the physiotherapy department after the completion of the course.
4. Manoeuvre the A.V. Aids.

Course Content

UNIT I **07 Hours**

Physiotherapy Ethics: Morals and ethics; Ethical Issue in physical therapy; Rules and regulation of council; Physical Therapy & Law; Medico-legal aspect of physical therapy; Liability; Negligence and practice licensure workmen compensation; Proper maintenance of Patient's record.

UNIT II **08 Hours**

Physiotherapy Department Management: Recruitment, Interview, probation, salary, hours of working, leaves facilities, retirement, referred policy; Maintenance of records: equipments, statistics; Planning, design construction, expansion plan; Physiotherapy Education Technology; Aims, philosophy and trends and issues; Educational aims; Agencies of education; Formal and informal education; Major philosophies of education (Naturalism, idealism, professionalism, realism)

UNIT III **07 Hours**

Concepts of Teaching and Learning: Theories of Teaching; Relationship between teaching and learning; Psychology of education; Dynamics of behavior, motivational process of learning perception, individual differences, intelligence personality.
Curriculum: Curriculum committee; Development of a curriculum for physiotherapy; Types of Curriculum; Placing, courses placement, time allotment; Correlation of therapy and practice.
Hospital and community areas for clinical instructions.

UNIT IV **08 Hours**

Principles and methods of teaching: Strategies of teaching; Planning of teaching; Organization, writing lesson plan.
AV. aids.
Teaching methods - socialized methods: Measurement and evaluation; Nature of measurement of Educations, meaning, process, personnel; Standardized, non-standardized; Standardized tools, important tests of intelligence, aptitude, instrument; Personality, achievements and status scale.
Programme evaluation; Cumulative evaluation.
Guidance and counselling: Student Ragging and Issues related.

Philosophy, principles and concepts, guidance and counseling services.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Learning and Teaching-Mangal S.K., 2017*
- *Primary Huh Curriculum Conversations with Subject Leaders in Primary Schools-John Tomsett, 2022*
- *Audio-Visual Aids to Educational Technology-Harmesh Lal, Shailendra Bhushan and Meenu Kumar, 2018*
- *Ethics in Physical Therapy- Nancy Kirsch, 2018*

Web Sources

- *https://www.andrews.edu/chhs/pt/pt/postpro-chhs/student-resources-files/dpt-associated-faculty-resources/pt-policy-manual.pdf*
- *https://www.physio-pedia.com/Ethics*
- *https://www.tes.com/magazine/archive/pedagogy-focus-teaching-theories*
- *https://www.brainkart.com/article/Audiovisual-Aids_35533/*

Course Title: CLINICAL BIOMECHANICS LAB
Course Code: MPM205

L	T	P	Credits
0	0	4	2

Total Hours: 30

Course Outcomes

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

1. Advocate the role of understanding applied mechanics as an essential skill for Physiotherapist.
2. Evaluate and apply the applications of movement dysfunction into therapeutic exercise prescription.
3. Analyze and prevent secondary impairments and/or pathologies across systems.
4. Analyze the root cause of biomechanical impairments and activity limitations.

Course Content

Forces
Equilibrium
Levers
Gravity, balance & equilibrium
Length-Tension Relationship in Muscle Tissue
Types of Muscle Contraction affecting force production
Angle of Pull
Kinetic Chains
End Feel
Types of Arthrokinematic Motion
Convex-Concave Law
Joint Surface Positions (Joint Congruency)

Transaction Mode

Demonstration method, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Sahrmann, S. (2001). Diagnosis and treatment of movement impairment syndromes. Elsevier Health Sciences. 2 nd Edition*
- *Magee, D. J. (2013). Orthopedic physical assessment. Elsevier Health Sciences. 3rd Edition*
- *Carol A. Oatis, Kinesiology: The Mechanics and Pathomechanics of Human Movement, 4th Edition*

Web Sources

- *https://www.physio-pedia.com/Introduction_to_Human_Biomechanics_-_External_Forces*
- *https://www.physio-pedia.com/Kinetic_Chain*
- *https://exrx.net/Kinesiology/AnglePull*
- *https://www.physio-pedia.com/Arthrokinematics*

Course Title: ADVANCED MANIPULATIVE SKILLS LAB

L	T	P	Credits
0	0	4	2

Course Code: MPM207
Total Hours: 30

Course Outcomes

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

1. Acquire the knowledge and skill of various approaches of Manual therapy for joints of the limbs/spine.
2. Apply the manual therapies to rehabilitate the Musculoskeletal problems.
3. Impart knowledge and train the undergraduate in Manual therapy.
4. Synthesize the various techniques for rehabilitation.

Course Content

Overview of manual therapy approaches for all the joints.
Assessment & methods of application of – Maitland, Kaltenborn, Cyriax Concept, Mulligan Concept, McKenzie, Butler's Neural Mobilisation.
Assessment & methods of application of soft tissue approaches – Myofascial techniques, Neural tissue Mobilization, Muscle Energy Techniques.
Assessment & methods of application of High velocity thrust techniques. Positional Release Techniques, Trigger point release, Lymphatic Manipulation**.**
Assessment & methods of application of Kinesiotaping**.**

Transaction mode

Group discussion, Video based teaching, open learning, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- *Manual Therapy Masterclass – Karem S Beeton*
- *Clinical Manual Therapy & Practice – Leon Chaitow*
- *Maitlands Peripheral Manipulation – Elly Hengeveled*
- *Manual of Combined Movement - Edwards*
- *Manual Therapy in Children – Heiner*

Web Sources

- *https://manualmobilization.wordpress.com/kaltenbornconcept/*

- *https://www.physio-pedia.com/McKenzie_Method*
- *https://cyriaxphysio.com/wp/the-cyriax-method/*
- *https://www.physio.co.uk/treatments/physiotherapy/manual-therapy/maitland-concept.php*

Course Title: OUTCOME MEASURES

Course Code: MPM211

L	T	P	Credits
2	0	0	2

Total Hours: 30

Course Outcomes

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

1. Define what outcome measures are and their importance in clinical practice and research.
2. Assess the content and methodology of outcome measures to ensure they are appropriate for specific clinical contexts.
3. Understand the concepts of reliability and validity in the context of outcome measures.
4. Implement the use of musculoskeletal outcome measures in daily clinical practice to track patient progress and outcomes.

Course Content

UNIT I **07 Hours**

Introduction, Description and selecting outcome measures; Quality Outcome Measures: Content, Methodology, Clinical Utility, Reliability and Validity.

UNIT II **07 Hours**

Clinical based Outcome Measures, Identifying and calculating musculoskeletal outcome measures.

UNIT III **08 Hours**

Upper Extremity general assessment, outcome measures and instruments

UNIT IV **08 Hours**

Lower Extremity general assessment, outcome measures and instruments

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Measuring Health: A Review of Quality of Life Measurement Scale by Ann Bowling*
- *Measurement in Medicine: A Practical Guide by Henrica C. W. de Vet, Caroline B. Terwee, Lidwine B. Mokkink, and Dirk L. Knol*
- *Musculoskeletal Assessment: Joint Range of Motion and Manual Muscle Strength by Hazel M. Clarkson*
- *Orthopedic Clinical Examination by David J. Magee*
- *Health Measurement Scales: A Practical Guide to Their Development and Use by David L. Streiner and Geoffrey R. Norman*

Web Sources

- *https://www.physio-pedia.com/Outcome_Measures*
- *https://www.physiopedia.com/Using_EvidenceBased_Practice_to_Decide_on_an_Outcome_Measure*

Course Title: ADVANCED FUNCTIONAL AND PHYSICAL DIAGNOIS
Course Code: MPM208
Total Hours: 45

L	T	P	Credits
3	0	0	3

Course Outcomes

On the completion of the course the students will be able to

1. Focus on the basic assessment skills for physical and Functional diagnosis in Musculoskeletal System in order to study the various impairments and their impact on activity and participation of the individual.

2. Acquire knowledge about the use of appropriate tools or instruments of assessment for diagnosis in various diseases and disorders including musculoskeletal conditions.
3. Comprehend the use of diagnosis for physiotherapy practice.
4. Acquire skill inappliedaspectofthesubjectforphysiotherapypractice.

Course Content

UNIT I **11 Hours**

Physical Diagnosis and its importance in clinical practice; FunctionalDiagnosisanditsimportanceinclinicalpractice; Subjective examination: Name,age,sex,height,weight,BMI, address, occupation, chief complaint,present history,past history,personal history,history of hospitalization, medical and surgical history; Assessment of Pain: Types of pain:Somatic,referred, Neurogenic,Visceral,etc. Location, duration, progressive or non-progressive, localize or generalize,distribution,quality,Severity,nature of pain; Measurement and Documentation: Visual Analogue Scale (VAS), Numerical Rating Scale (N.R.S.) McGill's modified questionnaire (including Body charts).

UNIT II **11 Hours**

Objective examination: Vitals parameter -Pulse Rate,Respiratory Rate,Blood Pressure, Temperature; Palpation; Tenderness, swelling/oedema, spasm, Surface Contour; Auscultation; Breath sounds,Heart sounds; Measurement: Joint PJROM,AJROM – Goniometry; Joint End feel, capsular pattern and non-capsular pattern,jointplay movements.

UNIT III **12 Hours**

Sensory examination: Superficial, deep and cortical sensation examination; Dermatome Examination; Motor Examination Muscles Tone: Normal, hypotonic and hypertonic; Muscle Girth,wasting–Atrophy and Hypertrophy; Myotome Examination; Reflex: Deep and superficial reflex; Muscle Power: Muscle grading/ manual muscle testing(MMT) of Head, Neck, Face, Upper Limb, Trunk and Lower Limb muscles.Introduction,Principles, Uses,Precaution and Contraindication, Types of muscle grading.

UNIT IV **11 Hours**

Gait Measurement: Normal and abnormal gait,Gait parameters assessment procedures Gait Evaluation and demonstrate Pathologic gait examination; Description of some of the most commonly used types of observational gait analysis; Advantages and disadvantages; Balance tests; Romberg test; Hallpike test; Functional reach test etc.; Coordination tests (Equilibrium and non-equilibrium tests); Coordination Tests in Standing, Walking, Sitting or Supine, Finger to nose,Finger to therapist finger, Finger to finger, Alternate nose to finger, Finger opposition, Pronation/Supination, Alternate heel to knee, Drawing an imaginary circle on air with UE and LE,etc.; Functional Diagnosis; Functional Activity Specific Assessment – FIM, ADLs scales Assessment of health and wellness; 36–SF health questionnaire; Questioners for quality of life and quality of care.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *OrthopedicPhysicalAssessment,MageeDJ.5th edition.Saunders*
- *Muscles:TestingandFunction,withPostureandPain:5th edition.KendallFP;McCreary EKetal.LippincottWilliamsandWilkins*
- *PracticalExerciseTherapy:3rd edition.HollisM;CookPF. Wiley-Blackwell*
- *TrainingintheCommunityforthepeoplewithdisabilities.Goerdtetal.WorldHealthOrganization*
- *HandRehabilitation-ApracticalGuide.2nd edition.ClarkGL.ChurchillLivingstone*
- *PhysiotherapyforRespiratoryandCardiacProblems.AdultsandPaediatrics.3rd ed.PryorJA, WebberBA. London:Churchill Livingstone,2002.*

Web Sources

- *https://musculoskeletalkey.com/neurophysiology-of-the-joints-and-muscles/*
- *https://www.physio-pedia.com/Trigger_Points*
- *https://www.physio-pedia.com/Manual_Lymphatic_Drainage*

- *https://www.spinehealth.com/treatment/chiropractic/spinalmanipulation-high-velocity-low-amplitude-hvla*

Course Title: ADVANCED MANIPULATIVE SKILLS
Course Code: MPM209
Total Hours: 45

L	T	P	Credits
3	0	0	3

Course Outcomes

On the completion of the course the students will be able to

1. Acquire the knowledge and skill of various approaches of Manual therapy for joints of the limbs/spine.
2. Integrate the manual therapies to rehabilitate the Musculoskeletal problems.
3. Impart knowledge and train the undergraduate in Manual therapy.
4. Disclose the various techniques for rehabilitation.

Course Content

UNIT I **11 Hours**

Physiological movements; Articular Neuro Physiology and principles of applications.

UNIT II **11 Hours**

Terminology, Principles, indications, contraindications, assessment & methods of application of –Maitland, Kaltenborn, Cyriax, Mulligan, McKenzie, Butler's Neural Mobilisation.

UNIT III **12 Hours**

Terminology, Principles, indications, contraindications, assessment & methods of application of soft tissue approaches – Myofascial techniques, Neural tissue Mobilization, Muscle Energy Techniques.

UNIT IV **11 Hours**

High velocity thrust techniques, Positional Release Techniques, Trigger point release, Lymphatic Manipulation; Kinesiotaping.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Manual Therapy Masterclass – Karem S Beeton*
- *Clinical Manual Therapy & Practice – Leon Chaitow*
- *Maitlands Peripheral Manipulation – Elly Hengeveled*
- *Manual of Combined Movement - Edwards*
- *Manual Therapy in Children – Heiner*

Web Sources

- *https://musculoskeletalkey.com/neurophysiology-of-the-joints-and-muscles/*
- *https://www.physio-pedia.com/Trigger_Points*
- *https://www.physio-pedia.com/Manual_Lymphatic_Drainage*
- *https://www.spinehealth.com/treatment/chiropractic/spinalmanipulation-high-velocity-low-amplitude-hvla*

SEMESTER III

Course Title: RESEARCH METHODOLOGY
Course Code: MPM301

L	T	P	Credits
4	0	0	4

Total Hours: 60

Course Outcomes

On the completion of the course the students will be able to

1. Demonstrate the ability to choose methods appropriate to research aims and objectives.
2. Develop the skills in qualitative and quantitative data analysis and presentation.
3. Develop advanced critical thinking skills.
4. Develop the foundation for research in physiotherapy.

Course Content

UNIT I **16 Hours**

Research: Its concept; Nature, scope, need and Objectives of Research; Research types; Research methodology; Research process – Flow chart, description of various steps; Selection of research problem.

UNIT II **15 Hours**

Research Design: Meaning; Objectives and Strategies of research; Different research designs; Important experimental designs; Methods of Data Collection and Presentation; Types of data collection and classification; Observation method, Interview Method; Collection of data through Questionnaires, Schedules; Data analysis and interpretation, editing, coding, content analysis and tabulation.

UNIT III **14 Hours**

Sampling Methods: Different methods of Sampling; Probability Sampling methods; Random Sampling; Systematic Sampling; Stratified Sampling; Cluster Sampling and Multistage Sampling; Non probability Sampling methods; Sample size.

UNIT IV **13 Hours**

Report writing and Presentation: Types of reports; Report Format – Cover page; Introductory page; Text; Bibliography; Appendices; Typing instructions; Oral Presentation.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Panneerselvam, R, 'Research Methodology', PHI, New Delhi.*
- *Cooper, D.R., Schindler, P.S., 'Business Research Methods,' Tata McGraw Hill*
- *Gupta S P,' Statistical Methods', Sultan Chand & Sons, Delhi*
- *Ronald E Walpole, 'Probability and Statistics for Engineers and Scientists' (International Edition), Pearson Education.*
- *Geode, Millian J. & Paul K. Hatl, "Methods in Research", McGraw Hills, NewDelhi*
- *Kothari C.R., "Research Methodology", New AgePublisher*

- *Nargundkar R, Marketing Research, Tata McGraw Hill, New Delhi,2002.*
- *Sekran, Uma, "Business Research Method", Miley Education,Singapore*

Web Sources

- *https://www.academia.edu/*
- *https://www.studeersnel.nl*
- *https://www.scribd.com*

Course Title: ETHICS AND IPR
Course Code: MPM303

L	T	P	Credits
4	0	0	4

Total Hours: 60

Course Outcomes

On the completion of the course the students will be able to

1. Analyze research related information and research ethics.
2. Comprehend and differentiate different types of intellectual properties.
3. Application of ethical principles and commit to professional ethics and responsibilities and norms of physiotherapy research and practice.
4. Acquire knowledge about trademark.

Course Content

UNIT I **15 Hours**

Ethics: definition, moral philosophy, nature of moral judgement and reactions, scope,Ethics with respect to science and research, Intellectual honesty and research integrity

UNIT II **15 Hours**

Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP) Redundant publications: duplicate and overlapping publications, salami slicing, Selective reporting and misrepresentation of data, Publication ethics: definition, introduction and importance

UNIT II **15 Hours**

Introduction to Intellectual Property rights: Concept & theories, Kinds of intellectual Property Rights, Advantages & Disadvantages of IPR, Development of IPR in India, Role & Liabilities of IPRs in India.

UNIT IV **15 Hours**

Rights of trademark-kind of signs used as trademark-types, purpose & functions of a trademark, trademark protection, trademark registration, selecting and evaluating trade mark, trade mark registration process.

Transaction mode

Flipped teaching, Open learning, Group discussion**,** Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Course Title: PROFICENCY IN TEACHING

Course Code: MPM397

L	T	P	Credits
2	0	0	2

Total Hours: 30

Learning Outcomes

After completion of this course, the learner will be able to:

1. Design the learner-centered instructional plans and learning outcomes.
2. Apply innovative teaching strategies and technologies to engage learners.
3. Analyze the different assessment methods to evaluate student learning.
4. Reflect on teaching experiences and continuously improve teaching practices.
5. Develop effective communication and classroom management skills.

Course content

UNIT I **10 Hours**

Overview of the course and its objectives – Specify 1-2 theories or give overview of theories of learning for teaching - Understanding the role of the teacher and student in the learning process - Writing clear and measurable learning outcomes -

Meaning Nature, definition, scope, and importance Pedagogy, Andragogy, and Heutagogy – Skills-based approach to teaching (Teaching skills), Micro-teaching, Macro teaching. Methods and approaches of teaching - CAM, Structure-function approach, Synthetic and Analytic approach, Jurisprudential inquiry model

UNIT II **6 Hours**

Understanding the diverse needs and backgrounds of learners - Creating an inclusive and supportive learning environment - Facilitating active learning and student engagement strategies

Lectures, discussions, and demonstrations - Group work, collaborative learning, and cooperative learning - Problem-based learning, case studies, and simulations

UNIT III **7 Hours**

Integrating technology tools into instruction – Online, blended learning, flipped learning, and M-learning approaches - Using educational software and platforms effectively

Formative and summative assessment methods – Difference between Assessment, Evaluation and Measurement, E-assessment tools,

UNIT IV **7 Hours**

The importance of reflective practice in teaching - Self-assessment and evaluation of teaching effectiveness –Need for Professional development - Teaching in multicultural and international classrooms - Culturally responsive teaching practices

Meaning, Definition of teaching model - Assumptions, Importance, Role, and type of teaching models. Historical teaching model, Philosophical model of teaching

Transaction Mode

Discussions, Case Studies, Microteaching, Classroom Observations, Peer Teaching: Video Analysis, Role-Playing, Lecture-cum-demonstration, Classroom Simulations, Reflective Journals/Blogs, Teaching Portfolios and Technology Integration, Flipped Teaching

Suggested Readings

- *Ali, L. (2012). Teacher education. New Delhi: APH Publishing Corporation.*
- *Anandan, K. (2010). Instructional technology in teacher education. New Delhi: APH Publishing Corporation.*
- *Bruce R Joyce and Marsha Weil, Models of Teaching, Prentice Hall of India Pvt Ltd, 1985.*
- *Chalan, K. S. (2007). Introduction to educational planning and management. New Delhi: Anmol Publications Pvt. Ltd.*
- *Chand, T. (2008). Principles of teaching. New Delhi: Anmol Publications Pvt. Ltd.*
- *Chiniwar, P. S. (2014). The technology of teaching. New Delhi: Anmol Publications Pvt. Ltd.*
- *Curzon, L. B., & Tummons, J. (2004). Teaching in future education. U.S.A: Bloomsbury Academic Publications.*
- *Das, R.C. (1993): Educational Technology – A Basic Text, Sterling Publishers Pvt. Ltd.*
- *Evaut, M. The International Encyclopedia of Educational Technology.*
- *Gage N L, Handbook of Research on Teaching, Rand Mc Nally and Co., Chicago, 1968.*
- *Graeme, K. (1969): Blackboard to Computers: A Guide to Educational Aids, London, Ward Lock.*

- *Haas, K.B. and Packer, H.Q. (1990): Preparation and Use of Audio Visual Aids, 3rd Edition, Prentice Hall, Inc.*
- *Haseen Taj (2006):modern Educational Technology, Agra: H.P Bhargava Book House.*
- *Jarvis, M. (2015). Brilliant ideas for ICT in the classroom. New York: Routledge Publications.*

Course Title: Research Proposal

Course Code: MPM398

L	T	P	Credits
0	0	8	4

Learning Outcomes

After completion of the course, the learner willbe able to

1. Get deep insights to collect, review and analyze the related literature.
2. To apply the knowledge to formulate hypothesis & design research process.
3. Find the research titles which are significant, applicable and researchable.
4. Interpret the findings to design statistical strategies & write references, bibliography and webliography.

Course Content

A research proposal contains all the key elements involved in the research process and proposes a detailed information to conduct the research.
The students are supposed to prepare the research proposal of any research area of their choice following these steps:

1. Selection of topic
2. Significance of the research area
3. Formulation of hypothesis/Research questions
4. Review of related literature
5. Method & Procedure (Includes sampling & design)
6. Data collection and proposed statistical analysis
7. Delimitations
8. Reference/Bibliography

Evaluation

The students will have to complete the writing process of each topic given above within one week, which will be evaluated at the end of every week. It will consist of 8 marks each. The final proposal shall be of 15 marks, Viva 16 marks and attendance 5 marks.

Transaction Mode

Collaborative learning, Group Discussion, E team Teaching, Activities, Assessments, Collaborative teaching, Peer Teaching, Video Based Teaching, Quiz, Open talk, E team Teaching, Case analysis, Flipped Teaching.

Course Title: COMPUTER LAB
Course Code: MPM305

L	T	P	Credits
0	0	2	1

Total Hours: 15

Course Outcomes

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

1. Design charts and graphs in Microsoft Excel.
2. Acquire knowledge about scientific editing tools.
3. Analyse various features of Microsoft Word, Excel and Power Point Presentation.
4. Acquire skills in mail merge tools.

Course Content

Generating Charts/Graphs in Microsoft Excel
Power Point Presentation, Creating a new document with templates & Wizard
Word basics
Thesis Writing Formats
Scientific editing tools
Style Formats (MLA & APA)
Using Words Drawing Features, Inserting Tables – (Adding, deleting, modifying rows and columns - merging & splitting cells), Using formulas in tables, Converting text to table and vice-versa.
Mail Merge tool
Managing Workbooks, Working with Worksheets

Transaction Mode

Demonstration method, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Leon & Leon, "Introduction to Computers", Vikas Publishing House, NewDelhi*
- *Saxena S., "MS Office Xp for Everyone", Vikas Publishing House, New Delhi,2007*
- *June Jamrich Parsons, "Computer Concepts", Thomson Learning, 7th Edition,Bombay*
- *White, "Data Communications & Computer Network", Thomson Learning, Bombay*
- *Comer, "Computer networks and Internet", Pearson Education,4e*

Web Sources

- *https://www.researchgate.net*
- *https://www.youtube.com/playlist?list=PLWPirh4EWFpF_2T13UeEgZWZHc8nHBuXp*

Course Title: VERTEBRAL REHABILITATION
Course Code: MPM308

L	T	P	Credits
2	0	0	2

Total Hours: 30 Hours

Course Outcomes

On the completion of the course the students will be able to

1. Explain the biomechanical principles that govern vertebral movement and stability.
2. Formulate appropriate management strategies for congenital vertebral disorders.
3. Perform detailed examinations to determine the level and extent of spinal cord damage.
4. Utilize appropriate diagnostic and therapeutic interventions to manage the spinal conditions effectively.

Course Content

UNIT I **16 Hours**

General Assessment Of Vertebral Disorders : Review of anatomy and biomechanics of vertebral column: Orthopaedic Assessment of Cervical, thorax, Lumbar & Sacrum.

UNIT II **15 Hours**

Congenital Disorders And Deformities Of Vertebral Column: Spinal Dysraphism, congenital Torticollis, Congenital lordosis, Congenital Scoliosis, KlippelFeil syndrome, Cervical rib, Congenital Stenosis, Syringohydromyelia, Spinal cord Herniation and Chiari Malformations, Neurofibromatosis ,Achondroplasia ,tethered cord syndrome

UNIT III **14 Hours**

Inflammatory Disorders Of Vertebral Column: Seronegative Spondyloarthropathies (Ankylosing Spondylitis) Psoriatic arthritis, Reiter's syndrome,spondylitis, Acute Transverse MyelitisDegenerative Disorders Of Vertebral Column; Degenerative disc disease, spondylosis, spondylolisthesis,osteoarthritis. Spondylolysis, segmental instability, spinal stenosis

UNIT IV **13 Hours**

Regional: Low back Pain & stiffness disorders, Regional pathological conditions Cervical, Lumbar, Thoracic, Sacral; Spinal Cord Injuries: Types, Classifications, Pathology, Level, Examination, Management & rehabilitation,Bioengineering appliances & support devices, Pre &post-operative rehabilitation

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *White III AA, Panjabi MM. Clinical biomechanics of the spine.*
- *Liebenson C, editor. Rehabilitation of the spine: a practitioner's manual. Lippincott Williams & Wilkins; 2007.*
- *O'Sullivan SB, Schmitz TJ, Fulk G. Physical rehabilitation. FA Davis; 2019 Jan 25.*
- *Hengeveld E, Banks K, editors. Maitland's Vertebral Manipulation E-Book: Management of Neuromusculoskeletal Disorders-Volume 1. Elsevier Health Sciences; 2013 Aug 22.*

- *Kumarlal Fernando C. The Physiology of the Joints Vol 3, The Trunk and the Vertebral Column.*
- *Kapandji IA. The Trunk and the Vertebral Column. The Physiology of the Joint. 1980;3:42- 119.*

Web Sources

- *https://www.physio-pedia.com/Lumbar_Fusion_Rehabilitation*
- *https://www.physiopedia.com/Physiotherapy_Management_of_Individuals_with_Spinal_Cord_Injury*

Course Title: MEDICAL AND SURGICAL MANAGEMENT OF MUSCULOSKELETAL CONDITIONS

Course Code: MPM309

L	T	P	Credits
3	0	0	3

Total Hours: 45 Hours

Course Outcomes

On the completion of the course the students will be able to

1. Comprehend the pathophysiology, clinical presentation, and diagnostic criteria for bone and joint infections.
2. Formulate management strategies for degenerative joint diseases, includingrehabilitative measures.
3. Understand the clinical presentation and diagnostic criteria for thecommon disorders affecting the upper limb, lower limb, and spine
4. Formulate comprehensive care plans for geriatric patients, emphasizing prevention, treatment, and rehabilitation of age-related disorders.

Course Content

UNIT I **16 Hours**

General Orthopedics: Infection Disorders of the Bones and Joints, Metabolic Disorders of the bones and joints, Congenital Disorders of the bones and joints, Inflammation of the bones and joints, Degeneration of the bones and joints, Developmental of the bones and joints, Connective tissue Disorders, Neuromuscular disorders, Tumors of bones, Complex Regional Pain Syndrome, Myopathies, Burns

UNIT II **15 Hours**

Regional Orthopedics: Disorders of Upper Limb, Disorder of the Lower Limb, Disorder of Spine; Traumatology (Fractures, Subluxation, Dislocations and Soft tissue injury): Trauma of the upper limb, Trauma of the lower limb, Trauma of the spine, Peripheral Nerve Injuries

UNIT III **14 Hours**

Orthopedic Surgeries: Osteotomy, Arthrodesis, Arthroplasty, Tendon transfers, repairs and grafting , Nerve Suturing, Soft tissue release, Spinal Stabilization, Spinal Fusion, Discectomy, Laminectomy, Reattachment of Limbs, Meniscectomy

UNIT IV **13 Hours**

Amputation: Types, Level and Procedure, Preoperative, operative and Prosthetic management, Prevention and Treatment of complication; Geriatric Care: Examine and assessment of geriatric Patient, Disorders specific to ageing

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- *Pediatric Orthopedics: more knowledge in Orthopaedics / Dormans, John P*
- *Clinical Orthopedics Examination / Mcrae, Ronald*
- *Apleys system of Orthopedics and Fractures/ Solomn, Louis*
- *Fractures of the upper extremity. / Ziran, Bruce H. ed.*
- *Musculoskeletal disorders in the workplace: Principles and Practice. / Nordin, Margareta.*
- *Orthopedic physical Examination. / Reider, Bruce*
- *Orthopedic Physical Assessment, David Magee*
- *Essentials of orthopedics for physiotherapist: Ebnezar, J*
- *Orthopaedics Principles of basic and Clinical Science; Bronner, F & Warrell, RV*

Web Sources

- *https://www.physio-pedia.com/Lumbar_Fusion_Rehabilitation*
- *https://www.physiopedia.com/Physiotherapy_Management_of_Individuals_with_Spinal_Cord_Injury*

Course Title: ANTHROPOMETRY
Course Code: MPM310

L	T	P	Credits
3	0	0	3

Total Hours: 45 Hours

Course Outcomes

On the completion of the course the students will be able to

1. Explain the role of anthropometric measurements in assessing physical health and fitness.
2. Interpret the significance of the gross size and mass of different body parts measurements in a clinical setting.
3. Recognize and locate key anatomical landmarks used in anthropometric measurements.
4. Understand and implement the Heath-Carter method for somatotyping.

Course Content

Unit I: **13 hour**

Role of anthropometric knowledge in Physiotherapy, Age determination:-Skeletal age, Dental age.

Unit II: **14 hours**

Body measurements: Gross size and mass, Lengths or heights of body parts, Circumstances of body parts, Skinfold thickness

Unit III: **16 hours**

Anthropometric study group measurements: Planes of the body, Axes of the body, Landmarks on the body; Body composition: Different Body composition, various methods to estimate body composition; Anthropometric determination of the body composition (skinfold thickness), Application of surface anthropometry (the body profile).

Unit IV: **15 hours**

Somatotyping: Sheldon's method of somatotyping, Critical evaluation of Sheldon's method of somatotyping , Heath– Carter method of somatotyping, The rating scales, Anthropometric measurements, First, Second and Third Components , Somatotype distribution.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- *Anthropometric Standardization Reference Manual" by Timothy G. Lohman, Alex F. Roche, and Reynaldo Martorell*
- *Human Measurement Techniques in Anthropology" by Maria M. Clausen and Chara Santourian*
- *The Measure of Man and Woman: Human Factors in Design" by Alvin R. Tilley and Henry Dreyfuss Associates*
- *Ergonomics and Human Factors: Applications in Occupational Safety and Health" by Waldemar Karwowski and William S. Marras*

Web Sources

- *https://www.physio-pedia.com/Girth_Measurement*
- *https://www.ncbi.nlm.nih.gov/books/NBK537315/*
- *https://www.physio-pedia.com/Body_Composition*

Course Title:**DRUG ABUSE**
Course Code: OEC073

L	T	P	Credits
2	0	0	2

Total Hours: 30 Hours

Course Outcomes
On the completion of the course the students will be able to

1. Comprehend the Meaning, Nature, and Extent of Drug Abuse
2. Evaluate the impact on the individual, including physical and mental health.
3. Understand the role of healthcare professionals in medical management.
4. Study the importance of strict enforcement of laws and time-bound trials.

Course Content

UNITI **7 hours**

Meaning of Drug Abuse:Meaning, Nature and Extent of Drug Abuse in India and Punjab, Consequences of Drug Abuse for:Individual, Education, Employment, Income, Family, Prescription Drug Abuse, Intravenous Drug Abuse.

UNITII **8 Hours**

Management of Drug Abuse:Medical Management: Medication for treatment and to reduce withdrawal effects, Psychiatric Management: Counselling, Behavioural and Cognitive therapy, Social Management: Family, Group therapy and Environmental Intervention,Rehabitlitation.

UNITIII **7 Hours**

Prevention of Drug abuse:Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny, School: Counselling, Teacher as role-model, Parent-teacher-Health Professional, Coordination, Random testing on students.

UNITIV **8 Hours**

Controlling Drug Abuse:Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs,Publicity and media, Campaigns against drug abuse, Educational and awareness program, Legislation: NDPs act, Statutory warnings, Policing of Borders, Checking, Supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- *Ahuja, Ram (2003), Social Problems in India, Rawat Publication, Jaipur.*
- *Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment,Government of India, 2004.*
- *Inciardi, J.A. 1981. The Drug Crime Connection. Beverly Hills: Sage Publications.*

- *Kapoor. T. (1985) Drug epidemic among Indian Youth, New Delhi: Mittal Pub.*
- *Kessel, Neil and Henry Walton. 1982, Alcohalism. Harmond Worth: Penguin Books.*
- *Modi, Ishwar and Modi, Shalini (1997) Drugs: Addiction and Prevention, Jaipur: RawatPublication.*
- *National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical*
- *Epidemiological Unit, All India Institute of Medical Sciences, 2004.*

Web Sources

- *https://www.physio-pedia.com/Prescription_Drug_Abuse*
- *https://www.physio-pedia.com/Intraveneous_Drug_Abuse*

Course Title: EXERCISE PRESCIPTION
Course Code: MPM402

L	T	P	Credits
1	0	0	1

Total Hours: 15 Hours

Course Outcomes

This course is designed to enable students to do the following:

1. Implement the principles of specificity and progressive overload into exercise program design.
2. Apply the theories of behavior change and motivational strategies to exercise adherence.
3. Apply results of fitness assessments to create fitness programs.
4. Develop single session and long-term fitness training plans for apparently healthy, asymptomatic clients.

Course Content

Unit I **4Hours**

Principles of overload, specificity, and progression and how they relate to exercise programming, Various types of interval, continuous, and circuit training programs, benefits and precautions associated with exercise training in apparently healthy and controlled disease.

Unit II **4 Hours**

Knowledge of the relationship between the number of repetitions, intensity, number of sets, and rest with regard to strength training , intensity, duration , frequency, and type of physical activity necessary for development of cardio-respiratory fitness, describe exercises designed to enhance muscular strength and/or endurance of specific major muscle groups.

Unit III **3 Hours**

Importance of recording exercise sessions and performing periodic evaluations to assess changes in fitness status, advantages and disadvantages of implementation of interval, continuous, and circuit training programs.

Unit IV **4 hours**

Ability to evaluate flexibility and prescribe appropriate flexibility exercises for all major muscle groups, modify exercise programs based on age, physical condition, and current health status.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- *White III AA, Panjabi MM. Clinical biomechanics of the spine.*
- *Liebenson C, editor. Rehabilitation of the spine: a practitioner's manual. Lippincott Williams & Wilkins; 2007.*
- *O'Sullivan SB, Schmitz TJ, Fulk G. Physical rehabilitation. FA Davis; 2019 Jan 25.*
- *Hengeveld E, Banks K, editors. Maitland's Vertebral Manipulation E-Book: Management of Neuromusculoskeletal Disorders-Volume 1. Elsevier Health Sciences; 2013 Aug 22.*
- *Kumarlal Fernando C. The Physiology of the Joints Vol 3, The Trunk and the Vertebral Column.*
- *Kapandji IA. The Trunk and the Vertebral Column. The Physiology of the Joint. 1980;3:42- 119.*

Web Sources

- *https://www.physio-pedia.com/Physical_Activity_and_Exercise_Prescription*
- *https://www.physio-pedia.com/Therapeutic_Exercise_Prescription*
- *https://www.physio-pedia.com/FITT_Principle*