**BHAGWANT UNIVERSITY AJMER**

**MPT SPORT SYLLUBUS**

| S.No | SUBJECT CODE | SUBJECTS | Teaching Hours | | | Credits | Evaluation Scheme | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **MPT(SPORTS) - I Sem** | **L** | **T** | **P** | | **Internal** | **External** | **Total** |
| 1 | 01MPS101 | Review of Basic Services-1(Anatomy& Physiology) | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 2 | 01MPS102 | Review of Basic Services-1(Pathology& Pharmacology) | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 3 | 01MPS103 | Applied Physiotherapy | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 4 | 01MPS201 | Clinical Practice-1 | 0 | 0 | 6 | 3 | 40 | 60 | 100 |
| 5 | 01MPS301 | Discipline & Co-Curricular Activities | 0 | 0 | 4 | 1 | 40 | 60 | 100 |
| | | | | | | | | | |
| | | **MPT(SPORTS)-II SEM** | | | | | | | |
| | | | | | | | | | |
| 1 | 02MPS101 | Applied Bio-Mechanics & Ergonomics | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 2 | 02MPS102 | Bio-Stastisitics & Research Methodology | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 3 | 02MPS201 | Cinical Practice-2 | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 4 | 02MPS202 | Seminars On Clinic Issues | 0 | 0 | 6 | 3 | 40 | 60 | 100 |
| 5 | 02MPS301 | Discipline & Co-Curricular Activities | 0 | 0 | 4 | 1 | 40 | 60 | 100 |

| S.No | SUBJECT CODE | SUBJECTS | Teaching Periods | | | Credits | Evaluation Scheme | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **MPT(SPORTS)-III Sem** | **L** | **T** | **P** | | **Internal** | **External** | **Total** |
| | | | | | | | | | |
| 1 | 03MPS101 | Assessment Of Diagonosis | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 2 | 03MPS102 | Medical & Surgical Management | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 3 | 03MPS103 | Physiotherapy Management | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 4 | 03MPS201 | Clinical Practice-3 | 0 | 0 | 6 | 3 | 40 | 60 | 100 |
| 5 | 03MPS301 | Discipline & Co-Curricular Activities | 0 | 0 | 4 | 1 | 40 | 60 | 100 |
| | | | | | | | | | |
| | | **MPT(SPORTS)-IV Sem** | | | | | | | |
| 1 | 04MPS101 | Professional Development & Ethics | 6 | 0 | 0 | 6 | 40 | 60 | 100 |
| 2 | 04MPS201 | Practical | 6 | 0 | 0 | 6 | 40 | 60 | 100 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 04MPS202 | Seminar & Case Presentation | 0 | 0 | 6 | 3 | 40 | 60 | 100 |
| 4 | 04MPS203 | Dissertation Project Work | 0 | 0 | 4 | 1 | 40 | 60 | 100 |
| 5 | 04MPS301 | Discipline & Co-Curricular Activities | 0 | 0 | 4 | 1 | 40 | 60 | 100 |

## SUBJECT: Review OF Basic Services-1 ( Anatomy & Physiology)
## Code:01MPS101

**Course objectives:**

- Understanding of gross anatomy of various body parts.
- Application of knowledge of anatomy to learn evaluation and application of physical therapy.
- Major emphasis of learning is towards Musculo-skeletal, cardio-respiratory and nervous system.

**Learning Outcomes:**

- Develop a vocabulary of appropriate terminology to effectively communicate information related to anatomy
- Recognize the anatomical structures
- Use anatomical knowledge to predict physiological consequences, and use knowledge of function to predict the features of anatomical structures.

### 1. Human Anatomy:

- Bone/joints (Osteo and Arthrology)
- Muscles (Myology)
- Nerves and Nervous system
- Integumentary System

### 2. Upper limb and lower limb:

- Bone and joints
- Muscles
- Nervous and nervous system,
- Vascular system
- Various regions:

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

### 3. Introduction to Trunk Region:

Bone and joints (Vertebrae, Ribs and Sternum)

- Muscles
- Nerve and plexuses
- Vascular structures
- Variousregions
  Thoracic
  Lumbar
  Sacra-coccygeal.

### 4. Head & Neck:

- Bone &joints
- Muscles
- Nerve and plexuses.
- Vascular structures
- Various regions-
  Head- Camial cavity, orbit, nasal, cavity, oral cavity. Neck- Triangles

- **5. Cardio-Respiratory System:**

- Pleura and lungs
- Pericardium and heart
- Vessels and Large Vessels

### 6. Nervous-Anatomy:

- Nervous System
  Central Nervous System (Brain and Spinal Cord)
  Somatic Nervous System (Cranial and Spinal Nervous)
  Autonomic Nervous System
- Meninges and Ventricular System of C.N.S.
- Blood Supply to C.N.S.

### 7. Human Physiology:

- A Review of clinical and applied physiology

### 1. Cardiovascular System:

- Structure and Properties of Heart
- Cardiac Cycle
- Regulation of Heart's performance/circulation during Exercise
- Cardio Output
- Arterial Blood Pressure
- Physiology of Vascular System
- Lymphatic Circulation
- Protection from Coronary Heart Disease
- Sudden Cardiac Death in Sports

**2. Respiratory System:**

- Ventilation and Control of Ventilation
- Alveolar air
- Regulation of Breathing / Respiration during Exercise
- Pulmonary function test
- Air Conditioning
- Second wind
- Oxygen Debt

**3. Muscle Physiology:**

- Electrical properties of Neuron
- Classification of Nerve Injury
- Effects of Nerve injury
- Structure of Skeletal Muscle
- Electrical properties f Skeletal Muscle
- Contractile Mechanism
- Length- Tension Relationship
- Fast and Slow Muscles
- Skeletal Muscle Metabolism
- Growth and Exercise
- Repair and Adaptation during Exercise
- Training for Muscular Strength and Endurance
- Muscle tissue fiber typing and its significance

**4. Exercise Physiology:**

Muscle & its contraction - Architecture of skeletal muscles, sliding filament theory, types of muscle fibres, mechanical efficiency of muscle contraction, force-velocity, motor, motor unit, muscle fatigue-blood supply, prolonged exercise.

Cardiac cycle-pressure during cardiac cycle, Haemodynamics mechanical work and pressure, hydrostatic pressure, flow and resistance, venous capillary structure and transport mechanisms, filtration & osmosis, vascularization of skeletal muscles,

regulation of circulation during exercise, cardiac output & 02 updates - stroke volume, blood pressure.

### i) Respiration

Lung compliance air way resistance, pulmonary ventilation at rest and ruing exercise, diffusion in lung tissues, gas pressure - ventilation & perfusion, regulation of berating-Exercise, high air pressure - Breath holding diving.

### ii) Physical Performance

Aerobic process intensity & duration of exercise, prolonged exercise, muscular stress involved in exercise.

Anaerobic Process : Power & capacity of high energy breakdown.

Lactate: Production - distribution & disappearance, effect of metabolism on tissue & blood, PH, Anaerobic threshold, maximal oxygen uptake in various sports.

**Evaluation of anaerobic power, exercise electrocardiogram.**

### iii) Physical training

Training principles, continuous vs. intermittent exercise training methods & biological long-term effects of training. Disuse, isometric strength training, dynamic strength training. Training of aerobic training. Endurance training, retraining, recovery a fire exercise, Mechanical efficiency technique, body composition, stretching, psychological aspects, muscular soreness, Ischemic heart disease if, contra indication to physical training.

### iv) Applied Work Physiology

Factors affecting sustained physical work, assessment of work load relation to work capacity Assessment of maximal aerobic power measurement of oxygen uptake in a typical work situation, Assessment of load exerted on specific muscles, classification of work, Daily rates of energy expenditure, energy expenditure during specific activities like sleeping, sedentary, work house work, light industry, manual lab our.

### v) Fatigue

General Physical fatigue, local muscular fatigue, cardiac rhythm in humans, shift work, effect of menstruation.

### vi) Nutrition & Physical Performance

Nutrition in general digestion, energy metabolism & factors governing the selection of fuel for muscular exercises, food for the athlete, energy balance, regulation of food intake, ideal weight obesity, slimming diets, optional supply of Nutrients.

### vii) Factors Affecting Performance

High altitude -limiting factors, oxygen transport, adaptation of high altitude, high gas pressure, pressure effects, nitrogen, oxygen, carbon dioxide metabolism in sports, tobacco smoking - circulatory effects, reparatory effects, metabolic effects, smoking habits among athletes, alcohol & exercise - Neuromuscular function, aerobic & anaerobic power, metabolic effects, caffeine, Doping and "THE WILL TO WIN"

## 5. gastrointestinal Tract & Endocrine

- Effects of sports on G.J.T. and liver
- Hormone regulation fluid and Electrolytes during Exercise
- Exercise and Menstrual Cycle
- Stress Hormones in Exercise
- Effects of Exercise on various Hormones in the Body
- Opiods, Runner's high

## 6. Nervous System

- Elementary Neuroanatomy
- Neurons and Neuralgia
- Properties of nerve fivers, synapse
- Spinal cord
- Cerebral cortex
- Pyramidal and extra pyramidal system
- The cerebellum
- Autonomic nervous system
- Cerebrospinal fluid
- Cranial nerves

Books Recommended:


- Abrahams, Peter H. Mcminn's Color Atlas of Human Anatomy.
- Romanes, G.J. Cunningham's Manual of Practical Anatomy.
- Singh, lnderbir. Textbook of human Neuroanatomy.

- Snell, Richard S. Clinical Anatomy for Medical Students.
- More, Keith L. Essential Clinical Anatomy.
- Chaurasia, B.D. Human Anatomy : Regional and Applied.
- Axen, Kenneth. Principles of Exercise Physiology.
- Wilmore, Jack M. Physiology of Sports and Exercise.
- Ghai, C.L. Textbook of Practical Physiology.
- Chaudhuri, Sujit K. Concise Medical Physiology.
- Muthayya, M N. Human Physiology.
- Guyton, Arthur C. Textbook of Medical Physiology.
- Jain. Textbook of Physiology.


## SUBJECT: Review OF Basic Services-1 ( Pathology & Pharmacology)
## Code:01MPS102

**Course Objectives:**

a) To understand pharmaco-kinetics, pharmaco-dynamics.

b) Usage of common drugs with (indications, contraindications, side effects).

c) To understand the drug actions that may affect the physical therapy treatment.

d) Course is not prescription oriented.

**Learning Outcomes:**

- To understand the fundamental scientific principles of drug action and the various mechanisms by which drugs can mediate their pharmacological effect

- To understand the fundamental principles of pharmacokinetics that underly the absorption, distribution, metabolism and elimination of drugs in the body and thereby affect drug effectiveness

- To understand the biochemical reactions that result in the metabolism of drugs within the body

## Pathology

**1. General Pathology** (cell injury, inflammation, Repair, immune system)

**2. Geriatric**

i) Theories of aging
ii) Pathological & Physiological

**3. General body system**

**a. Nervous System**

**i) Infection**

- Meningitis
- Encephalitis

**ii) Vascular Disease**

- Ischemic encephalopathy
- Cerebral infarction

- Intracranial infarction
- Intracranial hemorrhage

**iii) Degenerative disease**

- Alzheimer's' disease
- Huntington's disease
- Parkinson's disease
- Motor neuron disease

**iv) Demyelinating disease**

- Multiple sclerosis

**v) The peripheral nervous system**

- Peripheral neuropathy
- Acute idiopathic polyneuropathy
- Diabetic neuropathy

**b. Musculoskeletal System**

**i) Bones**

- Hereditary and metabolic diseases (Osteoporosis, rickets, osteomalacia, osteitisfibrosa cystic renal osteodystrophy)
- Infections (Osteomyelitis and tuberculosis)

**ii) Joints**

- Degenerative joint disease
- Bursitis

**iii) Skeletal muscles**

- Muscle atrophy
- Myositis
- Muscular dystrophy
- Myasthenia gravis

**C. Cardiovascular system:**

- Rheumatic heart disease
- Myocardial infarction
- Atherosclerosis .
- Congenital heart diseases

**Pharmacology:**

- Drugs used in pain
- Local anesthetics
- Steroids
- Muscle relaxants
- Drugs acting upon Central and Autonomic nervous system
- Topically acting upon Cardio Respiratory system
- Drugs acting upon Musculoskeletal system

Books Recommended:


- Mohan, Harsh. Textbook of Pathology.
- Peter, S. and Macfarlane, Robine. Pathology illustrated.
- Catherine Cavallaro
- Goodmann, D and Williams G. Boissonn. Pathology: Implications for the Physical Therapist.
- Tripathi, K.D. Essentials of Medical Pharmacology.
- Seth, S.D. Textbook of Pharmacology.


# SUBJECT: Applied Physiotherapy

**Code:01MPS103**

**Course Objectives:**

To understand the principles of exercise therapy and its application as a treatment modality

**Learning outcomes:**

- Integrate knowledge of basic sciences and physical therapy in order to modify treatment approaches that reflect the breadth and scope of physical therapy practice.
- Integrate the use of basic principles of research in critical analysis of concepts and findings generated by self and others.
- Actively recognize the rights and dignity of individuals in planning and administering programs of care.

**1) Exercise Therapy:**

i) Assessment techniques: Manual Muscle Testing and Goniometry,
ii) Stretching and Mobilization,
iii) Re-education and Strengthening.
iv) Balance and Co-ordination Ex.
v) Gait Analysis and "raining (Both Normal and Pathological Gaits)
vi) Relaxation and soft Tissue Manipulations
vii) Posture
viii) PNF and Neuromuscular Coordination
ix) Hydrotherapy
x) Joint Mobilization

**2) Electrotherapy:**

i) General Review of Low, Med and high currents and their modifications like
ii) Di-dynamic and Russian Currents etc.
iii) Laser
iv) Cryotherapy
v) UVR and IRR
vi) Other thermal modalities like SWD. MWD, Hydro-Collator, Wax therapy, Fluido-therapy.

Clinical reasoning & evidence-based Physiotherapy for the above Exercise Therapy. Electrotherapy and Advanced Therapeutics by Seminar presentations, Journal presentations, Case presentations, recent advances, discussion-cum-presentations

**Practicals :**

**1) Exercise Therapy :**

i) Musculoskeletal and Neurological Assessment
ii) Strengthening techniques
iii) Soft tissue stretching and mobilization
iv) Gait analysis and training
v) Postural assessment and re-education
vi) Balance and Coordination
vii) Hydrotherapy.

**2) Electrotherapy:**

**A. All types of low and medium frequency currents**

i) Faradic
ii) Galvanic
iii) High Voltage Current
iv) Di dynamic
v) Russian
vi) Interferential Therapy
vii) Tens
viii) Micro current

**B. All types of high frequency currents and modalities:**

i) Cryotherapy
ii) UVR
iii) IRR
iv) LASER
v) Other thermal modalities like Hydro-Collator, Wax therapy, Fluidotherapy.

Books Recommended:


- Gardiner, M Dena. Principles of Exercise Therapy.
- Kisner, Carolyn and Lynn Allen Colby. Therapeutic Exercise Foundations and Techniques.
- Hollis, Margaret, and Phyl Fletcher-Cook Practical Exercise Therapy.
- Low, John, Ann Reed, and Mary Dyson. Electrotherapy Explained: Principles and Practice.
- Kitchen , Sheila, and Sarah Bazin, ed. Clayton's Electrotherapy.
- Kendall, Florence Peterson, et al. Muscles Testing and Functions.

- Prentice, William E., William Quillen, and Frank Underwood. Therapeutic Modalities for Physical Therapists.
- Hall, Carrie M., and Lori Thein Brody. Therapeutic Exercise Moving Toward Function.
- Hislop, Helen J., and Jacqueline Montgomery. Daniels and Worthingham's Muscle Testing Techniques of Manual Examination.


**SUBJECT:CLINICAL PRACTICE-1 CODE:01MPS201**

Students will engage in clinical practice in Physiotherapy Department in the sports setting to enhance their clinical skills and apply theoretical knowledge gained during teaching sessions.

**SUBJECT:DISCIPLINE & EXTRA CURRICULAR ACTIVITY**
**CODE:01MPS301**

## MPT ( SPORTS) II SEMESTER

**SUBJECT: Applied Bio-Mechanics & Ergonomics**
**Code:02MPS101**

**Course objectives:**

To understand the Musculoskeletal surgical anatomy normal and pathological deviations

**Learning Outcomes:**

- Apply knowledge of the underlying principles and concepts of Exercise and Sport Science. Including the core areas of: Human Physiology, Anatomy, Functional Anatomy, Exercise Physiology, Biomechanics, Motor Learning and Control, Exercise Metabolism and Nutrition, and Psychology .
- Utilise core instrumentation and equipment for the monitoring and assessment of exercise clients .
- Review, analyse and interpret information, and independently generate conclusions

## 1. Fundamental Mechanics:

- Forces; composition and resolution of forces; force systems
- Force of gravity and COG
- Stability
- Reaction forces
- Friction
- Moments
- Newton's laws
- Equilibrium: static and dynamic
- Simple Machines: Levers. pulleys and wheel a'1d axle
- Segmental dimensions
- Poisson's effect
- Static and cyclic load behaviors
- Load: Load sharing and load transfer

## 2. Kinematics:

- Motion: types, location, magnitude and Direction
- Angular motion and its various parameters
- Linear motion and its various parameters
- Projectile motion

## 3. Muscle Mechanics:

- Structure and composition of muscle
- Fiber length and cross-section areas
- Mechanical properties
- EMG chances during fatigue and contraction
- Changes in mechanical properties because of aging, exercise and immobilized of immobilization
- Clinical applications

**4. Ligament and Tendon Mechanics:**

- Structure, composition and mechanical properties
- Cross-sectional area measurement
- Muscle tendon properties
- Temperature sensitivity
- Changes in mechanical properties because of aging, exercise and immobilization
- Mechanoreceptors
- Clinical application
- Bone Mechanics

**5. Bone Mechanics :**

- Structure and composition of bone
- Stress
- Strain
- Modulus of Rigidity & Modulus of elasticity
- Mechanical propel1ies of Trabecular system
- Mechanical properties of Cortical bone
- Bone Remodeling
- Response of bone to aging & exercise & immobilization
- Mechanics to prevent fracture in bone
- Clinical application

**6. Joint Mechanics:**

- Joint design
- Joint categories
- joint functions: Arthrokinematics, Osteokinematics and kinematics chains
- Joint Forces, equilibrium and distribution of these forces
- Degenerative changes in weight bearing joints and compensatory actions
- Joint stability and its mechanisms Clinical
- Clinical applications

**7. Measurement Instruments:**

- Photo-optical devices
- Pressure transducers and Force Plates
- Gait Analyzer
- Isokinetic device
- EMG (Electro physiology of muscle contraction, recording. processing
- Relationship between EMG and Biomechanical Variables

**8. 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

**9. Gait :**

- Gait parameter: kinetic, kinematics, time-space
- Pathological gait
- Running
- Stair climbing
- Changes in gait following various surgeries/diseases/disorders

**10. Pathomechanics:**

- Bone and Joint Patho-mechanics
- NeuralPatho-mechanics
- Cardio Patho-mechanics
- Pulmonary Patho-mechanics
- Vascular Patho-mechanics

**11. 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

## Practical in Applied Biomechanics:

This course will enable the students to apply their knowledge of biomechanics and ergonomics in practical situation on their patients

- Evaluation and assessment of joint motion (planes, axes etc)
- Evaluation and assessment of posture
- Evaluation and assessment of Gait
- Practical usage of all examination and assessment devices.

Books Recommended:


- Hoffman, Shirf . Introduction to kinesiology.
- Oatis, Carol A. Kinesiology: The Mechanics and Pathomechanics of Human Movement.
- Norkins , Cynthia. Joint Structure and Function.
- Levangie, Pamela K . Joint Structure and Function: A Comprehensive Analysis.
- Orkaya, N . Fundamentals of Biomechanics.
- Karen, Jacobs, et al. Ergonomics for Therapists.
- Salvendy, Ganicl. Handbook of Human Factors and Ergonomics.
- Kraemer-Eibert , K.E. Ergonomics: How to Design for Ease and Efficiency.
- Pheasant. Stephen. Ergonomics. Work. and Health.


## SUBJECT: Bio-Statistics & Research Methodology
## Code:02MPS102

**Course Objectives:**

- Communicate the results of statistical analyses accurately and effectively

**Learning outcomes**

- Select from, use and interpret results of, descriptive statistical methods effectively;
- Demonstrate an understanding of the central concepts of modern statistical theory and their probabilistic foundation;

- Select from, use, and interpret results of, the principal methods of statistical inference and design;

**1. Research Methodology:**

i) How to read and critique research
ii) Introduction to research: Framework, levels of measurement, variables
iii) Basic research concepts: Validity and reliability
iv) Design instrumentation and analysis of qualitative research
v) Design instrumentation and analysis of Quantitativeresearch
vi) How to write a research proposal
vii) The use and protection of human and animal subjects,

**2. Biostatistics :**

i) Introduction: Description and interferential statistics, methods of collection, classification, tabulation and presentation of data.
ii) Central Tendency: Mean, Median, Mode and Standard deviation.
iii) Co-relation and Regression: Karl Pearson's co-relation method, Rank co-relation method, Regression and co efficient.
iv) Sampling and hypothesis and testing data collection, types of sampling.
v) Probability, Binomial distribution, Poison distribution, Normal distribution
vi) One way ANOVA, Two Way ANOVA
vii) Test of significance (t, chi square. f, z)
viii) Non-parametric tests
ix) Simple statistical analysis using available software.

Books Recommended:


- Thomas, J . Research Methods in Physical Activity.
- Gakhar, S.C. Biostastics.
- Batavia, Mitchell. Clinical Research for Health Professionals: A User-friendly Guide.
- French, Sally . Practical Research: A Guide for Therapists.
- Domholdt, Elizabeth. Rehabilitation Research: Principles and Applications.
- Mahajan, B.K. Methods in Biostatistics for Medical Students and Research Workers.
- Baride, J.P. Manual of Biostatistics.


**SUBJECT: Clinical Practice-2**
**Code:02MPS201**

Students will engage in clinical practice in Physiotherapy Department in the sports setting to enhance their clinical skills and apply theoretical knowledge gained during teaching sessions.

**SUBJECT: Seminars on Clinic Issues**
**Code:02MPS202**

These will serve as a platform for students to integrate various components of patient management .Students will give presentations on topics provided to them.

**SUBJECT: DISCIPLINE AND EXTRA CURRICULAR ACTIVITY**
**Code:02MPS301**

## MPT(SPORTS) -III SEM

**SUBJECT: Assessment Of Diagnosis** **Code:03MPS101**

**Course Objectives:**

- Therapeutic decision making: understand risks, benefits, and compliance issues in choosing a treatment

**Learning Outcomes;**

- History and physical examination: obtain a patient's history and physical exam in a logical, organized and thorough manner while adapting to the urgency of the medical situation and the time available.
- Diagnostic decision making: formulate a differential diagnosis based on the key findings from the history and physical examination.

**1. Orthopedic Assessment:**

- Patient History.
- Observation.
- Examination: Active and Passive Movements, functional.
- Assessment, Special tests, Reflexes and Cutaneous.
- Distribution, Joint Play Movements. Palpation.
- Immediately after injury.
- Acute stage.
- Chronic stage.
- Rehabilitation stage.
- Emergency sports evaluation.
- Biomechanics of running, jumping.

**2. Regional Examination with special emphasis on Special Tests:**

- Head and Face.
- Cervical spine.
- Shoulder.
- Elbow.
- Forearm, Wrist and Hand.
- Thoracic Spine.
- Lumber Spine.
- Pelvis.
- Hip.
- Knee.
- Lower Leg, Ankle and Foot.

**3. Sports Medicine Diagnosis (for practical purposes only):**

- Biomechanical measurements- Limbs and Spine.
- Serology.
- Biopsy.
- Plain Radiography.
- Contrast Radiography.
- Myelography.
- Radioactive Scanning.
- Discography.
- Tomography.
- Magnetic Resonance Imaging.
- Arthroscopy.

- Electromyography, Nerve Conduction Velocity Strength Duration Curve.
- BMO-Bone Densitometry- Ultrasound densitometer and Dual Energy X-ray Absorptiometry (DEXA).
- Differential diagnosis of common Sports Injuries.

Books Recommended:


- Magee, David. Physical Assessment.
- McKee, Pat . Orthopaedics in Rehabilitation: Splinting the Hand and Body.
- Atkinson. Karen. Physiotherapy in Orthopedics: A Problem Solving Approach.
- Karen and Shultz, S.J. Examination of Musculskeletel Injuries.
- Brotzman, S. Brent. Clinical Orthopedic Rehabilitation.
- Donatelli, R.A. and Wooden, M.J. Orthopedic Physical Therapy.
- Levangie, P.K., and C.C. Norkin. Joint Structure and Function: A Comprehensive Analysis.
- Joshi and Kotwal. Essentials of Orthopedics and Applied Physiotherapy.


## SUBJECT: Medical & Surgical Management
## Code:03MPS102

**Course objectives:**

- Understand the indications for, and the limitations of, essential diagnostic studies used to evaluate patients with surgical problems

**Learning Outcomes:**

- Demonstrate knowledge and understanding of common surgical problems
- Demonstrate an understanding of surgical treatments, and alternatives to surgical treatment

This course provides the study of the definition, terminologies, epidemiology, pathomechanics, clinical features and prevention, medical and surgical management of all sports injuries but not limited to the following. It will also enable the students to use this information in planning and tailoring effective, specific, safe physiotherapy treatment progrommes.

### Medical Problems:
### Definition and Terminologies:
**Medical Problems of Athletes-** Fungal infections, viral infections, common cold, diarrhea, dysentry, T.B., amoebiasis, etc.

### 1. Special Considerations:

- Female athlete- Sports amenorrhea, injury to female reproduction tract, menstrual asynchrony.
- Adolescent athlete.
- Disabled athlete.
- Doping amongst athlete.
- Protective Equipment Considerations.
- Emergency care, athletics first-aid and cardiopulmonary resuscitation.
- Weight Management.
-

**2. Sports Injuries:**

- Frequency and site of injury.
- Etiological factors .
- Prevention of injury mechanism of injury.
- Role of teachers and coaches in prevention of injury.

**3. Physiology of sports rehabilitation.**

**4. Sports specific Injury Pattern.**

- Acute, Overuse Injuries and traumatic related to Cricket Acute.
- Overuse Injuries and traumatic related to Judo.
- Acute, Overuse Injuries and traumatic related to Throw Ball.
- Acute, Overuse Injuries and traumatic related to Basket Ball.
- Acute, Overuse Injuries and traumatic related to Discus Throw.
- Acute, Overuse Injuries and traumatic related to Foot Ball.
- Acute, Overuse Injuries and ,traumatic related to Base Ball.
- Acute, Overuse Injuries and traumatic related to Bad Minton.
- Acute, Overuse Injuries and traumatic related to Tennis.
- Acute, Overuse Injuries and traumatic related to Gymnastics.
- Acute, Overuse Injuries and traumatic related to Cricket.
- Acute, Overuse Injuries and traumatic related to Javeline.
- Acute, Overuse Injuries and traumatic related to Judo.
- Sports Injuries of Upper limb.
- Sports Injuries of Lower limb.
- Sports Injuries of the spine.
- Sports Injuries of head and neck.
- Stroke management.
- Internal and external bleeding.

Books Recommended:


- Norris, C.M. Sports Injuries Diagnosis and management.
- Hoffman, Jay. Physical Aspects of Sport Training and Performance.
- Singh, Yadvinder. Sports Psychology.
- Jain, R. Sports Medicine.

- Macauly and Best. Evidence-based Sports Medicine.
- Johnson, R. Sports Medicine in Primary Care.
- Subotmick, S. Sports Medicine of the Lower Extremity.
- Miller, Mark D., Richard F. Howard and Kevin D. Plancher. Surgical Atlas of Sports Medicine.

**SUBJECT: Physiotherapy Management** **Code: 03MPS103**

**Course Objectives;**

- Apply clinical reasoning through the process of service user assessment, problem identification and treatment planning and deliver safe and effective physiotherapy intervention with a range of service users.

**Learning Outcomes:**

- Take responsibility for safety and wellbeing of self, staff and service users employing a patient centred approach.
- Apply effective verbal, non-verbal and written communication skills to develop and sustain the therapeutic relationship and contribute effectively to Multi-disciplinary team (MDT) working.
- Reflect on feedback and learning experiences to demonstrate own continuous professional development

This course provides the study of the definition, terminologies, epidemiology, pathomechanics, clinical features, and prevention, medical and surgical management of all sports injuries but not limited to the following. It will also enable the students to use this information in planning and tailoring effective, specific, safe physiotherapy treatment progrommes.

**Sports Psychology :**

1. Definitions an terminologies.
2. Role of sports psychology in sports performance.
3. Instincts: Killer instincts and motivation.
4. Attention, interests and motivation.

5. Personality of Sportsperson: Dynamic nature, factors affecting personality development, characteristics.
6. Role of sports in development in personality. learning relation to sports**.**

- Nature and meaning of learning and maturation.
- Characteristics of learning.
- Laws of learning maturation.
- Transfer of training.

**7. Emotions in Sports:**

- Characteristics of emotion.
- Controlling and training of emotion.
- Sentiments: types, importance and formation.

**8. Mental Health :**

- Concepts, meaning and importance.
- Characteristics of mentally healthy person/ athlete.

**9. Role of Physical Education in Promotion of Mental Health.**

**10. Factors affecting growth and development**

- Role of heredity
- Character of growth
- Heredity on relation to environment

**11. Different stages of Physical, Mental, soda I and emotional development group behaviors and leadership in sports**

- Nature of group behaviors.
- Types, quality, training and functioning of leader performance.

**12. Anxiety model stress and its implication on sports performance:**

- Isolate training
- Sudden change in opponent
- Audience stress
- Strategy changes
- Cognitive stress modeling

**13. contemporary Stress Reduction Strategies:**

- Biofeedback
- Mental coping strategies
- Visual imagery
- Meditation and :yoga

14. performance Factors:

- Stress and performance
- Motivation and performance

15. Anthropometry
16. Protective Equipment Considerations
17. Emergency care
18. Sports techniques

- Sports massage and soft tissue manipulation
- Splinting, lapping and bandaging: techniques, indication and contraindication
- Balance, coordination and P.N.F. Techniques
- Hydrotherapy
- Jacuzzi
- Sauna baths and spas
- Moist heat chambers
- Hot showers

19. Health club and fitness centers; Use and misuse of equipment.
20. Instrumentation in sports training and rehabilitation: Isokinetics exerciser, Treadmill, Ergo meter: upper and lower limb body fate platform ; Motion analyzer Cardio-respiratory evaluation apparatus affecting growth and development.
21. Prevention and rehabilitation of Heart attack
22. Role of physiotherapy exercises in high blood pressure athlete
23. Role of physiotherapy exercises in diabetic athlete
24. Role of physiotherapy in different medical conditions
25. Physiology of sports rehabilitation
26. Special exercise programme for sports person

**27. Biomechanical principles for all sports injuries:**

- Biomechanics & injuries related to Cricket
- Biomechanics & injuries related to judo
- Biomechanics & injuries related to Throw ball
- Biomechanics &injuries related to Basketball
- Biomechanics & injuries related to Discus throw
- Biomechanics & injuries related to Foothall

- Biomechanics & injuries related to Baseball
- Biomechanics & injuries related to Badminton.
- Biomechanics & injuries related to Tennis
- Biomechanics & injuries related to Gymnastics
- Biomechanics & injuries related to javelin
- Biomechanics & injuries related to swimming
- Biomechanics & injuries related to jumping sports
- Biomechanics & injuries related to track & field sports (athletics, soccer) etc.
- Sports injuries of Upper limb.
- Sports injuries of Lower Limb.
- Sports injuries of thorax, spine.
- Sports injuries of Head and neck

analysis. application.

**6. Biofeed Back. Advance Manual Therapy:**
**1. Manual Therapy:** Introduction, History. Basic Classification. Assessment manipulation, discussion in brief about the concepts of mobilization & Special techniques like Cyrix, Maitland, Mulligan, Butler, Kaltenborn Mckenzie

**2. Muscle Energy Techniques and Positional Stretch:** The basic concept and application of these techniques.

**3. Positional Release Therapy:** The basic concept and Application of these techniques.

**4. Myofascial Release:** Concept and application.

**5. Nerve Conduction Studies and Electromyography:** normal. abnormal action potentials, its recording protocols

Books Recommended:


- Norris, C.M. Sports Injuries Diagnosis and management.
- Hoffman, Jay. Physical Aspects of Sport Training and Performance.
- Deig, D. Positional Release Techniques.
- Chaitow, L. Muscle Energy Techniques.
- Macauly and Best. Evidence-based Sports Medicine.
- Johnson, R. Sports Medicine in Primary Care.
- Subotmick, S. Sports Medicine of the Lower Extremity.
- Miller, Mark D., Richard F. Howard and Kevin D. Plancher. Surgical Atlas of Sports Medicine.

**SUBJECT: Clinical Practice-3** **Code: 03MPS201**

Students will engage in clinical practice in Physiotherapy Department in the sports setting to enhance their clinical skills and apply theoretical knowledge gained during teaching sessions

**SUBJECT: DISCIPLINE AND EXTRA CURRICULAR ACTIVITY**
**Code:02MPS301**

**MPT(SPORTS)-IV SEM**

**SUBJECT: Professional Development & Ethics** **Code:04MPS101**

**Course Objectives:**

- Stating how each measure of student growth will be incorporated in a teacher's summative rating

**Learning objectives:**

- Establishing specific goals related to student performance on defined measures of content
- Measuring progress toward achieving those content goals
- Setting the dates for conducting those measures and reporting results

This course provides the study of the definition, terminologies, epidemiology pathomechanics, clinical features, and prevention, medical and surgical management of all sports injuries but not limited to the following. It will also enable the students to use this information in planning and tailoring effective, specific, safe physiotherapy treatment progrommes.

**1. Concepts of Teaching and Learning:**

- Meaning and Scope of Educational of Psychology
- Meaning and Relationship between Teaching and Learning
- Learning Theories
- Dynamics of Behavior
- Individual Differences

**2. Curriculum:**

- Meaning and Concepts.
- Basis of Curriculum Fom1uJation Development .
- Framing Objectives for Curriculum.
- Process of Curriculum Development and Factors Affecting Curriculum Development.
- Evaluation of Curriculum.

**3. Method and Techniques of Teaching:**

- Lecture Demonstration, Discussion, Seminar, Assignment Project and Case

**4. Planning for Teaching:**

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

**5. Teaching Aides:**

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

**6. Measurements and Evaluation:**

- Nature of Educational Measurement: Meaning, Process and Types of tests
- Construction of an Achievement Test and it Analysis Standardized Test
- Introduction of some Standardized tools. Impor1ant tests of intelligence.
- Aptitude Personality.
- Continuous and Comprehensive Evaluation

**7. Guidance and Counseling:**

- Meaning and Concepts of Guidance and Counseling
- Principles
- Guidance and Counseling Services for Students and Faculty members
- Faculty Development and Development of Personnel for physiotherapy Services

**8. Clinical Education :**

- Awareness and guidance to the common people about health diseases and available professional services.
- Patient education.
- Education of the practitioners.

9. Functions of Management.
10. Management Process: Planning, organization, direction. controlling and decision-making.
11. Personal Management: staffing, recruitment selection performance appraisal, collective bargaining, discipline, and job satisfaction.
12. Quantitative Methods of Management: relevance of statistical and/ or techniques in management.
13. Marketing: marketing segmentation, marketing research production, planning pricing. and channels of distribution, promotion, consumer behavior and licenser.
14. Total Quality Management: basis of quality management, quality assurance program

in hospitals, medical audit and international quality system. Hospital as an organization: Functions and types of hospitals selected clinical supportive and ancillary staff of the hospital, emergency department. nursing. physical medicine and rehabilitation, clinical laboratory, pharmacy and dietary department.
15. Roles of Physiotherapy Director, Physiotherapy Supervisor, Physiotherapy Assistant, Physiotherapy, Occupational therapist, Home Health Aide and Volunteer.
16. Direct care and referral relationships and confidentiality.
17. Physiotherapy: Definition and Development.
18. Implications and conformation to the Rules of Professional Conduct. Legal responsibility for their actions in the professional context: Understanding the Physiotherapist's liability and obligations in the case of medico-legal action.
19. Code of Ethics: wider knowledge of ethics relating to current social and medical policy in the provision of health care.
20. Function of relevant professional associations education body and trade union.
21. Role of the International Health agencies such as the World Health Organization.
22. Standards of practice for Physiotherapy.
23. Current issues.
24. Basics of Computer-Hardware and Software.
25. Basic Computer Applications- MS Windows, MS Word, MS Excel, MS PowerPoint, etc.

Books Recommended:


- Gakhar, S.C. Educational Technology.
- Taxali, R.K. Fox Pro 2.5 made simple for DOS & Windows.
- Hunt, R and J. Shelly. Computers and commonsense.
- Naidoo. Health Studies: An introduction.


**SUBJECT: Practical** **Code: 04MPS201**

Related to assessments, investigations and physiotherapy management of at the above conditions.

Students will be judged on one elective and one non-elective case. They will be expected to assess, diagnose and plan effective treatment plan for both cases

1. **Demonstration of following Manual Therapy Techniques:**

   Cyriax
   Maitland
   Mulligan
   Butler
   Mckenzie

Nerve Mobilization

2. **Outline and Practical knowledge of :-**

   Muscle Energy Technique
   Positional Stretch
   Myofascial release etc
3. **Demonstration and practical knowledge of**

- NCV,EMG , Biofeedback.

Books Recommended:


- Low, John, Ann Reed and Mary Dyson. Electrotherapy Explained: Principles and Practice.
- Kitchen, Sheila and Sarah Bazin. Clayton's Electrotherapy.
- Deig, D. Positional Release Techniques.
- Chaitow, L. Muscle Energy Techniques.


**SUBJECT: Seminar & Case Presentation Code: 04MPS202**

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

**SUBJECT: Dissertation & Project Work Code: 04MPS203**

**BASED ON CLINICAL / CASE PRESENTATION INCLUDING VIVA VOCE)**

As part of their requirement for the Master Degree, the student is required to undertake a research study under the guidance of a Guide and a Co-guide. Research study must be selected only from the chosen specialization i.e. Musculoskeletal Conditions or Sports Injuries or Neurological Conditions or Pediatric Conditions and to be studied on

patients or normal individuals. Students have to undergo a dissertation viva-voce by an Examining Committee.

**SUBJECT: DISCIPLINE AND EXTRA CURRICULAR ACTIVITY**
**Code:04MPS301**