BPT 2ND YEAR COURSE STRUCTURE AND SYLLABUS

Second Year- course structure						
S: No	**Subjects**	**Subject Code**	**Hrs/week**			**Credits**
			L	**T**	**P**	**C**
1.	Pathology & Microbiology	24HBPT21T	4	-	-	4
2.	Exercise Therapy	24HBPT22T	4	-	-	4
3.	Bio-mechanics & Applied Anatomy	24HBPT23T	4	-	-	4
4.	Electrotherapy – I (Low Frequency & Medium)	24HBPT24T	4	-	-	4
5.	Electrotherapy – II (High Frequency)	24HBPT25T	4	-	-	4
6.	Exercise Therapy-Lab	24HBPT22L	-	-	4	2
7.	Electrotherapy – I Lab (Low Frequency & Medium)	24HBPT24L	-	-	4	2
8.	Electrotherapy – II Lab (High Frequency)	24HBPT25L	-	-	4	2
	Total		20	-	12	26

Title of the Course	**: Pathology & Microbiology**
Category	: Allied Medical Sciences
Year	: II Year
Course Code	: 24HBPT21T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits
4	-	-	4

Course objectives: The objective of this course is demonstrations, practicals and clinics the student will be able to demonstrate an understanding of the pathology and microbiology of common diseases that therapists would encounter in their daily practice. The course will also help therapists understand how to protect themselves and their patients from nosocomial infections during their interactions.

Course Outcomes:

1. Explain important pathological processes including cell death and injury, inflammation, thrombosis and neoplasia.
2. Discuss the relationship between pathological process and pathogenesis of musculoskeletal, cardio-vascular, neurological and oncological diseases.
3. Describe the predisposing factors, causes, pathogenesis, morphology, and complications of musculoskeletal, cardio-vascular, neurological, and oncological diseases.
4. Discuss the clinical features in relation to causes and pathogenesis of the diseases.
5. Describe the classification and characteristics of microorganisms' cause's diseases.
6. Describe the reproduction of common bacterial, fungal, viral pathogens.
7. Discuss the mechanism of infectious disease and body's immune defense.
8. Explain infection control practices that prevent the spread of infection.
9. Discuss the process of infection and mechanism create a sterile field in physiotherapy practice.

Unit 1: Basic Concepts of Disease & General Microbiology

- Concepts of disease, classification
- Bacterial, viral and parasitic infections – general outline
- History and classification of Microorganisms
- Morphology of bacteria, viruses, fungi
- Important virulence factors of bacteria

Unit 2: Tissue Responses to Injury

- Inflammation and repair
- Degeneration, necrosis and gangrene
- Haemorrhage, shock, embolism, thrombosis
- Sterilization and disinfection
- Antibacterial, antifungal and antiviral agents

Unit 3: Bacterial Diseases

- Tuberculosis
- Leprosy
- Typhoid
- Wound infections & anaerobic infections
- Hospital-acquired infections: types, causes, prevention

Unit 4: Deficiency, Tumours & Immunology

- Deficiency diseases
- Tumours: Aetiology, spread, common tumours
- Fundamentals of Immunology:
    - Innate and acquired immunity
    - Antigen, antibody
    - Immune response
    - Hypersensitivity reactions

Unit 5: Blood, Cardiovascular & Bloodstream Infections

- Anaemia
- Heart and blood vessels
- Common congenital anomalies
- Rheumatic and coronary heart diseases
- Bloodstream infections

Unit 6: Respiratory System Infections

- Pneumonias, bronchiectasis, emphysema, chronic bronchitis, asthma
- Respiratory tract infections (microbiology)
- Tuberculosis (microbiology aspect)

Unit 7: Musculoskeletal, Skin & Autoimmune Disorders

- Bone & joints: Autoimmune diseases, septic arthritis, osteomyelitis
- Rheumatoid arthritis
- Scleroderma and psoriasis
- Diseases of muscle: Poliomyelitis, myopathies
- Volkmann's ischaemia
- Skin: Leprosy

Unit 8: Organ System Infections

- Urinary system disorders + Genitourinary infections (STIs, UTIs)
- CNS: Infections (meningitis, encephalitis, poliomyelitis) & vascular disorders
- GIT infections (bacterial, viral, parasitic + hepatitis viruses)

RECOMMENDED BOOKS: -

1. Textbook of Microbiology - Anantanarayan

2. Textbook of Pathology - Robbins.

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RAJAMPET, YSR Kadapa District, AP – 516 126, INDIA
COLLEGE OF ALLIED HEALTH SCIENCES

Title of the Course	**: EXERCISE THERAPY**
Category	: Core Subject
Year	: II Year
Course Code	: 24HBPT22T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits
4	-	-	4

Course Objectives

The objectives of this course are to enable the student to:

1. Understand the basic principles and concepts of exercise therapy in physiotherapy practice.
2. Describe the physiological and biomechanical effects of therapeutic exercises on the human body.
3. Demonstrate knowledge of different types of therapeutic exercises (active, passive, resisted, stretching, relaxation, postural, balance, and coordination exercises).
4. Apply appropriate exercise techniques for improving strength, endurance, flexibility, posture, balance, and functional independence.
5. Integrate exercise therapy in the prevention, treatment, and rehabilitation of musculoskeletal, neurological, cardiopulmonary, and general medical conditions.
6. Develop skills in assessment, planning, and progression of exercise programs tailored to individual patient needs.
7. Adopt safe, ethical, and evidence-based approaches in the clinical application of exercise therapy.

Course outcomes

1. Explain the physiological effects of endurance, strengthening, balance and coordination effects on various systems.

2.Differentiate types of exercise based on the therapeutic effects.

3. Discuss the indications, contraindications and precautions to be taken while performing

I. Passive Range of Motion
II. Active Range of Motion
III. Assisted exercises
IV. Endurance exercise
V. Strengthening exercise
VI. Balance and coordination exercise

4. Demonstrate competencies in prescribing

I. Passive Range of Motion
II. Active Range of Motion
III. Assisted exercises
IV. Endurance exercise

V. Strengthening exercise
VI. Balance and coordination exercise

5. Prescribe therapeutic exercise based on the assessment findings.

6.Demonstrate competencies in preparing and implementing evidence-based exercise protocol for movement impairments under supervision.

7. Demonstrate abilities to document the dosage and progression as per the prescribed format (SH)

8. Communicate the exercise protocol effectively to the stakeholders.

Unit 1: Principles of Muscle Work & Movements

- Muscle work: Isotonic (concentric, eccentric), isometric (static).
- Group actions: Agonists, antagonists, synergists, fixators.
- Angle of pull, mechanical efficiency.
- Pelvic tilts (normal, anterior, posterior, lateral) and pelvic rotation – muscles involved, alterations, corrective measures.
- Starting positions: Standing, kneeling, sitting, lying, hanging – effects, importance, derived positions.
- Anatomical movements: flexion, extension, abduction, inversion, eversion, supination, pronation, rotations, trunk side flexion.
- Rhythm, timing, duration, classification of movements.
- Effects of exercise (physiological & therapeutic).

Unit 2: Relaxation, Passive & Active Movements

- Relaxation: Definition, fatigue, spasm, tension (mental/physical), relaxation types, breathing exercises, techniques.
- Passive movements: Types, techniques, indications/contraindications, effects.
- Passive stretching of muscles (UL, LL, neck).
- Active movements: Types, techniques, indications/contraindications, effects, home programs (neck & back).

Unit 3: Progressive Resistance Exercise & Muscle Testing

- Progressive resistance exercises: Fractional system, Macqueen's system, Delorme's boot, dumbbells, pulleys, suspension, powder board.
- Muscle grading: Types, key, techniques.
- Demonstration of grading for upper limb, lower limb, neck, trunk.

Unit 4: Goniometry & Measurement

- Normal ranges of joints.
- Instruments: Goniometer, measuring systems.
- Techniques of measurement for joints.
- Measurement of limb girth (arm, forearm, thigh, calf).

Unit 5: Muscle Re-education, Suspension & Hydrotherapy

- Re-education of muscles: Concept, techniques (spatial/temporal summation), facilitating methods, progressive strengthening, mat exercises.
- Suspension therapy: Principles, types (pendular, axial, eccentric fixation), indications, techniques.
- Hydrotherapy: Hydrostatic pressure, buoyancy, indications/contraindications, patient/therapist preparation, equipment, types (pool, contrast bath, whirlpool, Hubbard tank), safety & hygiene.

Unit 6: Joint Mobility & Crutch Walking

- Joint mobility: Ranges, joint structures, movements, causes of limitations, prevention of stiffness, positioning.
- Mobilization techniques (manual, passive, accessory movements, PNF).
- Crutch walking: Components, types of crutches, measurement, techniques (4-point, 3-point, swing, stairs, ramps), complications (crutch palsy).

Unit 7: Posture, Gait & Coordination

- Posture: Definition, good vs abnormal posture, postural mechanisms, assessment (inspection, plumb line, measurements), corrective measures (strengthening, mobilization, bracing, surgery).
- Gait: Definition, COG, normal gait cycle, determinants, muscles involved, pathological gaits (gluteus Medius/maximus, hip/knee weakness, hemiplegic, ataxic, equinus, calcaneus).
- Coordination: Balance (static/dynamic), neuromuscular coordination, incoordination due to LMN/UMN/cerebellar/sensory causes.
- Re-education of balance and coordination (PNF, Frenkel's exercises).

Unit 8: Complications of Bed Rest & Soft Tissue Manipulation

- Complications of prolonged bed rest.
- Burgers' exercises and maintenance programs.
- Massage: History, principles, precautions, physiological effects on systems.
- Massage techniques: Stroking, pressure, percussion, shaking.
- Demonstration: Massage of upper limb, lower limb, back, face.

RECOMMENDED BOOKS: -

1. Principles of Exercise Therapy – Dena Gardener.
2. Therapeutic Exercise foundation and techniques - Carolyn Kisner.

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COLLEGE OF ALLIED HEALTH SCIENCES

Title of the Course	**: Biomechanics & Applied Anatomy**
Category	: Core Foundation Course
Year	: II Year
Course Code	: 24HBPT23T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits
4	-	-	4

Course objectives:

1. Describe the structure of the human body with emphasis on bones, joints, muscles, and nervous system relevant to movement and physiotherapy practice.
2. Explain the principles of biomechanics including kinematics, kinetics, levers, equilibrium, and mechanical properties of tissues.
3. Relate the anatomical structures to functional movements of the upper limb, lower limb, spine, and trunk.
4. Demonstrate understanding of joint mechanics, muscle actions, posture, and gait from an applied anatomy and biomechanics perspective.
5. Apply biomechanical principles in analysing human movement, exercise performance, and physiotherapy techniques.
6. Develop skills to integrate anatomy and biomechanics in assessment, treatment planning, and rehabilitation of patients.
7. Adopt safe, evidence-based, and ethical approaches while applying anatomical and biomechanical knowledge in physiotherapy practice.

Course outcomes

1. Discuss the principles of physics and laws related to human movement.
2. Demonstrate understanding of functional movement (kinetics and kinematics) of human body.
3. Identify the relationship between structure, function, and mechanical properties of movement system
4. Analyse the components of human movement both in normal and pathological conditions.
5. Apply the principles of movement analysis in understanding normal and abnormal gait and posture.
6. Perform basic movement analysis to identify gait and postural abnormalities.
7. Apply the principles of biomechanics in designing physiotherapy protocols.
8. Interpret data obtained from movement analysis such as gait and postural analysis.

Unit 1: Basic Principles of Joint & Muscle Function

- Principles of joint design and structure
- Classification of joints (synarthrosis, amphiarthrosis, diarthrosis)
- Joint function: kinematic chains, ROM, stability
- Injury and disease effects on joints
- Muscle structure & function: composition, fibre types, motor unit, length–tension relationship
- Types of muscle contraction: concentric, eccentric, isometric, torque & isokinetic exercise
- Classification of muscles (spurt/shunt, tonic/phasic)

Unit 2: Vertebral Column & Mechanics of Respiration

- Articulations, ligaments, muscles of vertebral column
- Intervertebral discs, regional characteristics (cervical, thoracic, lumbar, sacral)
- Curves, lumbar–pelvic rhythm, stability & mobility
- Effects of injury & developmental anomalies
- Mechanics of respiration: work of breathing, respiratory muscles, compliance of lungs & chest wall

Unit 3: Temporomandibular Joint (TMJ) & Shoulder Complex

- Structure, articulations, function/dysfunction of TMJ
- Shoulder complex: sternoclavicular, acromioclavicular, scapulothoracic, glenohumeral joints
- Ligaments, dynamic stability, scapulohumeral rhythm
- Muscles of elevation, depression, stability & movement

Unit 4: Elbow & Forearm Complex

- Structure & function of humeroulnar, humeroradial, radioulnar joints
- Axis, ROM, muscle actions, stability & mobility
- Ligaments, carrying angle, open vs closed kinematic chains
- Effects of injury, resistance to forces
- Comparison: flexors vs extensors, pronators vs supinators

Unit 5: Wrist & Hand Complex

- Radiocarpal & midcarpal joints, ligaments, accessory structures
- Hand joints: CMC, MCP, IP – structure, ROM, muscles
- Thumb joints & muscles (extrinsic & intrinsic)
- Prehension & grips: power, precision, hook, pad-to-pad, tip-to-tip
- Functional position of wrist & hand, extensor mechanism, tendon gliding

Unit 6: Hip Complex

- Structure: articulations, trabecular systems, capsule, ligaments
- Pelvic motions & lumbar-pelvic rhythm
- Femoral motion, stability in stance, equilibrium
- Effects of muscular weakness, forces on hip joint
- Coxa Vara/valga, anteversion/retroversion comparisons

Unit 7: Knee Complex

- Tibiofemoral & patellofemoral joints: structure, ligaments, capsule, menisci
- Axes: mechanical, anatomical, motion
- Movements: flexion, extension, rotation, locking & unlocking
- Stability: anterior, posterior, medial, lateral, rotatory stabilizers
- Injuries & diseases, bursae, Q-angle, quadriceps & hamstring function

Unit 8: Ankle-Foot Complex, Posture & Gait

- Structure: ankle, subtalar, talocalcaneonavicular, transverse tarsal, tarsometatarsal, arches
- Terminology: inversion, eversion, pronation, supination
- Plantar arches: structure, ligaments, muscles, weight distribution
- Posture: gravity line, optimal alignment, postural deviations (pes planus, scoliosis, kyphosis, lordosis)
- Gait: phases, determinants, muscle activity at hip, knee, ankle, trunk, pathological gait deviations.

RECOMMENDED BOOKS: -

1. Text Book of Biomechanics – Cynthia Norkin.
2. The Physiology of the joints (Volume I, II, III) - I A Kapandji.

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COLLEGE OF ALLIED HEALTH SCIENCES

Title of the Course	: **Electrotherapy – I (Low Frequency & Medium)**
Category	: Core Subject
Year	: II Year
Course Code	: 24HBPT24T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits
4	-	-	4

Course objectives:

1. Understand the basic principles of electricity used in physiotherapy.
2. Learn the effects of low and medium frequency currents on the body.
3. Know the indications**,** contraindications, and dangers of electrotherapy.
4. Use different electrotherapy machines safely (DC, faradic, sinusoidal, TENS, IFT, etc.).
5. Perform basic tests like FG test, SD curve, EMG, NCV.
6. Select and apply appropriate treatments for different conditions.
7. Communicate clearly with patients about treatment and safety.
8. Follow ethical practices and update knowledge through lifelong learning.

Course Outcomes:

Electro Physical agents

1. Explain pathophysiology of inflammation to tissue injury/healing.
2. Discuss the physiology and pathophysiology of pain.
3. Discuss theories of pain and its implications to physiotherapy clinical decision making.
4. Explain the production, physiological and therapeutic effects of electro physical agents
5. Discuss the indications, contraindications and precautions to be taken while applying electro physical agents
6. Demonstrate competencies in applying (selection, dosage calculation, progression) electro physical agents
7. Rationalize the use of electro physical agents as appropriate to the stage of healing
8. Demonstrate competencies in preparing and implementing evidence-based electro physical agents' protocol for movement impairments under supervision.
9. Demonstrate abilities to document the dosage and progression as per the prescribed format
10. Demonstrate competencies in equipment maintenance, care and safety- precautions
11. Demonstrate competencies in communicating to the stakeholders effectively.

Unit 1: Basics of Physics for Electrotherapy

- Structure of matter and atom
- Theories of electricity
- Production of electrical charge
- Characters of charged body
- Potential and capacity

- Electric current
- Resistance: series and parallel
- Electrical energy and power
- Thermal effect of electric current

Unit 2: Electricity, Magnetism, and Measuring Devices

- Chemical effects of currents: ions, metals in solution, EMF, cells
- Magnetism: nature of magnets
- Magnetic effect of electric current
- Meters: milliammeter, voltmeter
- Electromagnetic induction principles, transformers
- Condensers & capacitors (potential, capacity, electric field)
- Main supply: production & house wiring

Unit 3: Low Frequency Currents – DC for Therapy

- Cell and battery
- Rectification of AC
- Direct current for treatment
- Care of apparatus
- Surging currents

Unit 4: Faradic, Sinusoidal & Electrical Shock

- Faradic current and coils
- Sinusoidal currents
- Causes of electrical shock
- Earth shock
- Electrical & chemical burns
- Prevention & management of electrical accidents

Unit 5: Stimulation of Nerves & Muscles

- Electrical stimulation principles
- Muscle contraction & stimulus duration
- Frequency of stimulation
- Physiological & therapeutic effects of faradic/sinusoidal currents
- Techniques & methods of application

Unit 6: Modified & Constant DC, Ionisation

- Modification of DC & therapeutic effects
- Methods & techniques
- Electrical reactions (changes, FG test, SD curve, EMG, NCV)
- Constant DC: therapeutic effects, cathodal & anodal galvanism
- Ionisation: theories, effects, techniques, surgical ionisation

Unit 7: Electro-Analgesia & Pain Management

- Definition and types of pain (acute/chronic)
- Theories of pain: specificity, summation, pattern
- Gate control theory
- Descending pain suppression mechanism
- TENS: principles, types, parameters, dosage

- Indications, contraindications, dangers

Unit 8: Medium Frequency & Interferential Therapy

- Types of medium frequency currents & characteristics
- Interferential therapy: introduction & principles
- Physiological effects
- Indications & contraindications
- Dosage & methods of application
- Dangers/precautions

RECOMMENDED BOOKS: -

1.. Clayton's Electrotherapy.
2. Electrotherapy Explained - Low and Reed

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Title of the Course	: **Electrotherapy – II (High Frequency)**
Category	: Core Subject
Year	: II Year
Course Code	: 24HBPT25T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits
4	-	-	4

Course objectives:

1. Understand the basic principles of high-frequency currents used in physiotherapy.
2. Learn the effects of high-frequency currents on body tissues.
3. Know about different high-frequency machines and their use.
4. Develop skills in applying high-frequency treatments safely and effectively.
5. Select suitable electrotherapy methods for different clinical conditions.
6. Follow safety rules, precautions, and ethical practices in patient care.
7. Encourage use of evidence-based knowledge in electrotherapy practice.

Course Outcomes:

1. Describe the principles and types of high-frequency currents used in physiotherapy.
2. Explain the physiological and therapeutic effects of high-frequency modalities.
3. Demonstrate correct handling and application of high-frequency electrotherapy equipment.
4. Select appropriate treatment methods for different clinical conditions using high-frequency currents.
5. Apply safety measures, recognize contraindications, and follow ethical practices during treatment.
6. Integrate evidence-based knowledge in planning and delivering high-frequency electrotherapy.

Unit 1: Basic Physics for High Frequency

- Electricity: definition, properties, static & current electricity, cell & battery, energy and power
- Magnetism: molecular theory, magnetic effects, properties
- Electromagnetic induction: EMF, dynamo principles, transformers, choke coil
- Condensers: principles, measurement, capacity, construction, charging & discharging
- Rectifiers: types, valve & metal rectifiers, half & full-wave rectification, smoothening circuit
- Safety devices: fuse, grid, switches (with diagrams)
- Devices regulating current: rheostat, potential divider
- Oscillations: capacitance, inductance, damping, frequency, energy transfer
- Physics of heat & radiation: heat, temperature, transmission, radiant energy, EM spectrum, reflectors, inverse square law

Unit 2: Short Wave Diathermy (SWD)

- Properties of high frequency currents: sustained/unsustained, damped/undamped, impedance
- Nodes & antinodes, wavelength
- Types of high-frequency currents (brief)
- Production of H.F. currents: principles, construction, tuning, regulation
- Methods: condenser field, cable method, field effects
- Physiological & therapeutic effects of SWD
- Technique: machine testing, patient preparation, electrodes (types, position, size, spacing), electrostatic & electromagnetic field applications, dosage
- Pulsed Electromagnetic Energy (PEME) – principles & application
- Dangers & precautions
- Indications & contraindications

Unit 3: Microwave Diathermy (MWD)

- Production of microwaves (with diagrams)
- Magnetron working principle
- Application of MWD
- Physiological & therapeutic effects
- Technique of application & dosage
- Indications & contraindications
- Dangers

Unit 4: Infrared Therapy (IRR)

- IR wavelength & frequency
- Types of IR generators & working principles
- Physiological & therapeutic effects
- Technique of irradiation: choice of apparatus, patient preparation, lamp arrangement, application, treatment duration/frequency
- Dangers, indications & contraindications
- Therapeutic uses and physiological basis

Unit 5: Ultraviolet Radiation (UVR)

- Physics: electric arc, ionization, transmission through gases, types of lamps
- Lamp construction: mercury vapour lamps, Kromayer lamp, cooling, spectrum, fluorescent tubes, PUVA apparatus, care of lamps
- Physiological & therapeutic effects, photosensitization
- Indications, contraindications & dangers
- Technique: test dose, local & general irradiation, treatment methods
- Common conditions treated
- Sensitizers, filters
- Comparison between IR & UV

Unit 6: LASER Therapy

- Introduction & characteristics
- Production & types of lasers
- Classification
- Physiological & therapeutic effects
- Principles & techniques of application
- Dosage
- Indications & contraindications

Unit 7: Heat & Cold Therapy

A. Superficial Heating

- Principles of conduction heating, thermal regulation
- Physiological regulation & local tissue heating
- Sites of tissue heating
- Burns
- Techniques: paraffin wax bath, hydrocollator packs, hydrotherapy, heated air, fluidotherapy, heating pads
- Physiological & therapeutic effects of superficial heating
- Indications & contraindications

B. Cryotherapy

- Physiological changes in skin cooling
- Therapeutic uses of cold
- Methods: packs, sprays, cryokinetics, cryostretch
- Dangers & contraindications
- Comparison of heat & cold treatments

Unit 8: Ultrasound & Traction

Ultrasound Therapy

- Production: piezoelectric effect, US wave generation (with diagrams)
- Properties: reflection, transmission, absorption, depth of penetration (intensity & frequency)
- Effects: thermal, mechanical, chemical, biological, on inflammation & repair
- Coupling media
- Modes: pulsed & continuous
- Therapeutic uses
- Techniques: direct contact, water bath, water bag; dosage in acute & chronic cases
- Phonophoresis & drugs used
- Testing of apparatus
- Dangers, indications & contraindications

Traction

- Effects of spinal traction
- Types of traction
- Application techniques
- Indications
- Adverse effects
- Contraindications & precautions

RECOMMENDED BOOKS: -

1. Electrotherapy Explained – Joseph Kahn.
2. Basics of Electrotherapy - Subhash Khatri.

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COLLEGE OF ALLIED HEALTH SCIENCES

Title of the Course : **EXERCISE THERAPY - LAB**
Category : Core Subject
Year : II Year
Course Code : 24HBPT22L
Branch : BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits
-	-	4	2

Course Objectives

1. Develop hands-on skills in performing basic and intermediate therapeutic exercises.
2. Understand the principles and indications of different types of exercises (e.g., passive, active, resisted).
3. Learn to perform clinical assessment**s** relevant to exercise therapy, including joint range of motion, manual muscle testing, and postural assessment.
4. Gain experience in planning and demonstrating exercise programs tailored to specific patient conditions.
5. Build confidence and competence in executing exercise techniques safely and effectively in a clinical/lab setting.

Course Outcomes

1. Identify and demonstrate appropriate therapeutic exercises for different joints and muscle groups.
2. Assess and record joint range of motion and muscle strength using standardized techniques.
3. Apply correct body mechanics and patient handling techniques during exercise sessions.
4. Select suitable exercises based on the stage of healing, patient condition, and therapeutic goals.
5. Design and modify basic exercise therapy plans for common musculoskeletal and postural conditions.
6. Communicate effectively with peers and instructors during practical demonstrations and group activities.
7. Adhere to safety protocols and demonstrate ethical behaviour in lab and simulated clinical settings.

List of Experiments

1. Demonstrate the Starting and Derived Positions in Standing, Sitting, Lying, Kneeling & Hanging**.**
2. Demonstrate the technique of measuring using goniometry
3. Demonstrate various techniques of Active movements
4. Demonstrate to apply the technique of passive movements
5. Demonstrate the relaxation techniques in various positions

6. Understand the progressive resisted exercises skill to Merits and demerits of manual muscle testing

7. Demonstrate exercises for training co-ordination – Frenkel's exercise.

8. Identify the abnormal postures and their corrections in human body application

9. Demonstrate the techniques for muscle stretching

10. Demonstrate the different walking aids and crutch walking

11. Understand the Determinants of gait and various pathological gaits in human body.

12. Applications of Joint mobilizations on various joints and assessing the movements

13. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles

14. Demonstrate the PNF techniques.

15. Demonstrate techniques for functional re-education.

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Title of the Course : **Electrotherapy – I Lab (Low Frequency & Medium)**
Category : Core Subject
Year : II Year
Course Code : 24HBPT24L
Branch : BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits
-	-	4	2

Course Objectives

1. Understand the principles of low and medium frequency electrical currents used in physiotherapy.
2. Develop skills to operate, handle, and maintain electrotherapy equipment safely.
3. Demonstrate techniques of electrode placement and stimulation procedures.
4. Apply electrotherapy modalities for diagnosis (nerve testing) and treatment purposes.
5. Gain competence in selecting appropriate parameters and dosage for patient-specific conditions.
6. Practice ethical, safe, and professional standards while delivering electrotherapy in laboratory settings.

Course Outcomes

1. Identify and describe low and medium frequency currents and their applications.
2. Demonstrate correct electrode placement and machine setup for different therapies.
3. Perform motor and sensory nerve stimulation tests.
4. Apply therapeutic techniques using faradic, galvanic, TENS, and interferential currents.
5. Select and adjust parameters for diagnosis and treatment according to patient needs.
6. Ensure patient safety, apply precautions, and follow ethical practices during lab sessions.
7. Integrate theoretical knowledge with hands-on skills in physiotherapy practice.

List of Experiments

1. Demonstrate the technique for patient evaluation – receiving & positioning for electrotherapy.
2. Collection of materials required and testing of electrotherapy apparatus.
3. Placement of electrodes for various low-frequency modalities.
4. Electrical stimulation for muscles supplied by peripheral nerves.
5. Faradism under Pressure for upper limb.
6. Faradism under Pressure for lower limb.
7. Plotting of SD curve with chronaxie and rheobase.
8. Faradic–Galvanic (FG) test demonstration.
9. Demonstration of treatment method using Interferential Therapy (IFT) for different regions
10. Application of Trans Electrical Nerve Stimulation (TENS)

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Title of the Course : **Electrotherapy – II Lab (High Frequency)**
Category : Core Subject
Year : II Year
Course Code : 24HBPT25L
Branch : BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits
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Course Objectives

1. Understand the principles and applications of high-frequency currents and actinotherapy in physiotherapy.
2. Demonstrate safe operation, handling, and maintenance of high-frequency electrotherapy equipment.
3. Develop competency in electrode placement and techniques for various high-frequency modalities.
4. Apply high-frequency therapy techniques (SWD, MW, IRR, UVR, LASER) for treatment of different regions.
5. Calculate dosage, set parameters, and modify therapy based on patient-specific needs.
6. Identify contraindications, risks, and safety precautions associated with high-frequency modalities.
7. Integrate theoretical knowledge with hands-on practice to deliver effective physiotherapy care.

Course Outcomes

1. Demonstrate patient evaluation and positioning for high-frequency therapy.
2. Collect and test all materials and apparatus required for high-frequency electrotherapy.
3. Demonstrate electrode placement and machine setup for SWD, MW, IRR, UVR, and LASER.
4. Apply treatment techniques of high-frequency modalities on different body regions.
5. Calculate dosage and adjust parameters based on the patient's condition.
6. Apply safety precautions and identify contraindications for each modality.
7. Demonstrate post-treatment procedures including cleaning, equipment winding up, and patient care.
8. Integrate high-frequency therapy techniques with clinical reasoning for effective patient management.

List of Experiments

1. Demonstrate the technique for patient evaluation – receiving & positioning for electrotherapy
2. Application of Ultrasound therapy for different regions – various methods.
3. Demonstration of Short-Wave Diathermy (SWD) treatment technique.
4. Demonstration of Infrared Radiation (IRR) therapy.
5. Demonstration of Microwave Diathermy (MWD).

6. Demonstration of Ultraviolet Radiation (UVR) – calculation of test dose & treatment technique.
7. Calculation of dosage and application of LASER therapy.
8. Technique and treatment application of Hydrocollator packs.
9. Technique and treatment application of cryotherapy.
10. Technique and treatment application of contrast bath and wax therapy.
11. Technique and treatment application of Traction.