

**UNIVERSITY OF ENGINEERING AND MANAGEMENT, JAIPUR BACHELORS OF
PHYSIOTHERAPY SYLLABUS**

PROGRAMME CODE:

DURATION- 4 ½ YEARS

DETAILED SYLLABUS WITH SCHEME OF EXAMINATION

SESSION- 2024-2025



UNIVERSITY OF ENGINEERING AND MANAGEMENT, JAIPUR

SCHEME OF BACHELOR OF PHYSIOTHERAPY (B. P. T.) EXAMINATION [IST SEMESTER]

S. No.	Subject	Total hours (Theory + Practical)			Credits		
		T	P	Total	T	P	Total
1	ANA101 Human Anatomy I	4	4	8	4	2	6
2	PHY102 Human Physiology I	3	2	5	3	1	4
3	EXT103 Fundamentals of Exercise Therapy II	3	4	7	3	2	5
4	ELT104 Fundamentals of Electro Physical Agents I	2	2	4	2	1	3
5	PSY105 Psychology	2	-	2	2	0	2
6	FHC106 Fundamentals of health care delivery System in India I	2	-	2	2	0	2
7	ENG107 English I (NUES)	1	-	1	1	0	1
8	IT 109 Information Technology I (NUES)	1	-	1	1	0	1
	Grand Total			30			24

SCHEME OF BACHELOR OF PHYSIOTHERAPY (B. P. T.) Examination [2nd Semester]

S. No.	Subject	Total hours (Theory + Practical)			Credits		
		T	P	Total	T	P	Total
1	ANA101 Human Anatomy II	4	4	8	4	2	6
2	PHY102 Human Physiology II	3	2	5	3	1	4
3	EXT103 Fundamentals of Exercise Therapy II	3	4	7	3	2	5
4	ELT104 Fundamentals of Electro Physical Agents II	2	2	4	2	1	3
5	BHC105 Biochemistry	2	-	2	2	0	2
6	SOG106 Sociology	2	-	2	2	0	2
7	ENG107 English II (NUES)	1	-	1	1	0	1
8	IT108 Information Technology II (NUES)	1	-	1	1	0	1
	Clinic Orientation						
	Grand Total			30			24

SCHEME OF BACHELOR OF PHYSIOTHERAPY (B. P. T.) EXAMINATION [3RD SEMESTER]

S. No.	Subject	Total hours (Theory + Practical)			Credits		
		T	P	Total	T	P	Total
1	General Pathology PAT 201	3	0	3	3	0	3
2	Pharmacology I PHA202	3	0	3	3	0	3
3	Community Medicine & Health Promotion II CMP203	3	0	3	3	0	3
4	Exercise therapy I EXT204	3	4	7	3	1	5
5	Electrotherapy I ELT205	3	4	7	3	1	5
6	Biomechanics & Kinesiology I BIK206	3	2	5	3	1	4
7	Yoga and Systems of Medicine I (NUES) YSM 207	1		1			1
8	Emergency Care and life support Skills (NUES) BLS 208	1		1			1
9	Clinical Orientation (Non-University)						
Grand Total				30			25

2024-25
Scheme Of Bachelor of Physiotherapy (B. P. T.) Examination [4th Semester]

S. No.	Subject	Total hours (Theory + Practical)			Credits		
		T	P	Total	T	P	Total
1	General Microbiology	3	0	3	3	0	3
2	Pharmacology II PHA2	3	0	3	3	0	3
3	Community Medicine & Health Promotion II CMP	3	0	3	3	0	3
4	Exercise therapy II EXT204	3	4	7	3	1	5
5	Electrotherapy II ELT205	3	4	7	3	1	5
6	Biomechanics & Kinesiology II BIK206	3	2	5	3	1	4
7	Medical Terminology (NUES)	1		1			1
8	Clinical Education (Non-University)	1		1			1
9							
Grand Total				30			25

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2024-25

SCHEME OF STUDY BACHELOR OF PHYSIOTHERAPY (B. P. T.) B. P. T. Examination

[5th Semester]

S No.	Subject	Theory Hours	Practical Hours	Total Hours	Credits Theory	Credits Practical	Credits Total
1.	General Medicine I	2	2	4	2	1	3
2.	General Surgery & Obs Gynec	2	2	4	2	1	3
3.	Orthopaedics I	3	2	5	3	1	4
4.	Physiotherapy in Medical and Surgical Conditions I	3	2	5	3	1	4
5.	Physiotherapy in Orthopaedic Conditions 1	3	2	5	3	1	4
6.	Physical & functional Diagnosis & Prescription	3	2	5	3	1	4
7.	Research Methodology, Biostatistics and Evidence Based Practice 1	2	0	2	2	0	2
	Clinical Education		6	6		6	3
	GRAND TOTAL			36			27

SCHEME OF STUDY BACHELOR OF PHYSIOTHERAPY (B. P. T.) B. P. T. Examination
[6th Semester]

S No.	Subject	Theory Hours	Practical Hours	Total Hours	Credits Theory	Credits Practical	Credits Total
1.	General Medicine II	2	2	4	2	1	3
2.	Cardio thoracic & Vascular Surgeries	2	2	4	2	1	3
3.	Orthopaedics II	3	2	5	3	1	4
4.	Physiotherapy in Medical and cardiovascular Surgical Conditions II	3	2	5	3	1	4
5.	B.P.T-305 Physiotherapy in Orthopaedic Conditions II	3	2	5	3	1	4
6.	Professional issues (including ethics), Administration & Bioengineering	2	0	2	2	0	2
7.	Biostatistics and Evidence based practice	2	-	2	2	0	2
	Clinical Education		6	6		6	3
	GRAND TOTAL			33			25

SCHEME OF STUDY BACHELOR OF PHYSIOTHERAPY (B. P. T.) B. P. T. Examination
[7th Semester]

S No.	Subject	T	P	Total Hours	Credits Theory	Credits Practical	Credits Total
1.	Neurology, and Neuro-surgery - I	3	2	5	3	1	4
2.	Paediatric conditions and psychosomatic disorders	2	1	3	2	1	3
3.	Physiotherapy in Neurological and Neurosurgical conditions I	3	2	5	3	1	4
4.	Cardiopulmonary diseases and surgery	3	2	5	3	1	4
5.	Sports Physiotherapy & Exercise Prescription-I	3	2	5	3	1	4
6.	Community Physiotherapy & Rehabilitation- I	3	2	5	3	1	4
7.	Project work orientation and Synopsis Submission (NEUS)						
8.	Clinical posting		6	6		6	3
	GRAND TOTAL			34			26

SCHEME OF STUDY BACHELOR OF PHYSIOTHERAPY (B. P. T.) B. P. T. Examination

[8th Semester]

S No	Subject	Theor y Hours	Practical Hours	Total Hours	Credits Theory	Credit s Practical	Credits Total
1.	Neurology, and Neuro-surgery -II	3	2	5	3	1	4
2	PT in Pediatrics conditions and psychosomatic disorders	2	1	3	2	1	3
3.	Physiotherapy in Neurological and Neurosurgical conditions II	3	2	5	3	1	4
4.	PT in Cardiopulmonary diseases and surgery	3	2	5	3	1	4
5.	Sports Physiotherapy & Exercise Prescription-II	3	2	5	3	1	4
6.	Community Physiotherapy & Rehabilitation- II	3	2	5	3	1	4
8.	B.P.T-406 Project						2
9.	Clinical Posting		6	6		6	3
	GRAND TOTAL			34			28

SUBJECT: HUMAN ANATOMY I

COURSE CODE: ANA101

CREDITS: 4

Course Objectives: The objectives of this course will be to emphasize the identification and application of the fundamental concepts and methods of life or physical science. To explore natural phenomena, observation & experimentation. To understand, identify, and describe the basic anatomical structures associated with cells and tissue, and muscular, skeletal, and nervous systems. It helps to develop basic dissection in the field of anatomy.

Course Outcomes (CO):

After taking this course a student will:

CO1: Describe common anatomical terms.

CO2: Discuss the classifications of bones, their general features, structure, functions, and the mechanism of displacement and common sites of fractures.

CO3: Identify the skeletal muscles, their origin, insertion, nerve supply, actions, and main relations.

CO4: Recognize anatomical structures and describe the topographic anatomy of the regions of the abdomen, pelvis, perineum, thorax, and extremities.

CO5: Describe the components of the nervous system, including the cerebrum, brainstem, cerebellum, spinal cord, peripheral nerves, sensory motor, and autonomic nervous systems.

S. No.	Topics	Hours	Course Outcomes (CO)
1	Unit 1	10 H	CO1, CO2, CO3, CO4
	Define Scope of Anatomy	1 H	CO1
	Anatomical Position and anatomical Terminology (Groove, tuberosity, trochanters etc.)	1 H	CO1
	Anatomical positions of body, axes, and planes	1 H	CO1
	Bones:		CO2
	Composition, Functions, Classification based on Morphology	1 H	CO2
	Development and Structure; Formation / Development of Bones esp. Long Bones; Parts of Long Bones	1 H	CO2
	Blood Supply of Bones	1 H	CO2
	Cartilage:	1 H	CO1
	Types and Features of cartilage		
	Joints:		
	Definition and types	1 H	CO1
	Features of fibrous, Cartilaginous & Synovial joints, sub-types of synovial joints	1 H	CO1
	Movements of joints, factors permitting and limiting these movement	1 H	CO1
	Blood supply of joints; applied aspects	1 H	CO1
	Muscles:		CO4
	Comparative Feature of Skeletal, Smooth and Cardiac Muscles, parts & structure of Skeletal Muscle including fascicular architecture	1 H	CO3
	Blood supply and nerve supply of Skeletal Muscle; Motor Unit	1 H	CO4
	Types of Skeletal Muscles based on their action i.e. Agonists, Antagonists, Fixators, Synergists, Origin & Insertion, Tendon; Isometric & Isotonic contractions; Applied Aspects	1 H	CO4
	Connective Tissue:		
	Composition i.e. Cellular & Non-Cellular components; Types and functions of connective tissue; Ligaments; Applied Aspects	1 H	CO1
2	Unit 2: Musculo Skeletal Anatomy of Upper Extremity	8 H	CO4, CO3,
	Osteology: Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, and Phalanges	2 H	CO4

	Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of forearm, back of forearm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity	2 H	CO4
	Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand	2 H	CO3
	Arches of hand, skin of the palm and dorsum of hand	2 H	CO4
3	Unit 3: Thorax	8 H	CO5
	Cardio-vascular system:		CO5
	Mediastinum: Divisions and contents Pericardium	1 H	CO5
	Thoracic Wall: position, shape and parts of the heart; conducting System	1 H	CO5
	Blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise	1 H	CO5
	Respiratory system:		CO5
	Outline the respiratory passages, Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments	1 H	CO5
	Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm	1 H	CO5
	Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action	1 H	CO5
4	Unit 4: Musculo Skeletal Anatomy of Lower Extremity	8 H	CO3, CO4
	Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges	2 H	CO4
	Soft parts: Gluteal region, Anterior, posterior, medial and lateral aspects of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot	2 H	CO4
	Joints of the lower limb: Hip Joint, Knee joint, Ankle and joint, joints of the foot	2 H	CO3
5	Unit 5: Musculo Skeletal Anatomy of trunk & vertebral column	8 H	CO3, CO4
	Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs.	1 H	CO4
	Discuss Soft tissue: Pre and Para vertebral muscles, intercostal muscles, anterior abdominal wall muscles, Inter-vertebral disc.	1 H	CO4
	Describe Pelvic girdle and muscles of the pelvic floor.	1 H	CO3

SUBJECT: Human Anatomy Practical

COURSE CODE: ANA191

CREDITS: 2

S. No.	Practical	Hours	Course Outcomes (CO)
1	Identify the parts of bones (Upper limb, lower limb, and spine)	6 H	CO3, CO4
2	Identify the muscles of extremities, trunk, and face on a dissected human body/3D model	6 H	CO4, CO1
3	Identify the joints of extremities, trunk, and face on a dissected human body/3D model	6 H	CO3, CO2
4	Identify the course and relationships of major peripheral nerves including plexuses formation	6 H	CO5
5	Identify the surface markings of joints, fascia, ligaments, and muscles of extremities, trunk, and face on a model	6 H	CO4
6	Identify the gross structure of heart, lungs, brain, and spinal cord on a dissected human body/3D model	6 H	CO5

Essential Readings:

1. Snell RS. Clinical anatomy: an illustrated review with questions and explanations. Lippincott Williams & Wilkins; 2004.
2. Inderbir Singh, Textbook of Anatomy with color Atlas – Vol. 1, 2, 3. Jaypee Brothers 3. Chaurasia BD. Human anatomy Volume- I, II & III, CBS Publisher; 2004.
3. Singh I. Textbook of human neuroanatomy. Jaypee Brothers Publishers; 2006.
4. Kadasne'S T.B. of Anatomy Vol.1 Upper and Lower Extremities 2009
5. Singh V. Textbook of clinical neuroanatomy. Elsevier Health Sciences; 2014.
6. Dutta AK. Essentials of human anatomy, head and neck

External Courses:

1. NPTEL Medical Course Anatomy
<https://dth.ac.in/medical/course.php>
2. Anatomy Specialization, University of Michigan, Course Era
<https://www.coursera.org/specializations/anatomy>

SUBJECT: HUMAN PHYSIOLOGY-I

SUBJECT CODE: PHY102

CREDITS: 3

Course Objectives:

The following goals are designed to ensure students comprehensively understand physiology. These goals serve as the cohesive framework for all physiology topics, emphasising the development of precise terminology for effective communication. Students will identify anatomical structures and elucidate the physiological functions of body systems. They will integrate concepts to relate physiological knowledge to practical scenarios, encompassing healthy lifestyle choices and imbalances in homeostasis. Furthermore, students will demonstrate proficiency in laboratory techniques for assessing the physiological functions of each organ system and interpret graphs depicting anatomical and physiological data.

Course Outcomes (CO):

After taking this course, a student will:

CO1: Acquire thorough knowledge of general physiology about cells, blood, nerves, and muscles.

CO2: Demonstrate understanding of the theoretical and practical aspects of the nervous system, including its classification and the physiology of voluntary movement.

CO3: Gain proficiency in understanding the excretory system and its functions through applied physiology.

CO4: Comprehend the physiological foundations of the endocrine system and its clinical implications.

CO5: Understand the physiology of the reproductive systems and the physiological changes occurring during pregnancy.

CO6: Illustrate human respiratory system physiology through diagrams and explanations.

CO7: Attain theoretical and practical knowledge of the cardiovascular and gastrointestinal systems, applying this knowledge in clinical contexts.

Sl. No	Topics	Hours	Course Outcome
1.	General Physiology	3	
	Cell: Morphology. Organelles: their structure and functions.	2	CO1
	Transport across the cell, diffusion, osmosis.	1	CO1
2.	Blood	5	
	Composition and function of blood, lymph and plasma, and Blood cells:	1	CO1
	structure, types, function, counts and variation of RBC, WBC, Platelet, Haemoglobin	1	CO1
	Erythropoiesis, Coagulation of blood (clotting factor), blood groups, immunity&, & anticoagulants. Cross-matching	2	CO1
	Indications and complications of Blood Transfusion, anaemia, jaundice, haemophilia.	1	CO1
3.	Cardiovascular system:	9	
	Physiological anatomy, structure, properties & nerve supply of heart, cardiac muscles, and blood vessels	2	CO7
	Action potential & pacemaker potential. Conducting system in terms of Components. Impulse conduction Cardiac Cycle, ECG.	4	CO7
	Stroke volume and regulation of Cardiac Output: Normal values, determinants, regulation & its variations of BP.	3	CO7
4.	Respiratory System:	7	
	Functions of – Pleura, trachea-bronchial tree, alveolus, respiratory membrane, and their nerve supply, Respiratory muscles mechanisms.	3	CO6
	Spirometry, Transport of respiratory gases: Diffusion across the respiratory membrane. Oxygen transport – Different forms, oxygen haemoglobin, dissociation curve (Bohr effect, Haldane effect).	2	CO6

	Regulation of Respiration: Neural Regulation. Hering-Breuer reflex. Voluntary control. Hypoxia: Hyperbaric oxygen therapy. Acclimatization Hypercapnia. Asphyxia. Cyanosis, Dysbarism. Respiratory changes during exercise it's important.	2	CO6
5.	Digestive System:	5	
	Composition, functions, production, and regulation of the digestive system, Salivary Secretion: Stomach, Saliva, mastication, Swallowing.	2	CO7
	Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation. Peptic ulcer.	2	CO7
	Gastric motility. Gastric emptying. Vomiting.	1	CO7
	Pancreatic Secretion: Composition, production, function, & regulation of liver, Gall bladder & Bile.	1	CO7
6.	Renal System:	11	
	Functions of renal system. Nephrons – cortical and juxtamedullary. Juxtaglomerular apparatus. Glomerular membrane.	2	CO3
	Renal blood flow and its regulation. Functions of kidneys	1	CO3
	Functions of kidneys. Mechanism of Urine Formation: Glomerular Filtration: Mechanism of glomerular filtration. GFR – normal value and factors affecting. Renal clearance. Inulin clearance.	3	CO3
	Creatinine clearance, Tubular Reabsorption: Reabsorption of Na ⁺ , glucose, HCO ₃ ⁻ , urea, and water. Filtered load. Renal tubular transport maximum. Glucose clearance.	2	CO3

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Renal threshold for glucose. Mechanism of concentrating and diluting the Urine: Counter-current mechanism. Regulation of water excretion. Diuresis. Diuretics.	2	CO3
Mechanism of micturition. cystometrogram. Atonic bladder, automatic bladder.	1	CO3

SUBJECT CODE: PHY192 I

CREDITS: 1

Sl.No.	Topics	Hours	Course Outcome
1.	Collection of Blood.	1	CO1
2.	Study of Hemocytometer. Hemoglobinometry.	1	CO1
	white blood cell count, red blood count, Leishman's staining	1	CO1
3.	Determination of Blood Group.	2	CO1
4.	Bleeding time and Clotting time (BTCT).	1	CO1
5.	Spirometry: Lung Volume and Capacity.	1	CO6
6.	Measurement of blood pressure.	1	CO6

Essential Readings:

1. K. Sembulingam, Essentials of Medical Physiology, Jaypee, All Chapters
2. Concise Medical Physiology – Sujit K. Chowdhuri.
3. Textbook of Physiology for Physiotherapy – Prof. A. K Jain.

Essential Courses

<https://www.coursera.org/learn/blood-film-morphology>

<https://www.coursera.org/learn/physiology>

<https://www.coursera.org/learn/infarction>

<https://www.coursera.org/learn/chronic-respiratory-diseases-crd-in-primary-care-settings>

<https://www.coursera.org/learn/managing-asthma-allergies-diabetes-and-seizures-in-school>

Course: FUNDAMENTALS OF EXERCISE MODALITIES I

Course Code: EXT 103 I

Credits: 4

SEMESTER 1

Course Outcomes (CO):

1. Apply the principles of physics in describing movements (Force, inertia, Laws of motion)
 2. Explain planes and axis of movements
 3. Discuss the methods of measuring joint movements
 4. Demonstrate joint movement measurements (Including electronic goniometer)
 5. Demonstrate fundamental and derived positions and muscle actions
 6. Demonstrate transfer techniques
 7. Perform basic assessment techniques (Motor, sensory, coordination and balance)
- Demonstrate knowledge and skills in prescribing basic movement aids

S. No.	Topics	Hours	Course Outcome
1	Unit 1: Basic principles Describe the aims of Exercise Therapy, The techniques of Exercise Therapy, Approach to patient's problems, and Assessment of patient's condition – Measurements of Vital parameters	2	CO1
	Apply the principles of mechanics applied to Exercise Therapy: Force, Composition, Resolution, Equilibrium- stable, unstable, neutral gravity-LOG-COG, levers-types, Speed, velocity, work, energy, power, acceleration, momentum, friction and inertia, axes and planes, pulley and springs	7	CO1, CO2

	Discuss Muscle work group action of muscles, angle of pull and mechanical efficiency of the muscles.	1	CO2
2	Unit 2: Starting and Derived Positions Demonstrate the starting positions, their muscle work, effects and uses and Standing, Kneeling, Sitting, Lying and Hanging.	2	CO2, CO5
	Demonstrate derived positions. Discuss the muscle work of each derived position	2	CO2, CO5
3	Unit 3 Definition and Classification of Active and Passive Movements with advantages, disadvantages, indications, contraindication, techniques	4	CO3
	Measurement of Joint Range Methods of testing: Measuring range of motion (ROM). Discuss Reliability and validity of goniometry. Functional ROM and normal range of motion of various joint. Technique of Goniometry.	8	CO3, CO4
	Perform ROM measurement of individual joint's using goniometer.	8	CO3, CO4
	Measurement of Limb Length- True, apparent and segmental limb length Measurement of angle of Pelvic Inclination	5	CO3, CO4
	Total	39	

Recommended Text Books

1. Principle of Exercise Therapy -Gardiner - C.B.S. Delhi
2. Practical Exercise Therapy - Hollis - Blackwell Scientific Publications.
3. Therapeutic Exercises Foundations and Techniques - Kisner and Colby -F.A. Davis.
4. Principles and practices of therapeutic massage – Sinha 3rd edition. Jaypee brothers Delhi
5. Margaret Hollis-Textbook of Massage.
6. Muscle testing and functions - Kendall - Williams & Wilkins.
7. Daniels and Worthingham's - Muscle testing - Hislop & Montgomery - W.B. Saunders.
8. Measurement of Joint Motion: A Guide to Goniometry - Norkins& White - F.A. Davis

Recommended reference books

1. Therapeutic Exercises - Basmajian - Williams and Wilkins.
2. Licht SH, editor. Massage, manipulation, and traction. E. Licht;
3. World Health Organization; Global Strategy on Diet, Physical Activity and Health
4. McArdle WD, Katch FI, Katch VL. Exercise physiology: nutrition, energy, and human performance. Lippincott Williams & Wilkins; 2010.
5. Kennedy-Armbruster C, Yoke M. Methods of group exercise instruction. Human Kinetics; 2014.
6. ACSM's Guidelines for Exercise Testing and Prescription

Course: FUNDAMENTALS OF EXERCISE MODALITIES I PRACTICAL

Course Code: EXT 193 I

Credits: 2

SEMESTER 1

S. No.	Topics	Hours	Course Outcome
1	Demonstrate the different types of muscle contraction, muscle work, group action of muscles and co-coordinated movements on self.	6	CO1, CO2
2	Demonstrate various fundamental and derived positions. And describe muscle work, and uses on self.	6	CO2, CO5
3	Measure the ROM of joints using hand held goniometer – upper limb, lower limb & trunk on human model	8	CO3, CO4
4	Demonstrate the relaxed passive movement of joints of upper limb and lower limb on human model.	6	CO2, CO3
5	Instruct the patient to perform of the active mobilisation exercises of joints of upper limb and lower limb on human model	8	CO5
6	Measurement of Limb Length- True, apparent and segmental limb length	2	CO7
7	Measurement of angle of Pelvic Inclination	2	CO7
Total		38	

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SUBJECT: FUNDAMENTALS OF ELECTRO PHYSICAL AGENTS I

SUBJECT CODE: ELT104

CREDITS: 3

Course Objectives: The "Fundamentals of Electro Physical Agents" course aims to provide students with a comprehensive understanding of electrotherapy principles and applications in physiotherapy. Students will learn the basics of electricity production and its effects on human tissues, the therapeutic effects of various electrotherapeutic modalities, and operational skills for different equipment. Additionally, the course covers pain physiology, clinical decision-making, equipment maintenance, and safety precautions to ensure effective treatment delivery.

Course Outcomes (CO):

After taking this course, a student will:

CO1: Explain fundamental principles of physics related to electricity production and its transmission.

CO2: Explain the production, physiological and therapeutic effects of biophysics, principles, therapeutic uses, indications, and contraindications of electrical stimulation agents.

CO3: Demonstrate competencies in operational skills of equipment, patient preparation, and techniques of application of electrical stimulation agents.

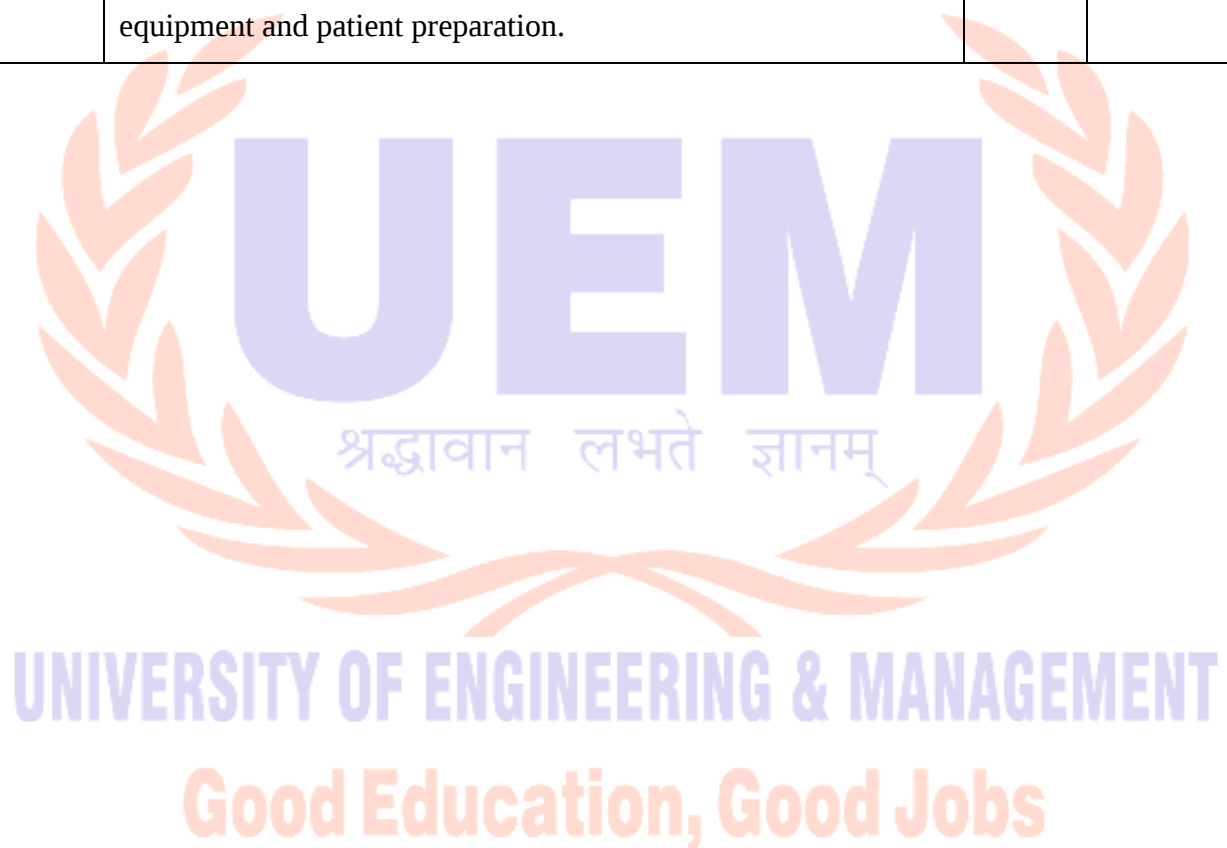
CO4: Discuss the physiology and pathophysiology of pain

CO5: Discuss theories of pain and their implications for physiotherapy clinical decision making.

Course Contents:

S.No.	Topics	Hours	Course Outcome
1	UNIT 1 Physical Principles in Relation to Physiotherapy	8	CO1
	Structure and Properties of Matter: solids, liquids, and gases; adhesion, surface tension, viscosity, density, and elasticity.	1	CO1
	Structure of Atoms and Molecules: atoms, molecules, elements, and compounds, electron theory, static and current electricity.	2	CO1
	Conduction and Insulation: conductors, insulators, potential difference, resistance, and intensity.	1	CO1
	Ohm's Law: application to AC and DC currents.	1	CO1
	Rectifying Devices: thermionic valves, semiconductors, transistors, amplifiers, transducers, oscillator circuits.	2	CO1
	Capacitance and Condensers: in DC and AC circuits.	1	CO1
2	UNIT 2 Effects of Current Electricity	7	CO2
	Chemical Effects: ions and electrolytes, ionization, production of E.M.F by chemical actions.	2	CO2
	Magnetic Effects: molecular theory of magnetism, magnetic fields, electromagnetic induction.	1	CO2
	Measurement Devices: milliammeters and voltmeters, transformers and choke coils.	1	CO2
	Thermal Effects: Joule's law and heat production.	1	CO2
	Physical Principles of Light and Sound: properties of light and sound.	1	CO2
	Electromagnetic Spectrum: biophysical application.	1	
3	UNIT 3 Electrical Supply	7	CO2
	Overview: main supply of electric current.	1	CO2
	Dangers and Precautions: short circuits, electric shocks, safety devices, earthing, fuses.	1	CO2
	Emergency Management: first and initial management of electric shock.	2	CO2
4	UNIT 4 Low Frequency Currents	15	CO3

	Introduction: direct, alternating, and modified currents.	1	CO3
	Iontophoresis: biophysics, principles, therapeutic uses, indications, contraindications, operational skills of equipment and patient preparation.	2	CO3
	Faradic Current: biophysics, principles, therapeutic uses, indications, contraindications, operational skills of equipment and patient preparation.	2	CO3
	Interrupted Direct Current: biophysics, principles, therapeutic uses, indications, contraindications, operational skills of equipment and patient preparation.	3	CO3



	Transcutaneous Electrical Nerve Stimulation (TENS): types of low frequency, pulse widths, frequencies, and intensities used in TENS applications.	1	CO3
	TENS Theories of Pain Relief	1	CO4
	TENS Principles of Clinical Application: effects and uses, indications, contraindications, precautions.	1	CO4
	TENS Operational Skills: equipment and patient preparation.	1	C04
	Advanced Safety Protocols and Innovations: latest advancements in safety devices and protocols to prevent electric shocks and other hazards.	3	C05

SUBJECT: Fundamentals of Electro Physical Agents Practical I

SUBJECT CODE: ELT194 I

CREDITS: 2

Practical's Topics

S. No.	Practical	Hours	Course Outcome
1	Identify components and safety devices involved in the electric supply of the electrotherapy department	3	CO1
2	Experience sensory and motor stimulation of nerves and muscles by various types of low-frequency currents on self	3	CO2
3	Locate and stimulate different motor points region-wise, including the upper & lower limb, trunk, face on a human model	3	C03

Essential Readings:

1. Electro therapy Explained: Principles & Practice Low & Reed, Butterworth Heinemann.
2. Claytons Electro therapy, Forster & Palastange Baillier Tindal.

SUBJECT: PSYCHOLOGY

SUBJECT CODE: PSY105

CREDITS: 2

Course Objectives:

The course covers essential psychological parameters relevant to physiotherapeutic practice and introduces students to fundamental sociological concepts, principles, social processes, and institutions. It also examines various social factors impacting families in both rural and urban communities.

Course Outcome:

At the end of the course, the candidate will be able to:

CO1: Define psychology and its role in the health delivery system. Explore psychological maturation during human development, growth, and changes during ageing.

CO2: Analyse the significance of psychological status in health and disease, environmental and emotional influences on personality and mental health.

CO3: Develop skills in patient interaction, including the therapist-patient relationship and professional collaboration. Emphasis on understanding the impact of disease on patients' psychological well-being.

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Sl. No	Topics	Hours	Course Outcome
1.	Introduction to Psychology:	2 Hours	
	Structuralism, functionalism, psychoanalysis, methods of introspection, observation, inventory, and experimental method	1	CO1
	Branches of psychology: pure psychology & applied psychology with the importance of the study of psychology to physiotherapy	1	CO1
2.	Developmental Psychology:	2 Hours	
	Nature, characteristics, & factors influencing growth & development, & outline developmental stages: infancy, childhood, adolescence, adulthood, & Old age.	1	CO1
	Role of heredity & environment with their relative importance in physical, psychological, & social development.	1	CO2
3.	Emotions and perception:	4 Hours	
	Definition, nature, concepts, types, principles, factors theories of anger, fear, anxiety, sensation, attention, illusion & hallucination, physiological changes due to emotional state.	1	CO1
	Definitions, concepts, factors, needs, and theories of motivation, learning (including classical & operant conditioning, trial and error), primary & secondary motives, characteristics, types, & assessment of intelligence tests (verbal, performance, IQ, mental age).	2	CO1, CO3
	Effective ways to learn massed/spaced, whole /part, recitation/reading, serial/free recall, incidental/intentional learning, knowledge of results, association, & mnemonic methods.	1	CO1
5.	Psychology of Frustration and Stress	2 Hours	
	Definition, causes, reactions, sources, types, physiological symptoms, and management of frustration,	2	CO1, CO3

	stress, conflicts, adjustment maladjustment, anxiety, tension, psychosomatic problems, and coping strategies.		
6.	Personality	4 Hours	
	Define Personality and describe factors in personality development • Describe tools of Measurement of Personality-: observation, situational test, questionnaire, rating scale, interview, and projective techniques.	2	CO1,CO2
	Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.	1	CO2
	Psychological reactions of a patient during admission and treatment of anxiety may include shock, denial, suspicion, loneliness, shame, guilt, rejection, fear, withdrawal, depression, egocentrism, justification, & loss of hope	1	CO2, CO3
7.	Social psychology:	1 Hours	
	Types of leaders with different theoretical approaches to leadership, development of attitude, and change of attitude.	1	CO1
8	Clinical psychology:	3 Hours	
	Models of training, abnormal behavior assessment, clinical judgment, psychotherapy, and self-management methods.	1	CO2, CO3
	Physiotherapist-patient interaction, aggression, self-imaging, stress management, assertive training, group therapy, body awareness, pediatric, child, and geriatric clinical psychology.	2	CO3

Essential Books:

1. Morgan C.T. & King R.A. Introduction to Psychology– recent edition [Tata McGraw-Hill publication]
2. Munn N.L. Introduction to Psychology [Premium Oxford, I.B.P. publishing.]
3. Clinical Psychology –Akolkar

4. Hurlock EB. Development psychology. McGraw-Hill

Essential Courses:

<https://www.coursera.org/learn/positive-psychiatry>

<https://www.coursera.org/learn/psychological-first-aid>

<https://www.coursera.org/specializations/abnormal-psychology>

<https://www.coursera.org/learn/positive-psychology>



SUBJECT: Fundamentals of Health Care Delivery System in India

SUBJECT CODE: FHC106

CREDITS: 2

Course Objectives:

Course Outcomes (CO):

After taking this course, a student will:

CO1: Understand the basic structure and function of healthcare delivery systems in India.

CO2: Comprehend the organization of healthcare delivery at different levels in India and identify issues within the system.

CO3: Recognize the importance and methods of community participation in healthcare.

CO4: Compare and contrast the Indian healthcare system with those of developed countries.

CO5: Evaluate the role of the private sector and identify the causes of imbalance between primary and specialty care.

CO6: Explain the objectives, impact, and policy framework of the National Health Mission and National Health Policy.

CO7: Understand the role of healthcare financing, insurance, corporatization, and globalization in shaping the healthcare system.

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S. No.	Topics	Hours	Course Outcome
1	Introduction to the Healthcare Delivery System	1	CO1
2	Healthcare Delivery System in India at Primary, Secondary, and Tertiary Care	1	CO2
3	Community Participation in the Healthcare Delivery System	1	CO3
4	Contribution of NGOs in Healthcare Delivery and Community Health Programs	1	CO3
5	Health System in Developed Countries	1	CO4
6	Private Sector	1	CO5
7	National Health Mission	1	CO6
8	National Health Policy	1	CO6
9	Issues in Health Care Delivery System in India	1	CO2
10	Human Resources for Health: Challenges Related to the Shortage and Distribution of Healthcare Professionals	1	CO2
11	National Health Programme: Background, Objectives, Action Plan, Targets, Operations, Achievements, and Constraints	1	CO6
12	Health Scenario of India: Past, Present, and Future	1	CO2
13	Introduction to the Profession of Physiotherapy: Role of Physiotherapy in National Health Issues	1	CO1
14	Recent Technological Advancements and Their Application in Physiotherapy	1	CO1
15	Concepts of Health and Disease: Risk Factors, and the Role of Health Promotion and Disease Prevention	1	CO7
16	Impact of Non-Communicable Diseases, Lifestyle Changes, and Environmental Factors on Future Health Scenarios	1	CO7
17	Corporatization of Healthcare	1	CO7
18	Globalization of Healthcare	1	CO7
19	Prospects of New Healthcare Reforms	1	CO7
20	Role and Growth of Telemedicine and Digital Health Platforms in Global Healthcare	1	CO7

21	Health Services Professionals: Types, Training, Practice Requirements, and Practice Settings	1	CO7
22	Differentiation Between Primary Care and Specialty Care: Causes of Imbalance	1	CO5
23	Role of Healthcare Financing: Impact on the Delivery of Healthcare	1	CO7
24	Basic Concepts of Insurance: How General Insurance Terminology Applies to Health Insurance	1	CO7

Essential Readings:

1. Textbook of Community Medicine" by Rajvir Bhalwar
2. "Park's Textbook of Preventive and Social Medicine" by K. Park
3. "Essentials of Global Health" by Richard Skolnik
4. "Public Health: What It Is and How It Works" by Bernard J. Turnock

External Courses:

1. Healthcare Delivery Providers by University of Minnesota
<https://www.coursera.org/learn/healthcare-delivery-providers>
2. Assessing Health Program Delivery by Johns Hopkins University
<https://www.coursera.org/learn/assessing-health-program-delivery>
3. Healthcare Organization Operations by Rutgers University
<https://www.coursera.org/specializations/healthcare-organization-operations>

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COURSE CODE- 107

COURSE TITLE - ENGLISH, COMMUNICATION AND SOFT SKILLS

Subject description: The objective of this course is to enable the student to effectively communicate with patient, colleague and professional. The student

will also be able to understand and implement the basic communication skills required for personal, hospital, and department management and interpersonal management.

Course outcomes

CO 1 apply basics of grammar and writing skills apply and communicate ideas orally and in writing with a high level of proficiency

use appropriate expressions in varied situations and topics of interest ,speak in English both in terms of fluency and comprehensibility

demonstrate independence in using basic language structure in oral and written

Major topics to be covered under Communication course

COURSE CONTENT

1. Basic Language Skills: Grammar and Usage.
2. Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.
3. Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.
4. Basic concepts & principles of good communication

COURSE CODE- 108

COURSE TITLE- COMPUTERS AND INFORMATION SCIENCE

SUBJECT DESCRIPTION: The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation. Topics to be covered under the subject are as follows:

Course outcome

CO 1 know the parts of computer

CO 2 have working knowledge of a computing system

CO3 use computer for word processing and presentation and data management

CO4 use the internet for personal and professional purpose

CO5 understand the role of digital technology in the health sciences

Course Content

Practical No.	Topic	Guidelines / Competencies
1	Introduction to Computers	Identify the characteristics, components, generations and languages of computers.
2	Input and Output Devices	Demonstrate the use of common input and output devices.
3	Processor and Memory	Identify the functions of the CPU and different types of computer memory.
4	Storage Devices	Differentiate between magnetic, optical and mass storage devices and their applications.
5	Microsoft Windows	Perform basic Windows operations including desktop navigation, file/folder management, shortcuts and window operations.

SUBJECT: Human Anatomy- II
COURSE CODE: ANA101- II
CREDITS: 4

Course Objectives: The objectives of this course will be to emphasize on Identification and application of the fundamental concepts and methods of a life or physical science. To explore natural phenomena, observation & experimentation. To understand, identify, and describe the basic anatomical structures associated with cells and tissue, and muscular, skeletal, and nervous systems. It helps to develop basic dissection in the field of anatomy.

Course Outcomes (CO):

After taking this course a student will:

CO1: Identify the skeletal muscles, their origin, insertion, nerve supply, actions, and main relations.

CO2: Identify the borders of the named anatomical regions along with their associated fascia, ligaments, tendons, or cartilages.

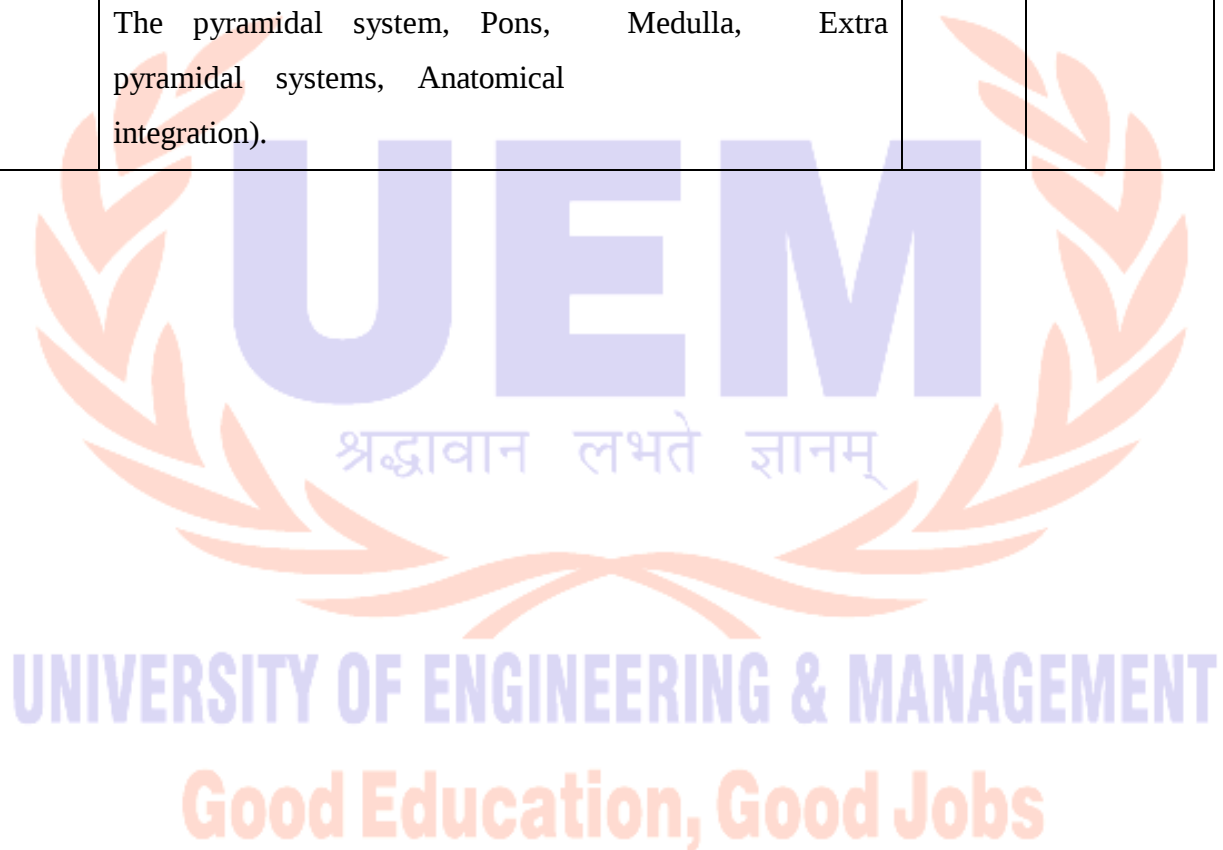
CO3: Recognize anatomical structures and describe the topographic anatomy of the regions of the abdomen, pelvis, perineum, thorax, and extremities.

CO4: Describe the anatomy of the components of organ systems of the body based on the anatomical region (thorax, abdomen, pelvis, and perineum).

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S. No.	Topics	Hours	Course Outcome
1	Unit 1: Abdomen	14 H	CO2, CO3
	Describe Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.	2 H	CO2
	Describe large blood vessels of the gut.	2 H	CO2
	Identify Location, size, shape, features, blood supply, nerve supply, and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, and gall bladder.	8 H	CO3
	Describe Pelvis: Position, shape, size, features, blood supply, and nerve supply of the male and female reproductive system.	2 H	CO3
2	Unit 2: Endocrine Glands	10 H	CO2, CO3
	Describe Position, shape, size, function, blood supply, and nerve supply of the following glands: Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes, pineal glands, thymus.	6 H	CO2, CO3
3	Unit 3: Musculo Skeletal Anatomy of Head and Neck	8 H	CO1
	Identify Osteology: Mandible and bones of the skull.	3 H	CO1
	Identify Soft parts: Muscles of the face and neck and their nerve and blood supply-extraocular muscles, triangles of the neck.	5 H	CO1
4	Unit 4: Neuro Anatomy	12 H	CO4

	Discuss Organization of Central Nervous System: Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory, and urogenital systems. Cranial nerves, Peripheral nervous system, Peripheral nerve, Neuromuscular junction, Sensory end organs, Central Nervous System, Spinal segments and areas, Brain Stem, Cerebellum, Inferior colliculi, Superior Colliculi, Thalamus, Hypothalamus, Corpus striatum, Cerebral hemisphere, Lateral ventricles, Blood supply to brain, Basal Ganglia, The pyramidal system, Pons, Medulla, Extra pyramidal systems, Anatomical integration).	12 H	CO4
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SUBJECT: Human Anatomy Practical-II
COURSE CODE: ANA191- II
CREDITS: 2

S. No.	Topics	Hours	Course Outcomes
	Head & Neck		
1	Mouth cavity	2 H	CO4
2	Nasal cavity	2 H	CO4
3	Pharynx and Larynx (Parts, Sensory distribution)	2 H	CO4
4	Cranial bones (Identification of individual bone, general features, different foramina in relation to cranial nerve, Cranial fossae and their relation to brain and Hypophysis)	3 H	CO2
5	Identification of Anterior and Posterior triangles of Neck with their contents.	2 H	CO3
6	Radiological Anatomy of Musculo Skeletal system.	1 H	CO3
	Abdomen & Pelvis		
7	Abdominal viscera	1 H	CO2
8	Sacrum	1 H	CO3
9	Bony pelvis	1 H	CO2
10	Viscera of Pelvis	1 H	CO1
11	Blood vessels	1 H	CO1
	Nervous System		
12	Spinal cord (with its meninges & Blood supply)	2 H	CO2
13	Parts of brain (including meninges, Hind Brain, Mid Brain, Fore brain – Cerebral hemisphere, functional areas, and blood supply)	5 H	CO3

Essential Readings:

1. Snell RS. Clinical anatomy: an illustrated review with questions and explanations. Lippincott Williams & Wilkins; 2004.
2. Inderbir Singh, Text book of Anatomy with color Atlas – Vol. 1, 2, 3. Jaypee Brothers 3. Chaurasia BD. Human anatomy Volume- I, II & III, CBS Publisher; 2004.
3. Singh I. Textbook of human neuroanatomy. Jaypee Brothers Publishers; 2006.
4. Kadasne'S T.B. of Anatomy Vol.1 Upper and Lower Extremities 2009
5. Singh V. Textbook of clinical neuroanatomy. Elsevier Health Sciences; 2014.
6. Dutta AK. Essentials of human anatomy, head and neck

External Courses:

1. NPTEL Medical Course Anatomy
<https://dth.ac.in/medical/course.php>
2. Anatomy Specialization, University of Michigan, Course Era
<https://www.coursera.org/specializations/anatomy>



SUBJECT CODE: PHY102 - II

CREDITS: 3

Course Objectives:

The following goals are designed to ensure students comprehensively understand physiology. These goals serve as the cohesive framework for all physiology topics, emphasising developing precise terminology for effective communication. Students will identify anatomical structures and elucidate the physiological functions of body systems. They will integrate concepts to relate physiological knowledge to practical scenarios, encompassing healthy lifestyle choices and imbalances in homeostasis. Furthermore, students will demonstrate proficiency in laboratory techniques for assessing the physiological functions of each organ system and interpret graphs depicting anatomical and physiological data.

Course Outcomes (CO):

After taking this course, a student will:

CO1: Acquire thorough knowledge of general physiology about cells, blood, nerves, and muscles.

CO2: Demonstrate understanding of the theoretical and practical aspects of the nervous system, including its classification and the physiology of voluntary movement.

CO3: Gain proficiency in understanding the excretory system and its functions through applied physiology.

CO4: Comprehend the physiological foundations of the endocrine system and its clinical implications.

CO5: Understand the physiology of the reproductive systems and the physiological changes occurring during pregnancy.

CO6: Illustrate human respiratory system physiology through diagrams and explanations.

CO7: Attain theoretical and practical knowledge of the cardiovascular and gastrointestinal systems, applying this knowledge in clinical contexts.

PHYSIOLOGY-II

Course Contents:

S.No.	Topics	Hours	Course Outcome
1.	Reproductive System	17 Hours	
	Physiology of Reproductive Organs: Structure and function of reproductive organs. Overview of sex determination, sex differentiation, and common reproductive disorders.	1 1	CO5 CO5
	Male Reproductive System: Functions of the testes in spermatogenesis and hormone production.	1	CO5
	Pubertal changes in males and their physiological implications.	1	CO5
	The action of testosterone and its regulation of secretion. Composition and functions of semen.	1	CO5
	Female Reproductive System: Functions of the ovaries in oogenesis and hormone secretion.	1	CO5
	Role of the uterus in the reproductive process.	1	CO5
	Pubertal changes in females and their physiological effects.	1	CO5
	Actions of estragon and progesterone, including their regulation of secretion.	1	CO5
	Menstrual Cycle: Phases of the menstrual cycle: ovarian and uterine phases.	1	CO5
	Hormonal basis of the menstrual cycle and its regulation.	1	CO5
	Significance of menarche and menopause in female reproductive health.	1	CO5
	Pregnancy: Physiological changes occurring during pregnancy.	1	CO5
	Functions and importance of the placenta.	1	CO5
	Methods and significance of pregnancy tests.	1	CO5
	Mechanisms of lactation and their role in infant nutrition.	1	CO5

	Overview of contraception methods for family planning and birth control.	1	CO5
2.	Endocrine system	9 Hours	
	Enumerate Major endocrine glands. Classification, mechanism of action and Functions of hormones	1	CO4
	Pituitary hormones: Secretory cells, action on target cells, and regulation of secretion of each hormone.	1	CO4
	Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxedema, Cretinism, Grave's disease	1	CO4
	Parathyroid hormones: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism. Hyperthyroidism. Calcium metabolism and its regulation.	1	CO4
	Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline	2	CO4
	Disorders: Phoechro- mocytoma. Endocrine Pancreas: Secretory cells, action, regulation secretion of insulin and glucagon. Glucose metabolism and its regulation. Disorder: Diabetes mellitus.	3	CO4
2.	Nerve Muscle Physiology	14 Hours	
	Resting Membrane Potential and Action Potential: description, membrane potential and its importance.	1	CO2
	Analysis of action potential: ionic basis, properties, and propagation.	1	CO2
	Structure and Functions of Neurons: Detailed examination of neuron structure and functional components.	2	CO2
	Classification of neurons by structure and function.	1	CO2
	Properties of nerve fibres and mechanisms of impulse transmission.	1	CO2
	Overview of nerve injury, including degeneration and regeneration processes.	1	CO2
	Neuroglia: Types and Functions:	1	CO2

	Classification and roles of neuroglia (glial cells) in the nervous system.		
	Functions of neuroglial cells in supporting and protecting neurons.	1	CO2
	Skeletal Muscle Structure: Classification and structural components of skeletal muscle fibres.	1	CO2
	Physiology of Neuromuscular Transmission: Mechanisms governing neuromuscular transmission.	1	CO2
	Role of neurotransmitters in muscle contraction and relaxation.	1	CO2
	Applied Aspects of Neuromuscular Disorders Clinical implications and management strategies for neuromuscular disorders.	1	CO2
	Diagnostic methods and therapeutic approaches in treating neuromuscular diseases.	1	CO2
3.	Nervous System:	27 Hours	
	Overview of central and peripheral nervous system, Functions of Nervous System.	1	CO2
	Functional anatomy, Classification & properties of synapse. Synaptic transmission.	1	CO2
	Sensory Mechanism: Functions and classification of sensory receptors.	1	CO2
	Sensory pathways: posterior column tracts, lateral spinothalamic tract, anterior spinothalamic tract, and trigeminal pathway.	2	CO2
	Sensory Cortex Sensations: Types of sensations: crude touch, fine touch, tactile discrimination, vibration sense. Mechanism of pain sensation: cutaneous pain (slow and fast pain), hyperalgesia, deep pain, visceral pain (referred pain).	2	CO2
	Motor Cortex and Motor Pathways Overview of motor pathways: pyramidal tracts, extrapyramidal tracts.	2	CO2
	Muscle Tone: Definition and properties of muscle tone: hypotonia, atonia, hypertonia.	1	CO2

	Upper motor neuron lesions (UMNL) and lower motor neuron lesions (LMNL).	1	CO2
	Spinal Cord Lesions: Effects and characteristics of complete transection and heme section of the spinal cord.	2	CO2
	Cerebellum and Posture, cerebellar ataxia.	2	CO2
	Postural reflexes: spinal, medullary, midbrain, and cerebral reflexes.	2	CO2
	Thalamus, Hypothalamus, Reticular Formation, and Limbic System.	2	CO2
	Structure, Functions and nuclei of the thalamus, hypothalamus, Basal Ganglia and Cerebral Cortex.	2	CO2
	Cerebral cortex lobes, Brodmann's areas, and higher functions like learning, memory, and speech.	2	CO2
	Cerebrospinal Fluid (CSF) and Blood Brain Barrier: Formation, composition, characteristics, importance circulation, & functions of CSF.	2	CO2
	Significance of lumbar puncture.	1	CO2
	Autonomic Nervous System: Features and actions of the parasympathetic and sympathetic nervous systems.	1	CO2
5.	Physiology Of Exercise:	2Hrs	
	Effects of acute and chronic exercise on respiratory, cardiovascular and musculoskeletal system	2	CO1

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SUBJECT CODE: PHY192 - II

CREDITS: 1

S.No.	Topics	Hours	Course Outcome
1.	Elicit superficial and deep tendon reflexes.	1	CO2
2.	Determine muscle tone.	1	CO2
3.	Cranial nerves	1	CO2

Essential Readings:

1. K. Sembulingam, Essentials of Medical Physiology, Jaypee, All Chapters
2. Concise Medical Physiology – Sujit K. Chowdhuri.
3. Textbook of physiology for physiotherapy – Prof. A. K Jain

Essential Courses:

<https://www.coursera.org/learn/medical-emergencies-cpr-toxicology-wilderness>

<https://www.coursera.org/learn/epidemics>

<https://www.coursera.org/learn/advanced-neurobiology1>

<https://www.coursera.org/learn/science-exercise>

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Course: FUNDAMENTALS OF EXERCISE MODALITIES II

Course Code: EXT 103 II

Credits: 4

SEMESTER 2

Course Outcomes (CO):

1. Apply the principles of physics in describing movements (Force, inertia, Laws of motion)
 2. Explain planes and axis of movements
 3. Discuss the methods of measuring joint movements
 4. Demonstrate joint movement measurements (Including electronic goniometer)
 5. Demonstrate fundamental and derived positions and muscle actions
 6. Demonstrate transfer techniques
 7. Perform basic assessment techniques (Motor, sensory, coordination and balance)
- Demonstrate knowledge and skills in prescribing basic movement aids

S. No.	Topics	Hours	Course Outcome
1	Unit 1: Muscle testing Discuss the Principles & Aims, Indications & Limitations, and Techniques of MMT for group & individual testing	2	CO3, CO4
	Demonstrate Manual Muscle testing procedure Perform MMT for upper limb, lower limb spine and face muscles	4	CO3, CO4
2	Unit 2: Classification of therapeutic exercise: Technique, effects, therapeutic use	1	CO6, CO7
	Demonstrate Active Movements Discuss active movements in terms of Definition of strength, power & work, endurance, muscle actions, Causes of decreased muscle performance	2	CO5, CO6, CO7
	Explain the Physiological adaptation to training: Strength & Power, Endurance.	1	CO5, CO6, CO7
	Demonstrate Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses	2	CO5, CO6, CO7

	Demonstrate Active Assisted Exercise: Discuss the principles, techniques, indications, contraindications, effects and uses Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses	3	CO5, CO6, CO7
	Demonstrate Resisted Exercise: Discuss the principles, indications, contraindications, precautions & techniques, effects and uses Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise	3	CO5, CO6, CO7
	Demonstrate Passive Movements	2	CO5, CO6, CO7
	Discuss Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements	3	CO5, CO6, CO7
	Demonstrate Mobilization exercises of the joints region-wise passive, active	5	CO5, CO6, CO7
3	Unit 3: Classify various types of soft tissue manipulation techniques.	1	CO6, CO7
	Discuss Physiological effects, therapeutic effects and contraindications of soft tissue manipulation.	2	CO6, CO7
	Describe effleurage, stroking, kneading, petrissage, deep friction, vibration and shaking etc.	3	CO6, CO7
	Perform effleurage, stroking, kneading, petrissage, deep friction, vibration and shaking etc.	6	CO6, CO7
Total		40	

Recommended Text Books

1. Principle of Exercise Therapy -Gardiner - C.B.S. Delhi
2. Practical Exercise Therapy - Hollis - Blackwell Scientific Publications.
3. Therapeutic Exercises Foundations and Techniques - Kisner and Colby -F.A. Davis.
4. Principles and practices of therapeutic massage – Sinha 3rd edition. Jaypee brothers Delhi
5. Margaret Hollis-Textbook of Massage.
6. Muscle testing and functions - Kendall - Williams & Wilkins.

7. Daniels and Worthingham's - Muscle testing - Hislop & Montgomery - W.B. Saunders.
8. Measurement of Joint Motion: A Guide to Goniometry - Norkins & White - F.A. Davis.

Recommended reference books

1. Therapeutic Exercises - Basmajian - Williams and Wilkins.
2. Licht SH, editor. Massage, manipulation, and traction. E. Licht;
3. World Health Organization; Global Strategy on Diet, Physical Activity and Health
4. McArdle WD, Katch FI, Katch VL. Exercise physiology: nutrition, energy, and human performance. Lippincott Williams & Wilkins; 2010.
5. Kennedy-Armbruster C, Yoke M. Methods of group exercise instruction. Human Kinetics; 2014.
6. ACSM's Guidelines for Exercise Testing and Prescription

Course: FUNDAMENTALS OF EXERCISE MODALITIES II PRACTICAL

Course Code: EXT 193 II

Credits: 2

SEMESTER 2

S. No.	Topics	Hours	Course Outcome
1	Perform passive mobilisation exercises of different joints region wise on self / human model.	10	CO6, CO7
2	Demonstrate the testing of muscle strength/ function region wise – upper limb, lower limb and trunk on human model.	10	CO6, CO7
3	Perform all the soft tissue manipulative techniques region wise – upper limb, lower limb, neck, back and face on human model	6	CO6, CO7
4	Demonstration ONLY Digital goniometry Pelvic inclinometer Dynamometry Accessory passive movement	12	CO6, CO7
Total			

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5. Kennedy-Armbruster C, Yoke M. Methods of group exercise instruction. Human Kinetics; 2014.
6. ACSM's Guidelines for Exercise Testing and Prescription

SUBJECT: Fundamentals of Electro Physical Agents II

SUBJECT CODE: ELT104 II

CREDITS: 3

Course Objectives:

The objective of the "Fundamentals of Electro Physical Agents course is to equip students with a comprehensive understanding of the basic principles and physics underlying electrotherapy and its application in physiotherapy.

Course Outcomes (CO):

After taking this course, a student will:

CO1: Explain fundamental principles of physics related to electricity production and its transmission.

CO2: Explain the production, physiological and therapeutic effects of biophysics, principles, therapeutic uses, indications, and contraindications of electrical stimulation agents.

CO3: Demonstrate competencies in operational skills of equipment, patient preparation, and techniques of application of electrical stimulation agents

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Course Contents:

S.No.	Topics	Hours	Course Outcome
1	UNIT 1 Electrical Reactions and Electro-Diagnostic Tests	13	
	Electrical Stimuli: normal behaviour of nerve and muscle tissue.	3	CO3
	Types of Lesions: development of reaction of degeneration.	2	CO3
	Faradic/Intermittent Direct Current Test.	3	CO3
	S.D. Curve: application.	3	CO3
	Chronaxie and Rheobase: pulse ratio.	2	CO3
2	UNIT 2 Infrared Rays	27	CO3
	Properties: wavelength, frequency, types and sources of IRR generation.	2	CO3
	Techniques of Irradiation: physiological and therapeutic effects, indications, contraindications, precautions.	3	CO3
	Operational Skills: equipment and patient preparation.	3	CO3
	Superficial Heat: paraffin wax bath, moist heat, electrical heating pads.	3	CO3
	Mechanism of Production.	3	CO3
	Mode of Heat Transfer.	1	CO3
	Physiological & Therapeutic Effects.	3	CO3
	Indications, Contraindications, Precautions.	3	CO3
	Operational Skills: equipment and patient preparation.	3	CO3
	Ultraviolet Radiation (UVR).	3	CO3

SUBJECT: Fundamentals of Electro Physical Agents II

SUBJECT CODE: ELT194 II

CREDITS: 2

Practical

S.NO	Practical's Topics	HOURS	Course Outcome
1	Demonstrate the application of special techniques of low-frequency current including Faradic foot bath, faradism under pressure.	8	CO3
2	Demonstrate the application techniques of Iontophoresis	8	CO3
3	Demonstrate the plotting of strength-duration curve and find out Chronaxie and Rheobase	8	CO3

Essential Readings:

1. Electro therapy Explained: Principles & Practice Low& Reed, Butterworth Heinemann.
2. Claytons Electro therapy, Forster & Palastange Baillier Tindal.

Essential Courses:

1. basis of Electro therapy
<https://youtu.be/h09Zw6czaO4?si=jEl4k8CIaiEdz8hR>

2. Interferential Current therapy

<https://youtu.be/rfhGBTUF5Ys?si=JNkoIpvVoGOKOk1R>

SUBJECT: Biochemistry

SUBJECT CODE: BHC105

CREDITS: 2

Course Objectives:

Course Outcomes (CO):

After taking this course, a student will:

CO1: Demonstrate skills in both chemistry and biology.

CO2: Various biomolecules which are present in the body and functions and the formation and fate of these biomolecules

CO3 - Discuss nutritional aspects of carbohydrates, lipids, proteins & vitamins & their metabolism with special reference to obesity.

CO4 - Acquire knowledge in brief about Clinical biochemistry, with special reference to Liver & renal function tests, Blood study for Lipid profile, metabolism of fat, Carbohydrates, proteins, bone minerals, and electrolyte balance.

Sl. No	Topics	Hours	Course Outcome
1.	General Biochemistry	4	CO1
	BIO-PHYSICS: Concepts of Ph. and buffers, Acid-base equilibrium, osmotic pressure, and its Physiological applications	2	CO1
	Cell- Morphology, Structure and function	2	CO1
2.	Carbohydrates chemistry	6	CO2 & CO3
	Definition, general classification with examples, Glycosides bond, Structures, composition, sources, properties, and functions of Monosaccharides, Disaccharides, Oligosaccharides, and Polysaccharides,	1	CO2
	Carbohydrate Metabolism – Introduction, Glycolysis Aerobic, Anaerobic, and its significance,	1	CO3
	Citric acid cycle- significance, Substrate level phosphorylation,	1	CO3
	Glycogen metabolism- Glycogenesis, Glycogenolysis, and Metabolic disorders related to glycogen metabolism. Gluconeogenesis, Cori cycle	2	CO3

	Hormonal regulation of glucose, Glycosuria, Diabetes mellitus, Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers.	1	CO3
3.	Amino-acid Chemistry	4	
	Definition, Classification, Peptide bonds, Peptides: Definition, biologically important peptides, amino acid classifications, essential amino acids, zwitterion.	2	CO2
	Protein chemistry: Definition, Classification, and configuration of protein, Functions of proteins.	1	
	Role of proteins in diet: Quality of proteins - Biological value, net protein utilization. . Nitrogen balance	1	CO2
4.	Lipid Chemistry	2	
	Definition, general classification, Definition, classification, properties, and functions of Fatty acids, Definition, structure, and importance of Triacylglycerol, Phospholipids, and Cholesterol.	1	CO2
	Essential fatty acids and their importance, Lipoproteins: Definition, classification, properties, Sources, and Function Ketone bodies, Role of lipids in the diet.	1	CO2
5.	Nutrition	7	
	Introduction and Importance of Nutrition: Calorific Values and Respiratory Quotient – Definition and Significance; Energy Requirements of a Person - Basal Metabolic Rate: Definition, Normal Values, Factors Affecting BMR; and the Specific Dynamic Action of Food.	2	CO2
	Physical activities - Energy expenditure for various activities. Calculation of energy requirement of a person, Balanced diet, recommended dietary allowances, Nutritional disorders.	1	CO2
	Vitamins – Definition, classification according to solubility, Discuss every individual vitamin - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity	2	CO3
	Mineral Metabolism - Definition, Sources. RDA. Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium,	2	CO3

	molybdenum, copper. Phosphate, calcium, and iron in detail.		
6.	Enzymes	3	
	Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples Factors affecting enzyme activity	1	CO2
	Enzyme inhibition and its applications. Diagnostic enzymology	2	CO3
7.	Nucleotide and Nucleic Acid Chemistry	2	
	Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in the body. Nucleic acids (DNA and RNA) chemistry: Difference between DNA and RNA	1	CO2
	Structure of DNA (Watson and Crick model), Functions of DNA. Structure, functions, and significance of tRNA, rRNA, mRNA.	1	CO2
8.	Clinical Biochemistry	3	
	Discuss normal levels of blood and urine constituents, biochemical parameters, and their significance. Relevance of blood and urine levels of Glucose	2	CO4
	Discuss each of the parameters in the body and their significance: urea, uric acid, creatinine, calcium, phosphates, and Liver function tests. Renal function tests	1	CO4

Essential Readings:

1. Textbook of Biochemistry- Chatterjee M.N.-Jaypee Brothers.
2. Textbook of Biochemistry for Medical Students Vasudeval D.M. Jaypee
3. Brothers Clinical Biochemistry- metabolic & Clinical aspects- Marshall & Bangert-Churchill Livingstone.
4. Biochemistry Southerland-Churchill Livingstone
5. Drugs in Sports: David R. Mottram and Sally Gunnel E. & F.N. Span.
6. Normal and Therapeutic Nutrition Robison H. Cortinne et al., Mac Millian Publish Company, New York.
7. Physiological Chemistry. By Harpar

Essential Courses:

1. <https://www.coursera.org/learn/energy-metabolism>
2. <https://www.coursera.org/learn/dna-decoded>
3. <https://www.coursera.org/learn/weight-management-beyond-balancing-calories>
4. <https://www.coursera.org/learn/weight-management-beyond-balancing-calories>
5. <https://www.coursera.org/learn/vital-signs>

Online resources: - <https://www.youtube.com/@Biochemistryguide>



SUBJECT: Sociology
COURSE CODE: SOG106
CREDITS: 2

Course Objectives: The objectives of this course will be to emphasize the identification and application of the fundamental concepts and methods of life or physical science. To explore natural phenomena, observation & experimentation. To understand, identify, and describe the basic anatomical structures associated with cells and tissue, and muscular, skeletal, and nervous systems. It helps to develop basic dissection in the field of anatomy.

Course Outcomes (CO):

CO1: Discuss the sociological concepts in relation to health, health care, and disorders.

CO2: Explain social theories in relation to health and health care.

CO3: Discuss biomedical and biopsychosocial health models.

CO4: Explain the concept of social groups, influence of groups on health and sickness, the role of primary groups and secondary groups in hospitals and rehabilitation settings.

CO5: Discuss the influence of family on human personality, individual's health, family and nutrition, and the effects of sickness on family along with psychosomatic disease.

CO6: Analyse the social cause for activity limitations and participatory restrictions caused by various disorders.

Course Content

S. No.	Topics	Hours	Course Outcomes
1	Introduction		
	Meaning- Definition and scope of sociology	1	CO1
	Its relation to Anthropology, Psychology, Social Psychology	1	CO2
	Methods of Sociological investigations: Case study, social survey, questionnaire, Interview, and opinion poll methods	1	CO2
	Importance of its study with special reference to Health Care Professionals	1	CO1
	Social Factors in Health and Disease Situations		

	Meaning of social factors	1	CO1
	Role of social factors in health and illness	1	CO1
	Socialization		
	Meaning and nature of socialization	1	CO2
	Primary, Secondary and Anticipatory socialization	1	CO2
	Agencies of socialization	1	CO2
	Social Groups		
	Concepts of social groups, influence of formal and informal groups on health and sickness	1	CO4
	The role of primary groups and secondary groups in the hospital and rehabilitation setup	1	CO4
	Family		
	The family, meaning, and definitions	1	CO5
	Functions and types of family	1	CO5
	Changing family patterns	1	CO5
	Influence of family on the individual's health, family, and nutrition	1	CO5
	The effects of sickness in the family and psychosomatic disease and their importance to physiotherapy	1	CO5
2	Community		
	Rural community: Meaning and features – Health hazards of realities, health hazards to tribal community	1	CO1
	Urban community: Meaning and features - Health hazards of urbanities	1	CO1
3	Culture and Health		
	Concept of Health	1	CO3
	Concept of Culture	1	CO3
	Culture and Health	1	CO3
	Culture and Health Disorders	1	CO3
4	Social Change		
	Meaning of social changes	1	CO1
	Factors of social changes	1	CO1

	Human adaptation and social change	1	CO1
	Social change and stress	1	CO1
	Social change and deviance	1	CO1
	Social change and health programme	1	CO1
	The role of social planning in the improvement of health and rehabilitation	1	CO1
5	Social Problems of Disabled		
	Population explosion	1	CO6
	Poverty and unemployment	1	CO6
	Beggary	1	CO6
	Juvenile delinquency	1	CO6
	Prostitution	1	CO6
	Alcoholism	1	CO6
	Problems of women in employment	1	CO6
	Geriatric problems	1	CO6
	Problems of underprivileged	1	CO6
6	Social Security		
	Social security and social legislation in relation to the disabled	2	CO6

Essential Readings:

1. McGee - Sociology - Drydon Press Illinois.
2. Kupuswamy - Social Changes in India - Vikas, Delhi.
3. Ahuja - Social Problems - Bookhive, Delhi.
4. Ginnsberg - Principles of Sociology - Sterling Publications.
5. Parter & Alder - Psychology & Sociology applied to medicine - W.B. Saunders.
6. Julian - Social Problems - Prentice Hall. Indian Social Problems - Madan, Vol-I-Madras
7. Bhushan, V., & Sachdeva, D. R. (2005). Introduction to sociology. Kitab Mahal

COURSE CODE- 107

COURSE TITLE - ENGLISH, COMMUNICATION AND SOFT SKILLS

Subject description: The objective of this course is to enable the student to effectively communicate with patient, colleague and professional. The student will also be able to understand and implement the basic communication skills required for personal, hospital, and department management and interpersonal management.

Course outcomes

CO 1 Apply basics of grammar and writing skills apply and communicate ideas orally and in writing with a high level of proficiency
use appropriate expressions in varied situations and topics of interest, speak in English both in terms of fluency and comprehensibility
demonstrate independence in using basic language structure in oral and written

Course Content

1. Special characteristics of health communication
2. Types & process of communication – verbal, non-verbal and written communication. Upward, downward and lateral communication.
3. Therapeutic communication: empathy versus sympathy.
4. Communication methods for teaching and learning.
5. Communication methods for patient education.
6. Barriers of communication & how to overcome

COURSE CODE- 108

COURSE TITLE- COMPUTERS AND INFORMATION SCIENCE

SUBJECT DESCRIPTION: The students will be able to appreciate the role of computer technology. The course has focus on computer organization,

computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation. Topics to be covered under

the subject are as follows:

Course outcome

CO 1 knows the parts of computer

CO 2 have working knowledge of a computing system

CO3 use computer for word processing and presentation and data management CO4 use the internet for personal and professional purpose

CO5 understand the role of digital technology in the health sciences

Course Content

1 Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.
2 Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.
3 Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

SUBJECT NAME: GENERAL PATHOLOGY**SUBJECT CODE-PAM201****YEAR:2ND YEAR****SUBJECT DESCRIPTION AND INSTRUCTION TO TEACHER**

This subject follows the basic subjects of Anatomy, Physiology and Biochemistry and it forms a vital link between preclinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases. The knowledge and understanding of Pathology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient. Efforts are made on this course to avoid burdening the student.

Course Outcomes (CO):

After taking this course a student will:

CO1: Gather and apply essential information from patient cases necessary to discuss clinic-pathologic processes in Small Group Discussions.

CO2: Develop a differential diagnosis when presented with clinical information or a histo-pathologic finding.

CO3: Utilize laboratory studies to diagnose and monitor disease states and conditions.

CO4: Demonstrate the ability to support self-education (i.e., active learning).

CO5: Demonstrate the ability to find additional information when confronted with a question or unfamiliar term, particularly when preparing for case-based exercises.

CO6: Investigates new and exciting material about microbes and our world, including health concerns, microbial anatomy and physiology, genetics, epidemiology, and use of antimicrobials and disinfectants.

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Mapping of Course Outcomes (CO) and Program Outcomes (PO):

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		ü			ü		ü	
CO2		ü			ü		ü	
CO3		ü			ü		ü	
CO4			ü		ü		ü	
CO5			ü		ü		ü	



S. No	Topics	No. of Lectures	Course Outcome (CO)
	UNIT 1 General Pathology	10H	
	- Cell injury, Causes of disease, mechanism & toxic injuries with special reference to Physical, Chemical, & ionizing radiation, Reversible injury (degeneration), types-morphology-swelling, hyaline, fatty changes, Intra-cellular accumulation-hyaline mucin, Irreversible cell injury, types of necrosis, and Gangrene apoptosis, calcification- dystrophic & metastasis, Extra-cellular accumulation-amyloidosis, calcification-Pathogenesis-morphology - Inflammation & Repair pathology inflammation Acute inflammation, features, causes, vascular & cellular events, ii) Morphologic variations, iii) Inflammatory cells & mediators, iv) Chronic inflammation: causes, types, non-specific & granulomatous with examples, Wound healing by primary & secondary union factors promoting & delaying healing process. vi) Healing at various sites-including-bones, nerve & muscle vii) Regeneration & repair, the factors affecting healing and repair of soft tissues and skin.		
2.	UNIT 2 Pathophysiological basis of disease and nutritional disorders		
	Hemodynamic derangement	15H	

	• Pathophysiology of edema, hyperaemia, Haemorrhage, shock, embolism, thrombosis, and infarction • Immune mechanism (Natural and Acquired) • Features of autoimmune diseases and immunodeficiency diseases, • Causative factors, pathology & clinical features Characteristic of benign and malignant tumours, Grading and staging of malignant tumours, General effect of malignancy on the host, Outline the carcinogenic agent's method of diagnosis of malignancy and Carcinoma • Classify, causative factors, pathology & clinical features of Nutritional disorders, deficiency disorders (protein deficiency, vitamin deficiency (A,B,C,D,E, K) iodine deficiency), effect of nutrition deficiency on skeletal muscles, bones, and neurological function, hypersensitivity reactions, Rickets		
	UNIT 3 Systemic Disorders: Pathology, Diagnosis, and Management		
3.	• Causative factors, pathology, clinical features, diagnosis, and management of Disorders of blood (anaemias, Leukemia) • Causative factors, pathology, clinical features, diagnosis, and management of Disease of circulatory system (atherosclerosis, thromboangitis obliterans, varicose vein, DVT, thrombophlebitis, lymphedema, congestive cardiac failure, rheumatic heart disease,) • Causative factors, pathology, clinical features, diagnosis, and management of ischemic heart disease • Causative factors, pathology, clinical features, diagnosis, and management of congenital heart disease. • Causative factors, pathology, clinical features,	15H	

	diagnosis, and management of Disease of Respiratory System(Pneumonias, Bronchiectasis, Emphysema, Chronic bronchitis, Asthma, Occupational lung diseases, Carcinoma of lungs) • Causative factors, pathology, clinical features, diagnosis and management of Disorders of musculoskeletal system. (Arthritis- rheumatoid, degenerative, infective, metabolic. osteoporosis, Paget's disease, osteogenesis imperfecta, osteomyelitis, a brief outline of bone tumours. Muscular dystrophy, myasthenia gravis, myositis.) • Causative factors, pathology, clinical features, diagnosis, and management of the Disorders of Nervous system (Meningitis, encephalitis, vascular diseases of brain, peripheral nerve lesion, degenerative diseases, parkinsonism and Alzheimer's disease. • Causative factors, pathology, clinical features, diagnosis, and management of the Disorders of Endocrine system (Diabetes, Thyroiditis, Thyrotoxicosis, Myxedema) • Causative factors, pathology, clinical features, diagnosis, and management of the Disorders atherosclerosis, varicose vein, DVT		
Total Lecture Hours:			

Recommended Textbooks for Pathology 2024-25

1. Cotran, Kumar & Robbins Robbins Pathological Basis of Disease - - W.B. Saunders.
2. Harsh Mohan Textbook of Pathology - - Jaypee Brothers.
3. Goodmann and Boissonnault Pathology: Implications for Physical Therapists - - W.B. Saunders.

Recommended reference books for Pathology

1. Walter & Israel, General Pathology - - Churchill Livingstone.
2. Anderson Muirs Textbook of Pathology - - Edward Arnold Ltd.



COURSE CODE: BPT-202**COURSE TITLE: PHARMACOLOGY CREDITS: 3****LECTURE HOURS: 3****MARKS DISTRIBUTION: Maximum: 100 Marks (Internal: 30 Marks; External: 70 Marks)****Course Description:**

This course introduces students to the fundamental concepts of pharmacology, emphasizing the role of drugs in treatment and their interactions with physiotherapy. By the end of the course, students will have a thorough understanding of the pharmacokinetics and pharmacodynamics of commonly used drugs, their therapeutic and adverse effects, and their impact on exercise and movement. The chemistry of drug molecules is not covered in this course.

Mapping of Course Outcomes (CO) with Program Outcomes (PO):

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	✓	✓	✓				✓	✓
CO2	✓	✓	✓				✓	✓
CO3	✓	✓	✓	✓			✓	✓
CO4	✓	✓	✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓
CO6	✓	✓	✓	✓	✓	✓	✓	✓

Course Contents:

S. No	Topics SECTION A	Hours	CO
	Unit 1: General Pharmacology		
	Definition and classification of drugs Sources of drugs, routes of administration, Drug distribution, metabolism, and excretion, Pharmacokinetics and pharmacodynamics, Factors modifying drug response and adverse effects		
	Unit 2: Inflammatory/Immune Diseases		
	Non-narcotic Analgesics & NSAIDs: Acetaminophen, Aspirin, Non-Aspirin NSAIDs, Drug interactions with NSAIDs, Glucocorticoids: Pharmacological uses, adverse effects, physiologic roles, Drugs for Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout, Drugs for Neuromuscular Immune/Inflammatory Diseases: Myasthenia Gravis, Idiopathic Inflammatory Myopathies, Lupus, Scleroderma, Demyelinating Diseases		
	Unit 3: Autonomic Nervous System		
	General considerations – Sympathetic & Parasympathetic Systems, Receptors, Somatic Nervous System, Cholinergic and Anti-Cholinergic Drugs, Adrenergic and Adrenergic Blocking Drugs, Peripheral Muscle Relaxants		
	Unit 4: Cardiovascular Pharmacology		
	Drugs for Heart Failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors, Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct Acting Vasodilators, Antiarrhythmic Drugs, Drugs for Vascular Disease & Tissue Ischemia: Lipid-lowering agents, Antithrombotic, Anticoagulants, Thrombolytics, Drugs for Ischemic Heart Disease: Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia, Peripheral Vascular Disease		

	UNIT 5 Nutritional Pharmacology (Nutri-Pharma) Introduction to Nutritional Pharmacology: Definition and scope, Importance in health and disease, Role in physiotherapy and rehabilitation Current Trends and Research in Nutri-Pharma, Personalized nutrition and pharmacogenomics, Functional medicine and integrative approaches		
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Essential Readings

1. Goodman & Gilman's: The Pharmacological Basis of Therapeutics
2. Pharmacology for Physiotherapy by M.Murgesh
3. Essentials of Medical Pharmacology by K.D. Tripathi

Recommended reference books for PC

1. The Pharmacological basis of Therapeutics - Goodman and Gilman - MacMillan.
2. Satoskar RS, Rege N, Bhandarkar SD. Pharmacology and pharmacotherapeutics. Elsevier India;

Relevant Links-



COURSE CODE: BPT-202**COURSE TITLE: Public Health & Health Promotion (PH): Theory (L) CREDITS: 3****LECTURE HOURS: 3**

Course Description: This subject follows the basic science subjects to provide the knowledge about conditions the therapist would encounter in their practice in the community. The objective of this course is that after 60 hrs. of lectures and discussion the student will be able to demonstrate an understanding of various aspects of health and disease and the methods of health administration and be able to appreciate role of health education and disease preventive measures in keeping the population healthy.

Course Outcome:

CO1: Explain the determinants of health and their influence on individuals and communities, with reference to the local context.

CO2: Describe the structure and functioning of the Indian healthcare delivery system and its relevance to physiotherapy practice.

CO3: Discuss the National Health Policy and key health programmes, highlighting their application in physiotherapy and public health initiatives.

CO4: Illustrate the role of individuals, families, and communities in promoting and maintaining health.

CO5: Apply the concepts of disease prevention and health promotion across all levels of prevention in clinical and community settings.

CO6: Demonstrate an understanding of basic epidemiological principles and their role in preventing communicable and non-communicable diseases.

CO-PO Mapping Table

POs	CO1	CO2	CO3	CO4	CO5	CO6
PO1		✓			✓	
PO2	✓	✓	✓	✓	✓	✓
PO3			✓			✓
PO4		✓	✓	✓		
PO5		✓				
PO6			✓		✓	✓
PO7	✓			✓	✓	
PO8	✓	✓	✓	✓		✓

S. No	Topics	Hours	CO
	UNIT I		
1.	Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease. Health Education		
2.	Epidemiology, definition, and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defences and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening		
	Unit 2 Communicable Diseases		
3.	Epidemiology of communicable disease: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardiovascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness, Accidents, and Injuries		
4	Unit 3 Health Programs		
	Public health administration- an overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic, and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants, and pre-school children, occupational groups		
	UNIT 4		

	Health programmes in India: Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme.		
	Unit 5 Family Planning		
	Demography and Family Planning: Demographic cycle, Fertility, Family planning-objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods.		

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IT

SUBJECT NAME: EXERCISE THERAPY 2024-25 Subject Code: EXT205

Year: 2nd Year Semester: 3rd Sem

CREDIT HR: 4

Subject Description and instruction to teacher

The purpose of this course is to provide detailed knowledge and skills about the advanced concepts and methods of exercise therapy - build over the fun- amental concepts taught in the first year such as relaxation, suspension therapy, hydrotherapy, manual therapy, aerobic exercises functional re-education stretching etc. The basic idea is that after the completion of this course, a student acquires the skills and knowledge to apply the techniques of exercise therapy in patient care. The emphasis should be giving hands on training in execution of various types of exercises and passive procedures. Besides lecture and demonstration, the emphasis should be placed on making the student capable to perform the exercise procedures independently using DOAP [demonstrate, observe, assist, perform] model of teaching learning.

Course Outcomes (CO):

After taking this course a student will:

CO1: Demonstrate sound foundational knowledge and understanding of the principles of biology, chemistry, and nutrition, and an advanced understanding of human anatomy and physiology as they relate to responses and adaptations to physical activity and exercise.

CO2: Demonstrate basic laboratory skills pertaining to assessments, laboratory methods, sound experimental and analytical practices, data acquisition and reporting in the exercise sciences. CO3:

Demonstrate knowledge of the importance and influence of physical activity, kinesiology, nutrition, and exercise on health and be an advocate for physically active lifestyles as a means to improve quality of life and reduce the risk and prevalence of lifestyle related diseases.

CO4: Plan, administer, and evaluate wellness and fitness programs, nutrition projects, and exercise physiology tracks based in sport, clinical, industrial, and/or corporate environments.

CO5: Demonstrate requisite skills and abilities for meaningful employment in exercise science related areas or pursue graduate studies in an exercise therapy related area.

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Mapping of Course Outcomes (CO) and Program Outcomes (PO):

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	✓						✓	✓
CO2	✓						✓	✓
CO3	✓			✓			✓	✓
CO4	✓			✓			✓	✓
CO5	✓			✓			✓	✓



S. No.	Topics	Hours	Course Outcome
	UNIT I		
1	RELAXATION: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation-Principles & uses: General, Local, Jacobson's, Mitchel's, additional methods	5H	
2	SUSPENSION THERAPY: Principles, indications, contraindications, and benefits of suspension therapy, types of suspension therapy – axial, vertical, pendulum; techniques of suspension therapy for upper limb & lower limb	5H	
3	FUNCTIONAL RE-EDUCATION: Muscle activities of Lying to sitting, Activities on the Mat/Bed, Movement, and stability at floor level, Sitting activities and gait; Lower limb and Upper limb activities. Transfer Activities, wheelchair transfer.	5H	
4	POSTURE: Posture and its types, Postural Mechanism, Patterns of Posture, Principles of re-education: Posture corrective methods and techniques	5H	
	Breathing Exercise, Normal breathing, types, techniques, indications, contraindications		
5	MANUAL THERAPY & PERIPHERAL JOINT MOBILIZATION: Principles, Grades, Indications and Contraindications, Effects and Uses of Maitland, Kaltenborn, Mulligan, The Effects of joint mobilization, in terms of Indications and contraindications, Grades of mobilization, Principles of mobilization, Identify red flags for mobilization, Accessory movements and end feel. Principles, Indications, Contra-Indications and evidence for schools of mobilization (Maitland, Mulligan, McKenzie, Muscle Energy Technique, Myofascial stretching, Cyriax, Neuro Dynamics)	5H	

6.	STRETCHING: Terms related to stretching, Tissue and Joint response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions to be taken and contraindications of stretching, passive and active stretching for upper and lower limb		
7.	Principles, physiological and therapeutic effects of traction, types, indications, contraindications for traction		

SUBJECT: EXERCISE THERAPY PRACTICAL SUBJECT CODE: EXT291

CREDITS: 2

Course Contents:

S. No.	Topics	Hours
1.	Demonstrate of Patient Preparation and Relaxation techniques	4H
2.	Demonstrate of Patient Preparation and Suspension therapy	4H
3.	Demonstrate of Bed mobility and Transfer skills for Functional Re-education	
4.	Assessment of Posture, and Demonstration of Posture corrective measures	
5.	Measure chest expansion and demonstrate various breathing exercises	
6.	Demonstration of Patient Preparation for Peripheral Joint Mobilisation, perform mobilization for upper limb lower limb, and spine, Demonstrate clinical reasoning skills in selection and application of manual therapy techniques	4H
7.	Demonstrate techniques of strengthening muscles	4H
8.	Perform manual and mechanical tractions	4H
Total Lecture Hours: 40Hours		

SUBJECT: FUNDAMENTALS OF ELECTRO PHYSICAL AGENTS III**SUBJECT CODE: ELT****SEMESTER III****CREDITS: 3**

Course Objective: This course is an ideal way to bring up to date with current procedures in this field. It will expand the knowledge of the underlying principles of modalities such as ultrasound and laser therapy and will enhance the ability to adapt, standard treatment protocols to the specific needs of each patient.

Course Outcomes (CO):**After taking this course a student will:**

CO1: To consider the basic issues of each modality.

CO2: What the energy can (and cannot) do in terms of physiological & therapeutic effects.

CO3: To relate these issues to both the research evidence & the clinical application of each modality.

CO4: Explain the basic nature of the applied energy.

CO5: Identify the key physiological effects of the modality. CO6: Rationalize the main therapeutic effects.

CO7: Justify the appropriate clinical application. CO8: Establish appropriate clinical doses.

CO9: List the key contraindications, dangers & precautions.

Mapping of Course Outcomes (CO) and Program Outcomes (PO):

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		ü						ü
CO2		ü						ü
CO3		ü		ü				ü
CO4				ü			ü	ü
CO5				ü			ü	ü
CO6		ü		ü			ü	ü
CO7		ü		ü			ü	ü
CO8		ü		ü			ü	ü
CO9		ü		ü			ü	ü

COURSE CONTENTS

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S. No.	Topics	Hours	Course Outcome
1	MEDIUM FREQUENCY CURRENT (interferential current)	8	CO1
	a) Definition, characteristics, physiological/therapeutic effect of I.F current, indication, technique of application, contraindication, and precaution. IFT: Definition Types, Types of Electrodes & Placements of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications. Advantage of IFT Over Low Frequency currents. Russian Current and Rebox currents.	1	CO1
	HIGH FREQUENCY CURRENT	2	CO1
	a. SHORT WAVE DIATHERMY - Introduction, physiological effect and therapeutic effect of SWD, method of application (capacitor field method and cable method etc.) technique of treatment, indication, contraindication and Dangers. , characteristics, mechanism of work, physiological effect and therapeutic effects, indications, techniques of application, principle of treatment and contraindication. PULSED SWD	1	CO1
	b. MICROWAVE DIATHERMY - Introduction and characteristics, Physiological effect, Therapeutic effect, Techniques of application and principle of treatment, Dangers of microwave diathermy	2	CO1
2	LASER: Introduction and characteristics, Classify LASER Effect on tissue, stage of healing, Production, Biophysical effects, types, therapeutic effects, techniques of application, indication, contraindications, dangers, and precautions of LASER therapy, and Calculate dosage of LASER for various structures and types of injuries.	7	CO2
3.	ULTRASONIC THERAPY: Mechanism of Production, biophysical effects, types, therapeutics types, U.S Therapy Parameter, Coupling Media, the Physics of sound including	2	CO2

	characteristics and propagation, indication, and contraindication, precautions, of therapeutic Ultrasound. Calculate dosage of ultrasound for various structures and types of injuries, testing of apparatus, application of Therapeutic ultrasound, handling the equipment including preparation, maintenance and safety, Technique of application and dosage		
4	Biofeedback: Introduction, Principles of biofeedback, Therapeutic effects of biofeedback, Different types of bio feedback, EMG biofeedback, Positive and negative feedback g) Technique of application, Indications and contra-indications		CO2
5.	Electro Assessment: introduction to methods of electro diagnosis SD CURVE I. Electro myography: technique of EMG, interpretation of normal and abnormal responses II. Nerve conduction studies: MNCV, SNCV, variables affecting nerve conduction, measurement of NCV of nerves of the upper limb and lower limb, interpretations of normal and abnormal responses.		CO2
6.	SHOCKWAVE THERAPY		CO2
	Principles, biophysical effects, types, therapeutic effects, indications, and contraindications of shockwave therapy, application of shockwave therapy, handling the equipment including preparation, maintenance and safety, current evidence pertaining to intermittent shockwave therapy		CO2

SUBJECT: FUNDAMENTALS OF ELECTRO PHYSICAL AGENTS' PRACTICAL I
SUBJECT CODE: ELT194 I
CREDITS: 2

S. No.	Practical topics	Hours	Course Outcome
1	Testing of Electrotherapy apparatus.	3	CO1
2	Technique of application of electrotherapy treatment modalities (demonstration and practice) of IFT, SWD, Laser, Ultrasound, Microwave Diathermy, Shockwave therapy,	18	CO2
3	Apply skills of electro-diagnosis (SD Curve), observe needle and surface EMG and NCV studies and analyse test results	3	CO3
4.	Observe the Biofeedback Unit.		

Essential Readings:

1. Electro therapy Explained: Principles & Practice Low& Reed, Butterworth Heinemann.
2. Claytons Electro therapy, Forster & Palastange Baillier Tindal.

Suggested Readings:

Textbooks:

- 1) Basanta Kumar Nanda, Electrotherapy simplified, jaypee, all chapters.
- 2) Angela Forster, Clayton"s Electrotherapy, CBS, all chapters.

References:

- 1) Low and Reed – Electrotherapy Explained: Principles and Practice
- 2) Jagmohan Singh – Textbook of Electrotherapy.
- 3) Kahn - Principles and Practices of Electrotherapy
- 4) Lehmann – Therapeutic Heat and Cold
- 5) Bellis E. Electrotherapy: evidence-based practice.

SUBJECT: BIOMECHANICS & KINESIOLOGY SUBJECT CODE:

CREDITS: 4, LECTURE HOURS:4

Course Objectives: This course aims to equip students with fundamental knowledge and skills in biomechanics and kinesiology. The course aims to develop a comprehensive understanding of human movement by applying mechanical principles and facilitating effective assessment, diagnosis, and treatment of musculoskeletal disorders.

Course Outcomes (CO):

After taking this course, a student will-

CO1: Discuss the principles of physics and laws related to human movement.

CO2: Demonstrate understanding of functional movement (kinetics and kinematics). **CO3:** Identify the relationship between structure, function, and mechanical properties. **CO4:** Analyze components of human movement in normal and pathological conditions. **CO5:** Apply principles of movement analysis to understand gait and posture.

CO6: Perform movement analysis to identify gait and postural abnormalities.

CO7: Apply biomechanics principles in physiotherapy protocols.

CO8: Interpret data from movement analysis, including gait and posture.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		✓		✓	✓		✓	✓
CO2		✓		✓	✓		✓	✓
CO3		✓		✓	✓		✓	✓
CO4		✓		✓	✓		✓	✓
CO5		✓			✓	✓	✓	
CO6		✓			✓	✓	✓	
CO7		✓			✓	✓	✓	
CO8		✓				✓	✓	
CO9		✓				✓	✓	

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CO10		✓				✓	✓	
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Mapping of Course Outcomes (CO) and Program Outcomes (PO):

Course Content:



S. No.	Topics	Hours	CO
1	Unit 1: Basics of Biomechanics	20 H	
	Basic Concepts in Biomechanics: Kinematics and Kinetics in the following terms: Types of Motion, Location of Motion, Direction of Motion, Magnitude of Motion, Definition of Forces, Force of Gravity, Reaction forces, Equilibrium, Objects in Motion, Force of friction, Concurrent force systems, Parallel force system, Work, Moment arm of force, Force components, Equilibrium of levers	5H	
	Introduction to Biomechanical Analysis: Techniques of biomechanical analysis, Importance of biomechanical analysis	5H	
	Joint structure and Function in terms of Joint design, Materials used in human joints, General properties of connective tissues, Human joint design, Joint function, Joint motion, General effects of disease, injury and immobilization.	5H	
	Muscle structure and function a). Mobility and stability functions of muscles b). Elements of muscle structure c). Muscle function d). Effects of immobilization, injury and aging	5H	
2	Unit 2: Biomechanics of the upper extremity joints	20 H	
	The shoulder complex in terms of Structure and components of the shoulder complex and their integrated function	2H	
	Normal and abnormal movements of shoulder	2H	
	Static and dynamic stability of Shoulder	5H	
	The common abnormalities of shoulder movement	5H	
	Elbow complex in terms of Structure and function of the elbow joint- humero ulnar and humero radial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury. Normal and abnormal movements of elbow joints. Common abnormalities of elbow movement	4H	

	The wrist and hand complex in terms of - Structural components and functions of the wrist complex; structure of the hand complex; functional position of the wrist and hand, normal and abnormal movements of wrist complex. Common abnormalities of wrist complex	2H	
3	Biomechanics of Spine		
	Discuss the Biomechanics of Cervical spine, Lumbar Spine and Pelvic complex in terms of – Structure and function of cervical spine, b. Factors responsible for stability of cervical spine c. Movements of cervical spine d. Structure and function of lumbar spine e. Factors responsible for stability of lumbar spine f. Movements of lumbar spine. g. Structure and function of pelvic complex- Sacro-iliac Joint, Sacrum, symphysis pubic joint and lumbo sacral joint		
	Analyse the movement of spine Identify the abnormal movements of spine		
	Biomechanics of the Thorax and Chest wall – Discuss biomechanics of the thorax and chest wall in terms of a. general structure and function. b. Rib cage and the muscles associated with the rib cage c. Ventilator motions: its coordination and integration d. Developmental aspects of structure and function e. Changes in normal structure and function in relation to pregnancy, scoliosis and COPD. Identify the abnormal movements of thoracic cage Discuss the mechanics of abnormal thoracic movement		
	Describe the Temporomandibular Joint in terms of - General features, structure, function and dysfunction Discuss the mechanics of abnormal TMJ movements		

SUBJECT: BIOMECHANICS & KINESIOLOGY PRACTICAL

SUBJECT CODE:
CREDITS: 2, LECTURE HOURS:4

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S. No.	Practical Topic	Hours	Course Outcomes (CO)
1	Joint Movements Analysis	4	CO1
2	Grip and Pinch Strength Assessment	3	CO1
3	Throwing Mechanics	4	CO2
4	Functional Movement Analysis	3	CO2
5	Lifting Mechanics & Lumbopelvic Rhythm	4	CO3

Recommended Text Books

1. Cynthia C, Norkin D, Pamela K. Joint structure and function. A comprehensive analysis.
2. Houglum PA, Bertoti DB. Brunnstrom's clinical kinesiology. FA Davis; 2011.

Recommended Reference Books

1. Steindler A. Kinesiology of the human body under normal and pathological conditions. Springfield, IL. Charles C Thomas.
2. Neumann DA. Kinesiology of the musculoskeletal system-e-book: foundations for rehabilitation. Elsevier Health Sciences;
3. Oatis CA. Kinesiology: the mechanics and pathomechanics of human movement. Lippincott Williams & Wilkins;2009.
4. Hamill J, Knutzen KM. Biomechanical basis of human movement. Lippincott Williams & Wilkins; 2006 Oct1.
5. Robert shawe P. Kapandji AI.: The Physiology of the Joints, Volume 3: The Spinal Column, Pelvic Girdle and Head. Journal of the Australian Traditional-Medicine Society. 2009 Sep1;15(3):178-9.
6. Margareta Nordin: Basic Biomechanics of Musculoskeletal System, 4thEdition

Relevant Links

1. NPTEL Course: https://onlinecourses.nptel.ac.in/noc23_bt04/preview
2. Coursera: <https://www.coursera.org/learn/anthropometry-biomechanics-and-motorskills-in-user-design>

Study Material: <https://drive.google.com/drive/folders/1Xv1LYd1cttF0IVvR-d9QAo110XCBGWYi>

SUBJECT: Yoga & Systems of Medicine (NUES)**SUBJECT CODE:****CREDITS: 4****LECTURE HOURS: 4****Course Objectives:**

This course aims to provide students with an understanding of the principles of Yoga and various traditional medical systems. It covers the conceptual foundation of Yoga, its role in health, physiological effects, and practical applications. The course also introduces students to AYUSH systems of medicine and their integration with modern healthcare.

Course Outcomes (CO):

After taking this course, a student will be able to:

- **CO1:** Understand the conceptual aspects of Yoga and other Systems of Medicine.
- **CO2:** Appreciate the role of Yoga in maintaining personal and societal health.
- **CO3:** Demonstrate and perform basic Asanas and Pranayama.
- **CO4:** Analyze the physiological effects of Yoga practices.
- **CO5:** Understand and explain various AYUSH systems of medicine.

Mapping of Course Outcomes (CO) and Program Outcomes (PO):

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	✓		✓			✓		✓
CO2	✓		✓				✓	
CO3		✓	✓			✓		✓
CO4		✓	✓	✓	✓			
CO5	✓		✓	✓	✓			

S. No.	Topics	Hours	CO
	Foundations of Yoga		
1	Introduction, Philosophy, History, Streams & Types of Yoga		
2	Yoga and Health – Panchakosha Theory, Concept of Health & Disease, Stress Management through Yoga		
3	Physiological Effects of Yoga – Shat Kriyas, Asanas, Pranayamas, Relaxation & Meditation Techniques		
4	Role of Yoga in Disease Prevention & Promotion of Health		
5	Scientific Research & Evidence-Based Benefits of Yoga		
	Introduction to AYUSH System of Medicine		
1	Ayurveda – Philosophy, Principles, Treatment Techniques		
2	Naturopathy – Concept, Treatment Modalities		
3	Unani, Siddha, Homeopathy – Overview & Applications		
4	Integration of Traditional & Modern Medical Systems		
	Physiotherapy and yoga		
1	Biomechanics of Yoga Asanas – Joint Movements & Muscle Activation		
2	Role of Yoga in Physiotherapy – Rehabilitation & Recovery		
3	Yoga in Pain Management – Applications for Chronic & Acute Pain		
4	Yoga and Posture Correction – Alignment & Stability		
5	Integration of Yoga with Physiotherapy Modalities		

Recommended Textbooks:

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1. **B.K.S. Iyengar** – Light on Yoga
2. **B.K.S. Iyengar** – Light on Pranayama
3. **M.M. Ghore** – Anatomy and Physiology of Yogic Practices
4. A Systematic Course in the Ancient Tantric Techniques of Yoga and Kriya – Bihar School of Yoga
5. Yoga for Different Ailments – SVYASA, Bangalore & Bihar Yoga Bharati
6. Yoga for Common Ailments – Robin Monro, Nagarathna & Nagendra
7. Yoga Therapy – Swami Kuvalayananda
8. Yogic Therapy – Swami Shivananda

Relevant Links-

1. Coursera: <https://www.coursera.org/learn/science-exercise>
2. Study Material: <https://drive.google.com/drive/folders/1Xv1LYd1cttF0IVvR-d9QAo110XCBGWYi>



SUBJECT: Basics of Emergency Care and Life Support Skills (BLS): Theory (L) Practical (P)

SUBJECT CODE:

CREDITS: 1

LECTURE HOURS: 1

Course Objectives:

Course Outcomes:

After completion of this course the student shall be able to

1. Perform Opening and maintaining and patent airway: assessment and knowledge of airway maneuvers and adjuncts
2. Ventilate patients: Assessment and management of breathing with Mouth to mouth and mouth to mask
3. Administer basic life support skills including cardiopulmonary resuscitation
4. Provide first aid of simple and multiple system trauma such as • Controlling haemorrhage • Managing Burns and wounds • Response to effects of weapons of mass destruction • manually stabilizing injured extremities
5. Provide first aid to patients with medical emergencies like heart attack and stroke • Identifying signs of Stroke and heart attack and safe transfer after first aid without delay in transfer. • Manage general medical complaints seizures and animal bites (snake /dog bite)
6. Reassure patients and bystanders by working in a confident, efficient manner • Avoid mishandling and undue haste while working expeditiously to accomplish the task
7. Manage safe patient transport Entailing

S. No.	Topics	Hours	CO
1	Emergent conditions and magnitude, Concept of golden hour, Duties and responsibilities of first responder Ethical issues and Gather information from observation, experience and reasoning. Identification of rapidly changing situations and adapt accordingly. Planning and organization of work. Scene safety. Dealing with emotional reactions family members and bystanders Well-being of first responder Personal protection . Steps to be taken against airborne and blood-borne pathogens . Personal protective equipment necessary for each of the following situations: Hazardous materials Rescue Operations Violent Scenes Crime scenes . Electricity, Water and ice . Exposure to blood-borne pathogens Exposure to airborne pathogens		
2	Airway 1. Signs of inadequate breathing 2. Mechanism of injury to opening the airway 3. Steps in the head-tilt chin-lift 4. Steps in the jaw thrust 5. Taking out foreign body 6. Ensuring patent airway during seizures and vomiting		
3	Ventilation 1. Of a patient with a mask or barrier device 2. Steps in providing mouth-to-mouth and mouth-to-stoma ventilation		

	Circulation 1. Evaluate the cardiac status of the patient 2. Determine the need for and take necessary action to proper circulation 3. Steps for control of bleeding: Pressure bandage and tourniquet, Clearing a foreign body airway obstruction		
4	CPR 1. Implications of cardiac arrest 2. Cardiopulmonary resuscitation (CPR) i. How it works ii. Steps iii. When to stop CPR 3. Brief overview of AED Automated external defibrillator (only demonstration –no hands on)		
5	Transportation Importance of timely and proper transportation methods of transportation of victim from site of injury to ambulance. Importance of spine protection methods of spine protection during transportation Disaster preparedness -. Preparedness and risk reduction Incident command and institutional mechanisms Resource management		

Practical

Student should practice on Mannequins and dummies and should be able to

1. Provide Airway & Ventilation
2. Perform Basic Life Support: CPR

Recommended textbooks for ECLS

Indian red cross : INDIAN FIRST AID MANUAL 2016 (7th edition) available at
<https://www.indianredcross.org/publications/FA-manual.pdf>

Semester- IV**SUBJECT NAME: Microbiology****SUBJECT CODE- MCB****YEAR: 2nd YEAR, 4th Sem****SUBJECT DESCRIPTION AND INSTRUCTION TO TEACHER****Course Outcomes (CO):**

After taking this course a student will:

CO1: Gather and apply essential information from patient cases necessary to discuss clinic-pathologic processes in Small Group Discussions.

CO2: Develop a differential diagnosis when presented with clinical information or a histo-pathologic finding.

CO3: Utilize laboratory studies to diagnose and monitor disease states and conditions.

CO4: Demonstrate the ability to support self-education (i.e., active learning).

CO5: Demonstrate the ability to find additional information when confronted with a question or unfamiliar term, particularly when preparing for case-based exercises.

CO6: Investigates new and exciting material about microbes and our world, including health concerns, microbial anatomy and physiology, genetics, epidemiology, and use of antimicrobials and disinfectants.

Mapping of Course Outcomes (CO) and Program Outcomes (PO)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		☐			☐		☐	
CO2		☐			☐		☐	
CO3		☐			☐		☐	
CO4			☐		☐		☐	
CO5			☐		☐		☐	

S. No	Topics	No. of Lectures	Course Outcome (CO)
	UNIT 1 General Microbiology	10H	
1	General Microbiology: Introduction & scope, Classification of Micro-organisms & morphology of Bacteria, Sterilization & disinfection (basic concepts) universal safety precautions, and waste disposal.		
	UNIT 2		
2.	Immunology: Antigen antibody-reaction & application for diagnosis, Immune response-normal /abnormal, Innate immunity & acquired immunity (vaccination), Hyper-sensitivity & autoimmunity, Laboratory Diagnosis of Infection	15H	
	UNIT 3		
3.	Bacteriology: Infection caused by gram Negative cocci, Gas gangrene, clostridium, Diphtheria, Septicaemia: Septic Shock, Cholera, Typhoid, Diarrhoea, Mycobacterial infection: Tuberculosis, Leprosy, Atypical Mycobacterium, Syphilis-morphology & pathogenesis (VDRL) List the causative factors, pathology, clinical features, diagnosis and management of Bacterial disease (Diphtheria, Whooping Cough Tetanus Pyogenic, Diphtheria, Gram negative infection, bacillary dysentery. STD Gastroenteritis, Food Poisoning Tuberculosis, Leprosy, Syphilis) Viruses: Introduction & general properties: HIV, Hepatitis, Polio, measles, congenital viral infections, Rubella, CMV Herpes, COVID19, Rabies and Pox 1. Mycology: Mycetoma, Aspergillosis, candidiasis 2. Hospital acquired infection	15H	
	UNIT 4		

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	Describe the causative factors, pathology, clinical features, diagnosis and management of viral diseases: (Poliomyelitis, Herpes, Rabies, Measles, Rickets, Chlamydial infection, HIV infection. Chicken Pox, Measles, Mumps, Influenza) Describe the causative factors, pathology, clinical features, diagnosis and management of Malaria, Filariasis, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.		
Total Lecture Hours:			

Recommended Textbooks

1. Cotran, Kumar & Robbins Robbins Pathological Basis of Disease - - W.B. Saunders.
2. Harsh Mohan Textbook of Pathology - - Jaypee Brothers.
3. Goodmann and Boissonnault Pathology: Implications for Physical Therapists - - W.B. Saunders.

Recommended reference books

1. Walter & Israel, General Pathology - - Churchill Livingstone.
2. Anderson Muirs Textbook of Pathology - - Edward Arnold Ltd.

COURSE CODE: PHA-202**COURSE TITLE: PHARMACOLOGY II****CREDITS: 3****LECTURE HOURS: 3****Course Description:**

This course introduces physiotherapy students to basic pharmacological concepts with a focus on drugs relevant to neurology, psychiatry, respiratory, gastrointestinal, endocrine systems, and geriatrics. It emphasizes drug mechanisms, therapeutic uses, adverse effects, and special considerations in physiotherapy practice. Students will learn to understand pharmacological interventions and their integration into rehabilitation plans.

Course Outcomes (CO):

After completion of this course, the student shall be able to:

1. Understand the mechanisms of action, uses, side effects, and physiotherapy implications of sedative-hypnotics, anxiolytics, antidepressants, and antipsychotics.
2. Explain the pharmacology of drugs used in Parkinsonism, epilepsy, and spasticity, and their role in neurorehabilitation.
3. Discuss respiratory pharmacology and its relevance to obstructive airway diseases and allergic rhinitis.
4. Understand the pharmacological management of peptic ulcer disease, constipation, diarrhea, and diabetes mellitus.
5. Recognize drug interactions and adverse effects of special concern in elderly patients.
6. Identify commonly used chemotherapeutic agents and their physiotherapy-related precautions.

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Mapping of Course Outcomes (CO) with Program Outcomes (PO):

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	✓	✓	✓				✓	✓
CO2	✓	✓	✓				✓	✓
CO3	✓	✓	✓	✓			✓	✓
CO4	✓	✓	✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓
CO6	✓	✓	✓	✓	✓	✓	✓	✓



Course Contents

S. No	Topics	Hours	CO
	Unit 1: Neuropharmacology I		
	Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines Antianxiety Drugs: Benzodiazepines, Other Anxiolytics Discuss Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium, Antipsychotic drugs		
	Unit 2: Disorders of Movement		
	Drugs used in Treatment of Parkinson 's diseases, Antiepileptic Drugs, Spasticity and Skeletal Muscle Relaxants		
	Unit 3: Respiratory Pharmacology		
	Respiratory Pharmacology and Drugs used in Treatment of Obstructive airway, Diseases, Allergic Rhinitis		
	Unit 4: Gastrointestinal and Endocrine Pharmacology		
	Gastrointestinal Pharmacology and drugs used in Peptic Ulcer Disease, Constipation, and diarrhoea Drugs, Hormones and drugs affecting endocrine functions Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycaemic		
	UNIT 5		
	Adverse effects of special concern in the Elderly, Dementia, and Postural hypotension., Chemotherapeutic agents		

Essential Readings

1. Goodman & Gilman's: The Pharmacological Basis of Therapeutics
2. Pharmacology for Physiotherapy by M.Murgesh
3. Essentials of Medical Pharmacology by K.D. Tripathi

Recommended reference books for PC

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1. The Pharmacological basis of Therapeutics - Goodman and Gilman - MacMillan.
 2. Satoskar RS, Rege N, Bhandarkar SD. Pharmacology and pharmacotherapeutics. Elsevier India;

Relevant Links-

Government & Online Reference Material:

- Guidelines from:
 - <https://www.ncahp.gov.in>
 - <https://www.physo.org> – Indian Physiotherapy Association
 - WHO & ICMR Guidelines on Geriatric and Chemotherapy Drug Safety
 - [Interactive 3D Clinical Skills: A Gamified Experience Specialization](#)
 - [Drug Hunting: The Science of Making New Medicines Specialization](#)



COURSE CODE: BPT-202

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COURSE TITLE: Community Medicine & Health Promotion II (PH): Theory (L)

CREDITS: 3

LECTURE HOURS: 3

Course Description: This subject follows the basic science subjects to provide the knowledge about conditions the therapist would encounter in their practice in the community. The objective of this course is that after 60 hrs. of lectures and discussion the student will be able to demonstrate an understanding of various aspects of health and disease and the methods of health administration and be able to appreciate role of health education and disease preventive measures in keeping the population healthy.

Course Outcome:

CO1: Explain the determinants of health and their influence on individuals and communities, with reference to the local context.

CO2: Describe the structure and functioning of the Indian healthcare delivery system and its relevance to physiotherapy practice.

CO3: Discuss the National Health Policy and key health programmes, highlighting their application in physiotherapy and public health initiatives.

CO4: Illustrate the role of individuals, families, and communities in promoting and maintaining health.

CO5: Apply the concepts of disease prevention and health promotion across all levels of prevention in clinical and community settings.

CO6: Demonstrate an understanding of basic epidemiological principles and their role in preventing communicable and non-communicable diseases.

CO-PO Mapping Table

POs	CO1	CO2	CO3	CO4	CO5	CO6
PO1		✓			✓	
PO2	✓	✓	✓	✓	✓	✓
PO3			✓			✓
PO4		✓	✓	✓		
PO5		✓				
PO6			✓		✓	✓
PO7	✓			✓	✓	
PO8	✓	✓	✓	✓		✓

S. No	Topics	Hours	CO
	UNIT I Preventive Medicine in Special Population		
1.	Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranatal and post-natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, social welfare programmes for women and children, Preventive medicine and geriatrics		
2.	UNIT II Occupational Health		
	Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.		
3	UNIT III Mental Health		
	Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as Intellectual Disability.		
4	UNIT IV Health Education		
	Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education. Exercise as Preventive Medicine: For Old age, Working Population, Adolescents and Children. How to keep your Society fit.		
5	UNIT V Environment and Health		
	Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, medical entomology. Hospital waste management: Sources of hospital waste, Health hazards, Waste management. Disaster Management: Natural and man-made disasters, Disaster impact and response, Relief phase,		

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	Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness.		
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SUBJECT NAME: EXERCISE THERAPY**Subject Code: EXT205****Year: 2nd Year****CREDIT HR: 4****Subject Description and instruction to teacher**

The purpose of this course is to provide detailed knowledge and skills about the advanced concepts and methods of exercise therapy - build over the fundamental concepts taught in the first year such as relaxation, suspension therapy, hydrotherapy, manual therapy, aerobic exercises functional re-education stretching etc. The basic idea is that after the completion of this course, a student acquires the skills and knowledge to apply the techniques of exercise therapy in patient care. The emphasis should be giving hands on training in execution of various types of exercises and passive procedures. Besides lecture and demonstration, the emphasis should be placed on making the student capable to perform the exercise procedures independently using DOAP [demonstrate, observe, assist, perform] model of teaching learning.

Course Outcomes (CO):

After taking this course a student will:

CO1: Demonstrate sound foundational knowledge and understanding of the principles of biology, chemistry, and nutrition, and an advanced understanding of human anatomy and physiology as they relate to responses and adaptations to physical activity and exercise.

CO2: Demonstrate basic laboratory skills pertaining to assessments, laboratory methods, sound experimental and analytical practices, data acquisition and reporting in the exercise sciences.

CO3: Demonstrate knowledge of the importance and influence of physical activity, kinesiology, nutrition, and exercise on health and be an advocate for physically active lifestyles to improve quality of life and reduce the risk and prevalence of lifestyle related diseases.

CO4: Plan, administer, and evaluate wellness and fitness programs, nutrition projects, and exercise physiology tracks based in sport, clinical, industrial, and/or corporate environments.

CO5: Demonstrate requisite skills and abilities for meaningful employment in exercise science related areas or pursue graduate studies in an exercise therapy related area.

Mapping of Course Outcomes (CO) and Program Outcomes (PO):

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	✓						✓	✓
CO2	✓						✓	✓
CO3	✓			✓			✓	✓
CO4	✓			✓			✓	✓
CO5	✓			✓			✓	✓



COURSE CONTENT

2024-25

S. No.	Topics	Hours	Course Outcome
1.	HYDROTHERAPY: Principles of fluid mechanics as they relate to hydrotherapy. Discuss the Physiological and therapeutic effects of hydrotherapy (joint mobility, muscle strengthening and wound care) Appreciate the indications, contraindications and precautions to be while providing hydrotherapy care. Identify the Types of Hydrotherapy equipment	6H	
2.	THERAPEUTIC GYMNASIUM: Introduction to the Equipment used in the therapeutic gymnasium. Usage of identified equipment, develop the skills in handling the equipment	6H	
3.	AEROBIC EXERCISE: Physiological response to aerobic exercise. Methods of exercise testing and prescription (ACSM) Explain the Normal and abnormal response to acute aerobic exercise. Discuss the Physiological changes that occur with training. Apply the principle of aerobic conditioning programme while prescribing exercise	5H	
4	CO-ORDINATION EXERCISE: Physiology of Co-ordination Appreciate the causes and pathophysiology of Incoordination. Test for co-ordination: (equilibrium test, non-equilibrium test), Principles of co-ordination exercise. Frenkel's Exercise in terms of its effects, mechanism, indications, and Evidence, Prescription progression, home exercise	6H	
1.	Motor control and MOTOR LEARNING: Motor Learning, Classify of Motor skills, Methods of Measurement of Motor Performance, Theories of motor learning and motor control and its application	5H	

2.	Proprioceptive Neuromuscular Facilitation: Neurophysiologic principles of PNF, Muscular activity, Diagonals patterns of movement: upper limb, lower limb. Demonstrate skills in performing PNF components (timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal). Stability: Alternating isometric, rhythmic stabilization		
3.	WALKING AIDS: Different types of walking aids (Crutches, Canes, Frames), Principles of prescribing walking aids, and Walking Patterns 2 Point, 3 point an 4 point gait		



2024-25

**SUBJECT: EXERCISE THERAPY
PRACTICAL**

SUBJECT CODE: EXT291

CREDITS: 2

Course Contents:

S. No.	Topic	Hours
1	Industrial visit for Hydrotherapy	4H
2	Demonstrate the skills of Identifying equipment of Therapeutic Gymnasium Handling the equipment of Therapeutic Gymnasium. Can also be done with an Hand on training in a GYM.	4H
3	Design and conduct aerobic training programme, Demonstration of Exercise testing, Aerobic Conditioning program	
4	Demonstrate of equilibrium and non-equilibrium testing. Demonstration and prescription of Frenkel's exercise	4H
5	Demonstrate the following PNF techniques. Contract and relax, Hold relaxes, Rhythmic initiation Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization	
6	Assessment, evaluation and Demonstration of gait training. Assessment and training for using walking aids: Axillary crutch [3-point, 2 point 4-point gait], Elbow crutch, Walker, Rollator, Cane.	4H
7	Demonstrate techniques of strengthening muscles using resisted exercises	4H
Total Lecture Hours: 40 Hours		

SUBJECT: ELECTROTHERAPY II

SUBJECT CODE: ELT

SEMESTER IV

CREDITS: 3

Course Objective: This course is an ideal way to bring up to date with current procedures in this field. It will expand the knowledge of the underlying principles of modalities such as ultrasound and laser therapy and will enhance the ability to adapt, standard treatment protocols to the specific needs of each patient.

Course Outcomes (CO):

After taking this course a student will:

CO1: To consider the basic issues of each modality.

CO2: What the energy can (and cannot) do in terms of physiological & therapeutic effects.

CO3: To relate these issues to both the research evidence & the clinical application of each modality.

CO4: Explain the basic nature of the applied energy.

CO5: Identify the key physiological effects of the modality.

CO6: Rationalize the main therapeutic effects.

CO7: Justify the appropriate clinical application.

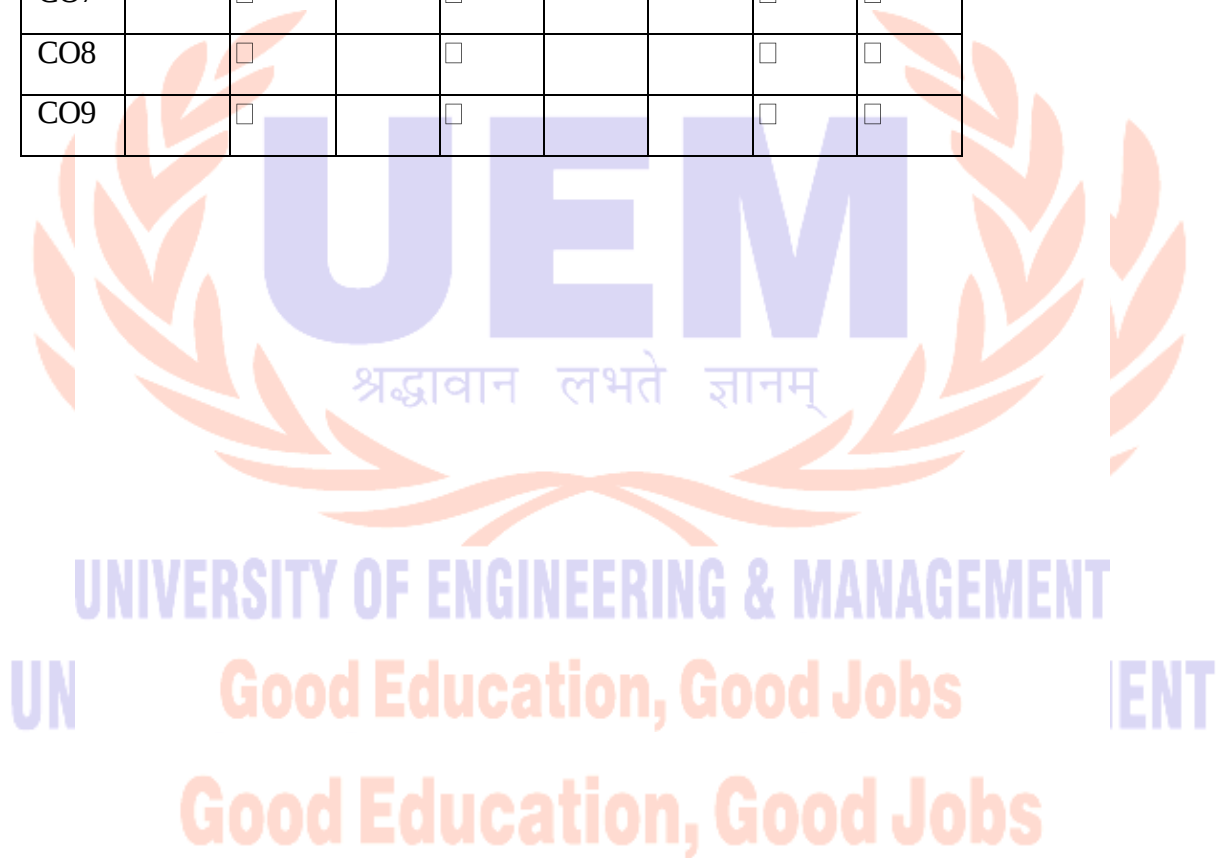
CO8: Establish appropriate clinical doses.

CO9: List the key contraindications, dangers & precautions.

2024-25

Mapping of Course Outcomes (CO) and Program Outcomes (PO):

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		☐						☐
CO2		☐						☐
CO3		☐		☐				☐
CO4				☐			☐	☐
CO5				☐			☐	☐
CO6		☐		☐			☐	☐
CO7		☐		☐			☐	☐
CO8		☐		☐			☐	☐
CO9		☐		☐			☐	☐



COURSE CONTENTS

2024-25

S. No.	Topics	Hours	Course Outcome
	Therapeutic mechanical pressure (Intermittent Compression Therapy)		
1.	Principles, biophysical effects, types, therapeutic effects, indications, and contraindications of intermittent compression therapy, Skills in application of compression therapy handling the equipment including preparation, maintenance and safety, current evidence pertaining to intermittent compression therapy	7	CO2
2	(Therapeutic hot and Cold		
	a) CRYOTHERAPY Production, Biophysical effects, types, therapeutic effects, techniques of application, indication, contraindications, and precautions of cryotherapy, application of cryotherapy, handling the equipment including preparation, maintenance and safety, current evidence pertaining to cryotherapy b) Hydrocollator: Physiological and Therapeutic effects, techniques of application, indication, contraindications, and precautions c) Hydrotherapy: a) Properties of water buoyancy b) Effects of buoyancy on movement c) Hubbard tank d) Contrast bath, e) Whirlpool bath d) Physiological responses to heat gain or loss on various tissues of the body		
	Pain Gate Theory		
3	Pain: Pain Pathway, Pain Gate Theory, Descending pain suppressing system, Physiological block, Interpretation with TENS, Rationalize the use of electro physical agents.		CO2
4.	Combination therapy		CO2
	Combined therapy- principle, therapeutic uses, and indication like U.S therapy with stimulation or TENS, Iontophoresis etc, Case Discussion on EPA: Design a management protocol for a		

	client with identified impairments, activity limitations and participatory restrictions		
5.	Recent advances in Electro-physiotherapy:		
	a) High power class IV LASER b) Shockwave c) PEMF (Pulse Electro Magnetic Energy), High Intensity Magnetotherapy d) Spinal Decompression, e) Pneumatic Compression therapy f) Functional Electrical Stimulation g) TECAR Therapy h) Cold air cryotherapy i) Virtual and Augmented Reality j) Brief idea about Robotic therapy		

**SUBJECT: FUNDAMENTALS OF ELECTRO PHYSICAL AGENTS'
PRACTICAL II**

SUBJECT CODE: ELT194 II

CREDITS: 2

S. No.	Practical topics	Hours	Course Outcome
1	Testing of Electrotherapy apparatus.	3	CO1
2	Technique of application of electrotherapy treatment modalities (demonstration and practice) of Therapeutic mechanical pressure (Intermittent Compression Therapy), Cryotherapy, hydrocollator and combination therapy, buoyancy on movement, Hubbard tank, Contrast bath, Whirlpool bath	18	CO2
3	High power class IV LASER b) Shockwave c) PEMF (Pulse Electro Magnetic Energy), High Intensity Magnetotherapy d) Spinal Decompression, e) Pneumatic Compression therapy f) Functional Electrical Stimulation g) TECAR Therapy h) Cold air cryotherapy i) Virtual and Augmented Reality, Robotic Therapy (can be done with Industrial Visit)	3	C03

Essential Readings:

1. Electro therapy Explained: Principles & Practice Low& Reed, Butterworth Heinemann.
2. Claytons Electro therapy, Forster & Palastange Baillier Tindal.

Suggested Readings:

Textbooks:

- 1) Basanta Kumar Nanda, Electrotherapy simplified, jaypee, all chapters.
- 2) Angela Forster, Clayton's Electrotherapy, CBS, all chapters.

References:

- 1) Low and Reed – Electrotherapy Explained: Principles and Practice
- 2) Jagmohan Singh – Textbook of Electrotherapy.
- 3) Kahn - Principles and Practices of Electrotherapy
- 4) Lehmann – Therapeutic Heat and Cold
- 5) Bellis E. Electrotherapy: evidence-based practice.



SUBJECT: BIOMECHANICS & KINESIOLOGY**SUBJECT CODE: BIK20****CREDITS: 4, LECTURE HOURS:4**

Course Objectives: This course aims to equip students with fundamental knowledge and skills in biomechanics and kinesiology. The course aims to develop a comprehensive understanding of human movement by applying mechanical principles and facilitating effective assessment, diagnosis, and treatment of musculoskeletal disorders.

Course Outcomes (CO):

After taking this course, a student will-

CO1: Discuss the principles of physics and laws related to human movement.

CO2: Demonstrate understanding of functional movement (kinetics and kinematics).

CO3: Identify the relationship between structure, function, and mechanical properties.

CO4: Analyze components of human movement in normal and pathological conditions.

CO5: Apply principles of movement analysis to understand gait and posture.

CO6: Perform movement analysis to identify gait and postural abnormalities.

CO7: Apply biomechanics principles in physiotherapy protocols.

CO8: Interpret data from movement analysis, including gait and posture.

Mapping of Course Outcomes (CO) and Program Outcomes (PO):

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		✓		✓	✓		✓	✓
CO2		✓		✓	✓		✓	✓
CO3		✓		✓	✓		✓	✓
CO4		✓		✓	✓		✓	✓
CO5		✓			✓	✓	✓	
CO6		✓			✓	✓	✓	
CO7		✓			✓	✓	✓	
CO8		✓				✓	✓	
CO9		✓				✓	✓	
CO10		✓				✓	✓	

S. No.	Topics	Hours
1	Unit 1 Biomechanics of the lower extremity joints	16H
	Hip Complex: Structure and Function: Explain the anatomy and mechanics of the hip joint, including its role in movement and weight-bearing, Pathologies: Common hip joint pathologies such as arthrosis, fractures, and structural abnormalities of the femur. Movements: Normal hip movements and recognize abnormal patterns. Stability: Analyse the factors contributing to hip joint stability. Movement Abnormalities: Common abnormalities affecting hip movement.	4H
	Knee Complex: Structure and Function: Describe the anatomy and biomechanics of the tibiofemoral and patellofemoral joints. Injury and Disease Impact: Examine how injuries and diseases affect knee function. Movements: Identify normal and abnormal knee joint movements. Stability: Discuss the factors that ensure knee stability. Movement Abnormalities: Highlight common abnormalities of knee movement. Patellar mal tracking and associated pain syndromes, IT band syndrome and lateral knee pain	4H
	Ankle and Foot Complex: Structure and Function: Explore the anatomy and function of the ankle, subtalar, talocalcaneonavicular, transverse tarsal, tarsometatarsal, metatarsophalangeal, and interphalangeal joints. Plantar Arches and Muscles: Discuss the structure and role of the plantar arches and the muscles supporting the ankle and foot. Deviations and Abnormalities: Identify common deviations such as Pes Planus (flat feet) and Pes Cavus (high arches). Foot motion during different phases of gait, Postural control and proprioception in foot function, Adaptations of the foot in running and jumping	4H
	UNIT II Posture	12H

















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2024-25

	Role of custom orthotics in postural correction	
	Identify postural abnormalities	2H
	Describe ergonomics	2H
	Postural Assessment Techniques Visual and instrumented methods (plumb line, postural grids, motion analysis) Functional assessments for postural stability	4H
	Discuss the effects of age, occupation and recreation on posture	4H
	UNIT III Gait	12 H
3	Normal gait cycle, the kinetics and kinematics of gait, determinants of gait, gait abnormalities, Role of muscle power and efficiency in Gait, energy recruitment of normal and abnormal gait. kinetic and kinematic analysis of stair climbing Biomechanics of Gait in Special Populations, Pediatric gait, Geriatric gait, Gait in pregnancy	1H

SUBJECT: BIOMECHANICS & KINESIOLOGY PRACTICAL

SUBJECT CODE: BIK29

CREDITS: 2, LECTURE HOURS:4

S. No.	Practical Topic	Hours	Course Outcomes (CO)
1	Posture Analysis	3	CO3
2	Gait Analysis	4	CO4
3	Stair Climbing Analysis	3	CO4
4	Jumping and Landing Mechanics	4	CO5
5	ADL Functional Movements Assessment	4	CO6

Recommended Text Books

2024-25

1. Cynthia C, Norkin D, Pamela K. Joint structure and function. A comprehensive analysis.
2. Houglum PA, Bertoti DB. Brunnstrom's clinical kinesiology. FA Davis; 2011.

Recommended Reference Books

1. Steindler A. Kinesiology of the human body under normal and pathological conditions. Spring-field, IL. Charles C Thomas.
2. Neumann DA. Kinesiology of the musculoskeletal system-e-book: foundations for rehabilitation. Elsevier Health Sciences;
3. Oatis CA. Kinesiology: the mechanics and pathomechanics of human movement. Lippincott Williams & Wilkins;2009.
4. Hamill J, Knutzen KM. Biomechanical basis of human movement. Lippincott Williams & Wilkins; 2006 Oct1.
5. Robert shawe P. Kapandji AI.: The Physiology of the Joints, Volume 3: The Spinal Column, Pelvic Girdle and Head. Journal of the Australian Traditional-Medicine Society. 2009 Sep1;15(3):178-9.
6. Margareta Nordin: Basic Biomechanics of Musculoskeletal System, 4thEdition

Relevant Links-

1. NPTEL Course: https://onlinecourses.nptel.ac.in/noc23_bt04/preview
2. Coursera: <https://www.coursera.org/learn/anthropometry-biomechanics-and-motorskills-in-user-design>
3. Study Material: <https://drive.google.com/drive/folders/1Xv1LYd1cttF0IVvR-d9QAo110XCBGWYi>

2024-25
Subject Name: MEDICAL TERMINOLOGIES AND RECORD KEEPING (NUES)

Subject Code: This course introduces the elements of medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study. Spelling is critical and will be counted when grading tests.

Topics to be covered under the subject are as follows:

S. No	Topic	Hours	CO
1.	Derivation of medical terms.		
2.	Define word roots, prefixes, and suffixes		
3.	Conventions for combined morphemes and the formation of plurals		
4.	Basic medical terms in health care and physiotherapy		
5.	Form medical terms utilizing roots, suffixes, prefixes, and combining roots.		
6.	Interpret basic medical abbreviations/symbols.		
7.	Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.		
8.	Interpret medical records/reports.		
9.	Data entry and management on electronic health record system		

2024-25
SEMESTER-V

Programme: Bachelor of Physiotherapy (BPT)

Paper - I

Subject Name: General Medicine I

Subject Code: (As per University Scheme)

Credit: 3

Lecture Hours:

Lecture No.	Module	Sub-unit	Lecture Topic	Learning Outcome
Module I: Infection (15 Hours)				
1	Module I	1.1	Introduction to Infection and Host Response	Explain the causes, types and pathophysiology of infections.
2		1.2	Effects of Infection on the Body	Describe systemic effects of infections.
3		1.3	Source and Spread of Infection	Explain modes of transmission and prevention.
4		1.4	Vaccination and Immunization	Describe principles and schedules of immunization.
5		1.5	Generalized Infections	Identify common systemic infections and clinical features.
6		1.6	Rashes Associated with Infections	Differentiate infectious skin manifestations.
7		1.7	Food Poisoning and Gastroenteritis	Explain etiology, clinical features and management.
8		1.8	Sexually Transmitted Diseases	Discuss common STDs and preventive measures.
9		1.9	HIV Infection and AIDS	Explain clinical manifestations, diagnosis and management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II: Poisoning (10 Hours)			
10	2.1	Introduction to Poisoning	Define poisoning and classify common agents.
11	2.2	Clinical Features of Poisoning	Recognize signs and symptoms of poisoning.
12	2.3	General Management of Poisoning	Explain emergency management principles.
13	2.4	Pharmaceutical Agents	Describe poisoning due to drugs and medications.

14	2.5	Drugs of Misuse	Explain clinical presentation and management.
15	2.6	Chemical Pesticides	Describe pesticide toxicity and treatment.
16	2.7	Envenomation	Explain management of snake bite and insect envenomation.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III: Food and Nutrition (15 Hours)			
17	3.1	Nutritional Assessment	Assess nutritional status using standard methods.
18	3.2	Nutritional and Energy Requirements	Explain daily nutritional requirements.
19	3.3	Deficiency Diseases	Describe common nutritional deficiency disorders.
20	3.4	Protein Energy Malnutrition	Identify clinical features and management.
21	3.5	Obesity: Etiology	Explain causes and risk factors of obesity.
22	3.6	Complications of Obesity	Discuss metabolic and systemic complications.
23	3.7	Benefits of Weight Reduction	Explain health benefits of weight loss.
24	3.8	Management of Obesity	Discuss dietary, exercise and pharmacological management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV: Endocrine Diseases (15 Hours)			
25	4.1	Introduction to Endocrine Disorders	Explain common endocrine diseases.
26	4.2	Clinical Presentation of Endocrine Diseases	Identify classical clinical manifestations.
27	4.3	Diabetes Mellitus: Etiology and Pathogenesis	Explain the development of diabetes mellitus.
28	4.4	Clinical Manifestations of Diabetes	Identify signs and symptoms.
29	4.5	Diagnosis and Management of Diabetes	Discuss diagnosis and treatment strategies.
30	4.6	Acute Complications of Diabetes	Explain diabetic emergencies.
31	4.7	Chronic Complications of Diabetes	Describe long-term complications and prevention.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V: Diseases of Blood (10 Hours)			
32	5.1	Examination of Blood Disorders	Perform clinical assessment of blood disorders.
33	5.2	Clinical Manifestations	Recognize common hematological presentations.
34	5.3	Anaemia	Differentiate types, causes and management.
35	5.4	Haemophilia	Explain etiology, clinical features and management.
36	5.5	Complications of Haemophilia	Describe complications and rehabilitation concerns.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VI: Diseases of the Digestive System (25 Hours)			
37	6.1	Clinical Manifestations of GI Diseases	Identify common gastrointestinal symptoms.
38	6.2	Reflux Oesophagitis	Explain etiology, diagnosis and treatment.
39	6.3	Achalasia Cardia	Describe clinical features and management.
40	6.4	Carcinoma of Oesophagus	Discuss diagnosis and treatment.
41	6.5	Gastrointestinal Bleeding	Explain causes and emergency management.
42	6.6	Peptic Ulcer Disease	Describe pathology and management.
43	6.7	Carcinoma of Stomach	Explain diagnosis and treatment principles.
44	6.8	Pancreatitis	Describe acute and chronic pancreatitis.
45	6.9	Malabsorption Syndrome	Explain causes and clinical presentation.
46	6.10	Ulcerative Colitis	Discuss pathology and treatment.
47	6.11	Peritonitis	Explain diagnosis and emergency management.
48	6.12	Infections of Alimentary Tract	Describe common GI infections.
49	6.13	Viral Hepatitis	Explain types, diagnosis and management.
50	6.14	Wilson's Disease	Describe etiology and management.
51	6.15	Alpha-1 Antitrypsin Deficiency	Explain clinical features.

52	6.16	Tumours of Liver	Discuss diagnosis and treatment.
53	6.17	Gallstones	Explain pathogenesis and management.
54	6.18	Cholecystitis	Describe clinical features and treatment.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VII: Diseases of Skin (10 Hours)			
55	7.1	Examination of Skin Diseases	Perform systematic dermatological examination.
56	7.2	Clinical Manifestations of Skin Disorders	Identify common dermatological presentations.
57	7.3	Leprosy	Explain diagnosis, complications and management.
58	7.4	Psoriasis	Describe etiology and management.
59	7.5	Pigmentary Disorders	Differentiate common pigmentary anomalies.
60	7.6	Vasomotor Disorders	Explain vascular skin disorders.
61	7.7	Dermatitis	Discuss causes and management.
62	7.8	Coccal Infections	Identify bacterial skin infections.
63	7.9	Fungal, Parasitic and Viral Skin Diseases	Differentiate common infectious skin disorders.
64	7.10	Integrated Case Discussion and Revision	Apply knowledge to clinical case scenarios.

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Practical No.	Topic	Guidelines / Competencies
1	Infection and Host Response	Demonstrate infection control practices and standard precautions.
2	Source and Spread of Infection	Identify modes of transmission and preventive measures.
3	Vaccination and Immunization	Interpret immunization schedules and counsel patients.
4	Generalized Infections and Infectious Rashes	Identify common clinical features through case discussion.
5	Food Poisoning, Gastroenteritis, STDs and HIV/AIDS	Assess clinical features and provide patient education.
6	Poisoning	Perform basic assessment and emergency management.
7	Toxic Agents and Envenomation	Recognize poisoning and envenomation cases.
8	Nutritional Assessment	Assess nutritional status using BMI and screening tools.
9	Nutritional Disorders and Obesity	Assess obesity and counsel on lifestyle modification.
10	Endocrine Disorders and Diabetes Mellitus	Perform diabetic assessment and educate patients.
11	Diabetes Complications	Identify acute and chronic complications and precautions.
12	Blood Disorders	Identify clinical features and interpret basic investigations.
13	Gastrointestinal Examination	Demonstrate systematic abdominal examination.
14	Gastrointestinal Disorders	Assess common GI disorders through case discussion.
15	Hepatobiliary Disorders	Recognize liver and gallbladder disorders.
16	Skin Diseases	Identify common skin lesions and infection control measures.

17	Pigmentary and Infectious Skin Disorders	Differentiate common dermatological conditions.
18	Integrated Case Discussion and Revision	Present cases and formulate clinical management plans.

Recommended text books

1. Davidson's principles and Practices of Medicine – Edward – Churchill Livingstone.
2. Hutchinson's Clinical Methods – Swash – Bailliere Tindall.
3. A Short Text book of Medicine – Krishna Rao – Jaypee Brothers.
4. A Short Text book of Psychiatry – Ahuja Niraj – Jaypee Brothers.
5. Shah SN: API text book of Medicine. Vol I & II, 8th Ed, The Association of Physicians of India, Mumbai, 2008.
6. Golwalla SA, Golwalla AF: Medicine for students. 21st Ed, National book depot, Mumbai, 2005.
7. Das PC: Textbook of medicine. 4th Ed, Current books international, Kolkata, 2000.
8. Mehta PJ, Joshi SR, Mehta NP: Practical Medicine. 17th Ed, National Book Depot, New Delhi, 2005.

Recommended reference books

1. Fauci, Braunwald, Kasper, Longo, Jameson, Loscalzo: Harrison's principles of internal medicine. Vol I & II, 17th Ed, McGraw Hill, New York, 2008.
2. McPhee, Papadakis, Tierney: Current medical diagnosis and treatment. 46th Ed, McGraw Hill, New York, 2007.
3. Ogilvie & Evans: Chamberlain's symptoms and signs in clinical medicine – An introduction to medical diagnosis. 12th Ed, Butterworth Heinmann, Oxford,
4. Douglas, Nicol & Robertson: Macleod's clinical examination. 11th Ed, Elsevier – Churchill Livingstone, Edinburgh, 2005

Programme: Bachelor of Physiotherapy (BPT) **Paper II**

Subject Name: General Surgery I

Subject Code:

Credit: 3

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I: Principles of General Surgery (20 Hours)			
1	1.1	Fluid, Electrolyte & Acid-Base Disturbances	Explain diagnosis and management of fluid, electrolyte and acid-base disorders.
2	1.2	Nutrition in Surgical Patient	Describe nutritional requirements and support in surgical patients.
3	1.3	Wound Healing	Explain phases and mechanisms of wound healing.
4	1.4	Factors Affecting Wound Healing	Identify factors influencing wound repair.
5	1.5	Scars and Scar Management	Describe types of scars and treatment methods.
6	1.6	Haemostasis	Explain components and physiology of haemostasis.
7	1.7	Haemostatic Disorders	Discuss bleeding disorders affecting surgery.
8	1.8	Blood Transfusion Therapy	Explain indications, blood components and complications of transfusion.
9	1.9	Surgical Infections	Identify common surgical infections and preventive measures.
10	1.10	Post-operative Complications	Describe common post-operative complications and their management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II: Basic Surgical Procedures (15 Hours)			
11	2.1	Indications of Surgery	Explain indications for various surgical procedures.
12	2.2	Types of Anaesthesia	Differentiate various types of anaesthesia.

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13	2.3	Effects, Indications & Contraindications of Anaesthesia	Explain indications, contraindications and effects of anaesthesia.
14	2.4	Types of Incisions	Describe commonly used surgical incisions.
15	2.5	Endoscopy	Explain indications and types of endoscopic procedures.
16	2.6	Biopsy	Describe types and clinical applications of biopsy.
17	2.7	Drainage Systems and Surgical Tubes	Identify commonly used drainage systems and tubes.
18	2.8	Anaesthesia-related Post-operative Complications	Discuss prevention and management of anaesthesia complications.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III: Thoracic Trauma (15 Hours)			
21	3.1	Airway Obstruction	Explain diagnosis and emergency management.
22	3.2	Pneumothorax	Describe causes, diagnosis and treatment.
23	3.3	Haemothorax	Explain clinical presentation and management.
24	3.4	Cardiac Tamponade	Discuss diagnosis and emergency treatment.
25	3.5	Tracheobronchial Disruption	Describe clinical features and management.
26	3.6	Aortic Disruption	Explain diagnosis and surgical intervention.
27	3.7	Diaphragmatic Disruption	Describe causes and management principles.
28	3.8	Esophageal Disruption	Explain diagnosis and treatment.
29	3.9	Cardiac and Pulmonary Contusions	Discuss clinical features and management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV: Surgical Oncology (10 Hours)			
30	4.1	Introduction to Cancer	Define cancer and classify its types.
31	4.2	Clinical Manifestations of Cancer	Identify common signs and symptoms.
32	4.3	Staging of Cancer	Explain TNM staging and its importance.
33	4.4	Surgical Management of Cancer	Describe common oncological surgical procedures.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V: Common Surgical Procedures (15 Hours)			
34	5.1	Cholecystectomy	Explain indications, procedure and complications.
35	5.2	Colostomy and Ileostomy	Describe indications and postoperative care.
36	5.3	Gastrectomy	Explain physiological changes and complications.
37	5.4	Hernias and Hernia Repair	Describe types and surgical management.
38	5.5	Appendicectomy	Explain indications and postoperative management.
39	5.6	Mastectomy	Discuss indications and rehabilitation considerations.
40	5.7	Nephrectomy	Explain indications and complications.
41	5.8	Proctectomy	Describe surgical indications and postoperative care.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VI: Burns and Plastic Surgery (10 Hours)			
42	6.1	Burns: Definition and Classification	Classify burns according to severity and depth.
43	6.2	Pathophysiology and Clinical Features of Burns	Explain pathological changes following burns.
44	6.3	Burn Management	Describe emergency and definitive management of burns.
45	6.4	Skin Grafts	Explain types, procedures and graft survival.
46	6.5	Flaps	Describe types and clinical applications of flaps.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VII: Obstetrics and Gynaecology (15 Hours)			
47	7.1	Menstrual Cycle and Menstrual Disorders	Explain normal physiology and common menstrual disorders.
48	7.2	Female Hormonal Disorders and Obesity	Describe hormonal disorders affecting women's health.
49	7.3	Cancer of Female Reproductive Organs	Explain diagnosis and management principles.

50	7.4	Female Genital Infections and STDs	Identify common infections and their management.
51	7.5	Menopause	Discuss physiological, emotional and musculoskeletal changes.
52	7.6	Malnutrition and Sterility	Explain nutritional deficiencies and infertility management.
53	7.7	Maternal Physiology and Pregnancy	Describe physiological adaptations during pregnancy.
54	7.8	Musculoskeletal Disorders During Pregnancy	Explain assessment and management strategies.
55	7.9	Prenatal Complications	Discuss investigations and management of antenatal complications.
56	7.10	Childbirth and Stages of Labour	Explain stages of labour and labour management.
57	7.11	Pain Relief in Labour and Puerperium	Describe pain management and postnatal care.
58	7.12	Surgical Procedures in Childbirth	Explain indications for Caesarean section and assisted delivery.
59	7.13	Urinary Incontinence	Describe types, assessment and management of incontinence.
60	7.14	Hysterosalpingography (HSG)	Explain the definition, indications, procedure and clinical applications of HSG.
61	7.15	Dilatation and Curettage (D&C)	Describe the indications, procedure, complications and postoperative management of D&C.
62	7.16	Laparoscopy	Explain the indications, advantages, contraindications and clinical applications of diagnostic and operative laparoscopy.
63	7.17	Colposcopy	Describe the indications, procedure, and interpretation of findings and role of colposcopy in cervical disease screening.
64	7.18	Hysterectomy	Explain the types, indications, surgical approaches, postoperative complications and rehabilitation following hysterectomy.

Practical No.	Topic	Guidelines / Competencies
1	Fluid, Electrolyte & Acid–Base Disturbances	Identify common fluid and electrolyte imbalances and interpret basic clinical findings.
2	Nutrition, Wound Healing & Scar Management	Assess nutritional status; identify stages of wound healing and scar management principles.
3	Haemostasis & Blood Transfusion	Identify haemostatic disorders and understand blood transfusion indications and precautions.
4	Surgical Infections & Post-operative Complications	Recognize common surgical infections and postoperative complications.
5	Anaesthesia	Identify types, indications, contraindications and postoperative effects of anaesthesia.
6	Surgical Procedures & Drains	Identify surgical incisions, endoscopy, biopsy, drains and surgical tubes.
7	Thoracic Surgical Emergencies	Recognize pneumothorax, haemothorax, cardiac tamponade and other thoracic emergencies.
8	Cancer Assessment & Staging	Identify clinical features, staging and surgical management of cancer.
9	Common General Surgical Procedures	Identify indications and postoperative care following cholecystectomy, gastrectomy, appendicectomy, hernia repair, colostomy and ileostomy.
10	Major Oncosurgical Procedures	Recognize postoperative management following mastectomy, nephrectomy and proctectomy.
11	Burns, Skin Grafts & Flaps	Assess burn severity and identify principles of burn rehabilitation, grafts and flaps.
12	Menstrual & Hormonal Disorders	Identify common menstrual disorders and hormonal abnormalities.
13	Gynaecological Disorders	Recognize female reproductive cancers, genital infections, menopause and infertility.
14	Pregnancy & Antenatal Care	Assess physiological changes, musculoskeletal disorders and antenatal complications.
15	Labour & Childbirth	Identify stages of labour, pain relief methods and obstetric surgical procedures.

16	Gynaecological Procedures 2024-25	Identify indications and rehabilitation considerations following HSG, D&C, laparoscopy, colposcopy and hysterectomy.
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Recommended text Books

1. S. Das: A concise textbook of surgery. 3rd Ed, Dr. S.Das, Calcutta, 2001.
2. S. Das: A manual on clinical surgery. 6th Ed, Dr. S. Das, Calcutta, 2004.
3. Dutta DC: Text book of obstetrics / Textbook of gynecology. 5th / 6th Ed, New central book agency (P) ltd, Kolkata, 2003/2004.
4. Basak KS: Essentials of ophthalmology. 3rd Ed, Current books international, Kolkata, 2004.
5. Bhargava KB, Bhargava SK & Shah TM: A short textbook of E.N.T diseases. 7th Ed, Usha publications, Mumbai, 2005

Recommended reference books

1. Russell RCG, Williams NS, Bulstrode CJK: Bailey & Love's short practice of surgery. 24th Ed, Arnold, London, 2004.
2. Mowschenson PM: Aids to undergraduate surgery. 3rd Ed, Churchill Livingstone, Edinburgh,
3. Farquharson M & Moran B: Farquharson's textbook of operative general surgery. 9th Ed, Hodder Arnold, London, 2005.
4. Lumley JSP: Hamilton Bailey's demonstrations of physical signs in clinical surgery. Butterworth Heinman, Oxford,
5. Doherty MG: Current surgical diagnosis and treatment. 12th Ed, Lange medical books, New York, 2006.

Programme: Bachelor of Physiotherapy (BPT) **Paper III**

Subject Name: Orthopaedics -I

Subject Code:

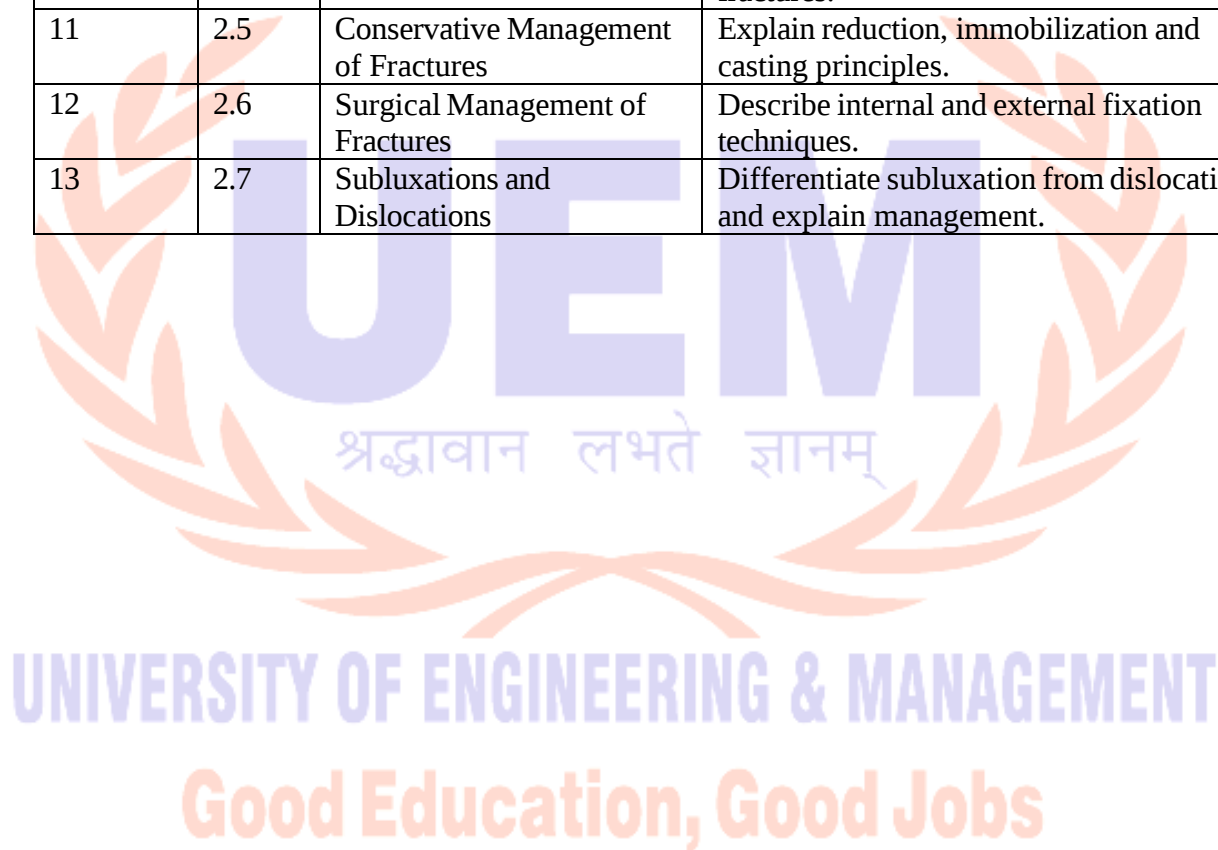
Credit: 3

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Introduction to Orthopaedics			
1	1.1	Introduction to Orthopedics	Explain the scope and principles of Orthopedics.
2	1.2	Clinical Examination in Orthopedic Patient	Perform systematic clinical examination of an orthopedic patient.
3	1.3	Common Investigative Procedures	Describe laboratory investigations used in orthopedic diagnosis.
4	1.4	Radiological and Imaging Techniques	Interpret commonly used imaging modalities in orthopedics.
5	1.5	Inflammation and Repair	Explain the inflammatory response and tissue repair mechanisms.

6	1.6	Soft Tissue Healing2024-25	Describe the phases and factors affecting soft tissue healing.
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Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Traumatology			
7	2.1	Introduction to Fractures	Define fractures and classify their types.
8	2.2	Clinical Features of Fractures	Identify the signs and symptoms of fractures.
9	2.3	Fracture Healing	Explain the stages and mechanism of fracture healing.
10	2.4	Complications of Fractures	Describe early and late complications of fractures.
11	2.5	Conservative Management of Fractures	Explain reduction, immobilization and casting principles.
12	2.6	Surgical Management of Fractures	Describe internal and external fixation techniques.
13	2.7	Subluxations and Dislocations	Differentiate subluxation from dislocation and explain management.



Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Fractures of Upper Limb			
14	3.1	Fractures of Clavicle and Scapula	Explain mechanism, clinical features and management.
15	3.2	Fractures of Greater Tuberosity and Neck of Humerus	Describe diagnosis and treatment principles.
16	3.3	Fracture Shaft of Humerus	Discuss clinical presentation and management.
17	3.4	Supracondylar Fracture of Humerus	Explain complications and treatment strategies.
18	3.5	Fractures Around Elbow	Describe fractures of capitulum, radial head, olecranon, coronoid and epicondyles.
19	3.6	Side Swipe Injury of Elbow	Explain mechanism, diagnosis and management.
20	3.7	Both Bone Fractures of Radius and Ulna	Describe clinical features and treatment.
21	3.8	Monteggia and Galeazzi Fracture-Dislocations	Differentiate injury patterns and management.
22	3.9	Chauffeur's Fracture	Explain diagnosis and management.
23	3.10	Colles' and Smith's Fractures	Compare mechanism, deformity and treatment.
24	3.11	Scaphoid Fracture	Explain diagnosis, complications and management.
25	3.12	Metacarpal, Bennett's and Phalangeal Fractures	Describe management of hand fractures.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Dislocations of Upper Limb			
26	4.1	Anterior Shoulder Dislocation	Explain mechanism, clinical features and management.
27	4.2	Kocher's and Hippocrates Manoeuvres	Describe principles of shoulder reduction techniques.
28	4.3	Surgical Management of Shoulder Dislocation	Explain Putti-Platt and Bankart procedures.
29	4.4	Recurrent and Posterior Shoulder Dislocation	Describe diagnosis and treatment principles.
30	4.5	Posterior Dislocation of Elbow	Explain mechanism, complications and management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Fractures of Spine & Lower Limb			
31	5.1	Cervical Spine Fractures	Describe mechanism, clinical features and management.
32	5.2	Cervical Immobilization Techniques	Explain the use of collars, braces, casts and traction.
33	5.3	Complications of Cervical Spine Injury	Discuss management of quadriplegia and bladder-bowel dysfunction.
34	5.4	Clay Shoveler's, Hangman's, Atlas and Odontoid Fractures	Explain diagnosis and management.
35	5.5	Thoracic and Lumbar Spine Fractures	Describe conservative and surgical management.
36	5.6	Fractures of Coccyx, Ribs and Sternum	Explain mechanism, clinical features and treatment.
37	6.1	Fracture of Pelvis	Explain mechanism, complications and management.
38	6.2	Fracture Neck of Femur	Describe classification, clinical features and treatment.
39	6.3	Trochanteric Fractures	Explain diagnosis and management principles.
40	6.4	Fracture Shaft of Femur	Discuss mechanism, complications and management.
41	6.5	Supracondylar and Condylar Fractures of Femur	Describe clinical features and treatment.
42	6.6	Fracture Patella	Explain mechanism and management.
43	6.7	Tibial Condyle Fractures	Describe diagnosis and treatment.
44	6.8	Both Bone Fractures of Tibia and Fibula	Explain conservative and surgical management.
45	6.9	Dupuytren's, Maisonneuve's and Pott's Fractures	Compare mechanisms and management approaches.
46	6.10	Bimalleolar and Trimalleolar Fractures	Describe diagnosis and treatment.
47	6.11	Calcaneal Fracture	Explain mechanism, complications and management.
48	6.12	Talus Fracture	Describe clinical features and treatment.
49	6.13	Metatarsal and Jones Fractures	Explain diagnosis and management.
50	6.14	Phalangeal Fractures	Describe management of toe fractures.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VII – Dislocations of Lower Limb			
51	7.1	Anterior Dislocation of Hip	Explain mechanism, clinical features and management.
52	7.2	Posterior Dislocation of Hip	Describe diagnosis, complications and treatment.
53	7.3	Central Dislocation of Hip	Explain mechanism and management principles.
54	7.4	Patellar Dislocation	Describe clinical features and treatment.
55	7.5	Recurrent Patellar Dislocation	Explain causes, management and rehabilitation principles.

Practical No.	Topic	Guidelines / Competencies
1	Introduction to Orthopedics & Clinical Examination	Perform basic orthopedic history taking and musculoskeletal examination.
2	Investigations & Imaging	Identify common laboratory investigations, X-rays and advanced imaging findings.
3	Inflammation, Soft Tissue & Fracture Healing	Identify stages of inflammation, tissue healing and fracture healing.
4	Fracture Assessment	Recognize clinical features, classification and complications of fractures.
5	Fracture Management	Differentiate conservative and surgical management of fractures.
6	Upper Limb Fractures	Identify common fractures of clavicle, scapula, humerus, elbow, forearm, wrist and hand on clinical examination and radiographs.
7	Shoulder & Elbow Dislocations	Assess shoulder and elbow dislocations; understand reduction techniques and postoperative care.
8	Cervical Spine Injuries	Demonstrate cervical immobilization and identify common cervical spine fractures and complications.
9	Thoracic, Lumbar Spine & Pelvic Fractures	Recognize clinical features and management principles of spinal, pelvic, rib and sternum fractures.
10	Hip & Femur Fractures	Identify fractures around the hip and femur and outline rehabilitation principles.
11	Knee & Leg Fractures	Assess fractures of patella, tibia, fibula and ankle using clinical findings and radiographs.
12	Foot Fractures	Identify fractures of calcaneus, talus, metatarsals

		2024-25 and phalanges.
13	Hip & Patellar Dislocations	Recognize hip and patellar dislocations and their rehabilitation considerations.
14	Integrated Orthopedic Case Discussion	Interpret clinical findings and radiographs to formulate diagnosis and management plan.

Recommended Text Books

1. Outline of Fracture-Adams
2. Outline of Orthopaedics-Adams
3. Orthopaedics and Traumatology-Natrajan
4. Apley's Orthopaedics
5. Textbook of orthopaedics- Maheshwari

Recommended Reference Books

1. Tureks Orthopaedics.
2. Cambells Operative Orthopaedics

Programme: Bachelor of Physiotherapy (BPT) Paper IV

Subject Name: PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS I

Subject Code:

Credit: 3

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Anatomy, Physiology and Assessment of Cardiopulmonary Conditions			
1	1.1	Anatomical Differences between Adult and Paediatric Lung	Explain anatomical differences between adult and paediatric lungs.
2	1.2	Physiological Differences between Adult and Paediatric Lung	Describe physiological differences affecting respiratory function.
3	2.1	Bedside Assessment – Adult Patient	Perform bedside cardiopulmonary assessment in adults.
4	2.2	Bedside Assessment – Paediatric Patient	Perform bedside assessment in paediatric patients.
5	2.3	Exercise Tolerance Testing – Cardiac	Explain cardiac exercise tolerance tests and interpretation.
6	2.4	Exercise Tolerance Testing – Pulmonary	Describe pulmonary exercise testing procedures.
7	2.5	Radiographs and Pulmonary Function Tests	Interpret chest radiographs and pulmonary function tests.

8	2.6	ABG, ECG and Laboratory Investigations	Explain the clinical significance of ABG, ECG, haematological and biochemical tests.
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Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Physiotherapy in Cardiopulmonary Conditions (20 Hours)			
9	3.1	Physiotherapy in Obstructive Lung Conditions	Explain physiotherapy management of obstructive lung disorders.
10	3.2	Physiotherapy in Restrictive Lung Conditions	Describe rehabilitation strategies for restrictive lung diseases.
11	3.3	Management of Breathlessness	Apply physiotherapy techniques to reduce dyspnoea.
12	3.4	Pulmonary Rehabilitation	Explain the principles of pulmonary rehabilitation.
13	3.5	Cardiac Rehabilitation	Describe phases and components of cardiac rehabilitation.
14	4.1	Physiotherapy Following Lung Surgeries	Plan physiotherapy following thoracic surgeries.
15	4.2	Respiratory Failure	Explain causes and physiotherapy management of respiratory failure.
16	4.3	Oxygen Therapy	Describe indications and precautions of oxygen therapy.
17	4.4	Mechanical Ventilation	Explain physiotherapy considerations in mechanically ventilated patients.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Airway Clearance Techniques (20 Hours)			
18	5.1	Hydration, Humidification and Nebulisation	Explain their role in secretion clearance.
19	5.2	Mobilisation and Breathing Exercises	Demonstrate breathing exercises for airway clearance.
20	5.3	Postural Drainage	Explain indications and techniques of postural drainage.
21	5.4	Manual Techniques – Percussion, Vibration and Shaking	Demonstrate manual airway clearance techniques.
22	5.5	Rib Springing	Explain indications and technique of rib springing.
23	5.6	Active Cycle of Breathing Technique (ACBT)	Demonstrate ACBT for secretion clearance.
24	5.7	Autogenic Drainage	Explain principles and application of autogenic drainage.

25	5.8	Mechanical Aids – PEP, Flutter and IPPB	Describe indications and use of airway clearance devices.
26	5.9	Facilitation of Cough, Huffing and Nasopharyngeal Suctioning	Demonstrate effective secretion clearance techniques.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Lung Expansion Techniques and Drug Therapy (20 Hours)			
27	6.1	Controlled Mobilisation and Positioning	Explain positioning to improve ventilation.
28	6.2	Breathing Exercises and Re-education	Demonstrate breathing re-education techniques.
29	6.3	Neurophysiological Facilitation of Respiration	Apply facilitation techniques for respiratory muscles.
30	6.4	Mechanical Aids – Incentive Spirometry	Explain indications and technique of incentive spirometry.
31	6.5	CPAP, IPPB and BiPAP	Describe non-invasive ventilatory support techniques.
32	6.6	Energy Conservation Techniques	Apply methods to optimize energy supply and demand.
33	7.1	Anti-inflammatory and Bronchodilator Drugs	Explain pharmacological management of inflammation and bronchospasm.
34	7.2	Drugs for Breathlessness and Sputum Clearance	Describe drugs used in respiratory management.
35	7.3	Drug Delivery Systems	Demonstrate correct use of inhalers and nebulisers.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Women's Health and Geriatrics (15 Hours)			
36	8.1	Ante-natal Physiotherapy	Explain physiotherapy during pregnancy.
37	8.2	Post-natal Physiotherapy	Describe physiotherapy following childbirth.
38	8.3	Early Intervention and Stimulation Therapy	Apply movement therapy principles in childcare.
39	8.4	Applied Yoga in Obstetric and Gynecological Conditions	Explain the role of yoga in women's health.
40	9.1	Geriatric Physiotherapy	Describe assessment and management of elderly patients.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VI – Physiotherapy in General Surgery (15 Hours)			
41	10.1	Abdominal Incisions	Identify common abdominal surgical incisions.
42	10.2	Pre-operative Physiotherapy	Explain goals and techniques of pre-operative physiotherapy.
43	10.3	Post-operative Physiotherapy	Plan post-operative rehabilitation programmes.
44	10.4	Physiotherapy Following Upper GIT Surgeries	Describe rehabilitation following oesophageal, gastric and duodenal surgeries.
45	10.5	Physiotherapy Following Lower GIT Surgeries	Explain rehabilitation following appendicectomy, cholecystectomy, colectomy and ileostomy.
46	10.6	Hernia Surgeries	Describe rehabilitation following herniotomy, herniorrhaphy and hernioplasty.
47	10.7	Physiotherapy in Dentistry and Surgical Complications	Explain physiotherapy management in dental surgery and common postoperative complications.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VII – Burns, Oncology and Dermatology (20 Hours)			
48	11.1	Burns and Burn Management	Explain classification and physiotherapy management of burns.
49	11.2	Skin Grafts and Reconstructive Surgeries	Describe rehabilitation following grafting and reconstructive procedures.
50	12.1	Physiotherapy in Medical Oncology	Explain physiotherapy management in medical oncology.
51	12.2	Physiotherapy in Surgical and Radiation Oncology	Describe rehabilitation following surgical and radiation oncology.
52	13.1	Documentation in Dermatology	Demonstrate assessment, documentation and follow-up in dermatological conditions.
53	13.2	UVR Therapy and Electrotherapy	Explain electrotherapeutic interventions for skin disorders.
54	13.3	Physiotherapy in Vitiligo, Hair Loss, Pigmentation and Infected Wounds	Describe physiotherapy management of common dermatological conditions.
55	13.4	Hyperhidrosis, Cosmetic Massage and Leprosy Rehabilitation	Explain physiotherapy interventions in dermatology and leprosy rehabilitation.

56	13.5	Care of Ulcers, Surgical Scars and Keloids	Plan physiotherapy management for wound healing, scar mobilisation and prevention of hypertrophic scars and keloids.
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Practical No.	Topic	Guidelines / Competencies
1	Adult and Paediatric Lung Anatomy & Physiology	Differentiate anatomical and physiological features of adult and paediatric lungs.
2	Bedside Assessment	Perform cardiopulmonary assessment in adult and paediatric patients.
3	Exercise Tolerance Testing	Demonstrate cardiac and pulmonary exercise tolerance tests and interpret findings.
4	Radiographs, PFT, ABG & ECG	Interpret basic chest radiographs, pulmonary function tests, ABG and ECG findings.
5	Obstructive & Restrictive Lung Conditions	Assess patients and plan physiotherapy management for common respiratory disorders.
6	Breathlessness, Pulmonary & Cardiac Rehabilitation	Demonstrate dyspnoea assessment and rehabilitation principles.
7	Lung Surgery, Respiratory Failure & Oxygen Therapy	Outline postoperative physiotherapy and oxygen therapy principles.
8	Mechanical Ventilation & Nebulisation	Identify ventilation modes and demonstrate humidification and nebulisation techniques.
9	Airway Clearance Techniques	Demonstrate breathing exercises, postural drainage, percussion, vibration and shaking.
10	Advanced Airway Clearance Techniques	Demonstrate ACBT, autogenic drainage, rib springing and mechanical airway clearance devices.
11	Cough Facilitation & Positioning	Demonstrate huffing, cough facilitation, suctioning principles and therapeutic positioning.
12	Respiratory Re-education	Demonstrate breathing re-education, incentive spirometry, CPAP/BiPAP and energy conservation techniques.
13	Respiratory Pharmacology	Identify common bronchodilators, anti-inflammatory drugs and drug delivery systems.
14	Obstetric & Geriatric Physiotherapy	Demonstrate antenatal, postnatal, early intervention, yoga and geriatric physiotherapy principles.
15	Physiotherapy in Abdominal & GIT Surgeries	Plan pre- and postoperative physiotherapy following abdominal and gastrointestinal surgeries.

16	Burns, Oncology & Dermatology Rehabilitation	Demonstrate physiotherapy management of burns, skin grafts, oncology patients, ulcers, scars and dermatological conditions.
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Recommended text books

1. Physiotherapy in Gynecological & Obstetrical conditions–Mantle
2. Text of Physiotherapy for obstetrics and Gynecology – G.B. Madhuri&Pruthvish
3. Physical Rehabilitation-Susan B O’Sullivan, Thomas. J. Schmitz
4. Multani and Verma – Principles of Geriatric Physiotherapy
5. Tidys Textbooks of Physiotherapy. Elsevier
6. Cash Textbook of Physiotherapy in Medical and Surgical Conditions.
7. Physical Rehabilitation, Assessment and management; Susan Sullivan
8. Physiotherapy in Obstetrics and Gynaecology, Polden

Recommended reference books

1. Women’s Health – Sapsford
2. Geriatric Physical therapy- Andrew A. Guccione

Programme: Bachelor of Physiotherapy (BPT) **Paper V**

Subject Name: Physiotherapy in Orthopaedic Conditions 1

Subject Code:

Credit: 3

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Physiotherapy Assessment in Orthopaedic Conditions (20 Hours)			
1	1.1	Introduction to Orthopaedic Physiotherapy Assessment	Explain the principles and objectives of orthopedic physiotherapy assessment.
2	1.2	SOAP Format and History Taking	Demonstrate documentation using SOAP format and obtain comprehensive patient history.
3	1.3	Pain Assessment	Assess pain using intensity, character, aggravating and relieving factors.
4	1.4	Observation	Identify postural abnormalities, deformities, swelling, muscle atrophy and gait deviations.
5	1.5	Palpation	Assess tenderness, muscle spasm, swelling, tissue integrity and temperature.
6	1.6	Range of Motion Assessment	Measure active and passive range of motion accurately.
7	1.7	Muscle Strength and Length Testing	Perform MMT, muscle length and flexibility assessment.

8	1.8	Limb Length, Girth and Neurological Examination 4-25	Assess limb length discrepancy, girth, dermatomes, myotomes and reflexes.
9	1.9	Special Tests and Functional Assessment	Perform special tests and functional outcome assessment.
10	1.10	Documentation and Home Exercise Programme	Prepare case records, prescribe home programme and perform follow-up documentation.



Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Physiotherapy Management of Fractures (20 Hours)			
11	2.1	Classification of Fractures	Classify fractures based on mechanism and morphology.
12	2.2	Fracture Healing	Explain stages and factors influencing fracture healing.
13	2.3	Principles of Fracture Management	Describe reduction, immobilization and fixation methods.
14	2.4	Types of Traction	Differentiate manual, skin, skeletal, cervical and lumbar traction.
15	2.5	Complications of Fractures	Identify early and late complications following fractures.
16	2.6	Physiotherapy Assessment in Fractures	Perform physiotherapy assessment in fracture patients.
17	2.7	PT Management During Immobilization	Plan physiotherapy during immobilization period.
18	2.8	PT Management After Immobilization	Design rehabilitation after cast removal or fixation.
19	2.9	Functional Rehabilitation Following Fracture	Restore functional mobility following fractures.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Physiotherapy in Specific Fractures and Dislocations (15 Hours)			
20	3.1	Upper Limb Fractures	Assess and manage upper limb fractures.
21	3.2	Upper Limb Dislocations	Explain physiotherapy management of upper limb dislocations.
22	3.3	Lower Limb Fractures	Assess and manage lower limb fractures.
23	3.4	Pelvic Fractures	Describe rehabilitation following pelvic fractures.
24	3.5	Lower Limb Dislocations	Explain physiotherapy management of lower limb dislocations.
25	3.6	Spinal Fractures	Plan rehabilitation following spinal fractures.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Physiotherapy Techniques and Manual Therapy (15 Hours)			
26	4.1	Physiotherapeutic Modalities in Orthopaedics	Select appropriate electrotherapy and exercise techniques.
27	4.2	Preventive and Curative Physiotherapy	Apply preventive and rehabilitative physiotherapy techniques.
28	5.1	Principles of Manual Therapy	Explain the principles of manual therapy.
29	5.2	Maitland Concept	Describe Maitland mobilization techniques and indications.
30	5.3	McKenzie Concept	Explain McKenzie assessment and treatment principles.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Degenerative, Inflammatory and Infective Conditions (25 Hours)			
31	6.1	Osteoarthritis	Assess and manage osteoarthritis of knee, hip and hand.
32	6.2	Rheumatoid Arthritis	Explain physiotherapy management of rheumatoid arthritis.
33	6.3	Ankylosing Spondylitis	Describe assessment and rehabilitation strategies.
34	6.4	Gout	Explain clinical presentation and physiotherapy management.
35	6.5	Perthes Disease	Describe physiotherapy management in Perthes disease.
36	6.6	Periarthritis Shoulder	Plan rehabilitation for frozen shoulder.
37	7.1	Osteomyelitis	Explain assessment and physiotherapy management.
38	7.2	Septic and Pyogenic Arthritis	Describe rehabilitation following infective arthritis.
39	7.3	Tuberculosis of Spine	Explain physiotherapy management of spinal TB.
40	7.4	Tuberculosis of Hip and Knee	Plan rehabilitation for TB affecting major joints.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VI – Postural Abnormalities and Deformities (20 Hours)			
41	8.1	Postural Abnormalities of Spine	Identify postural deviations and plan treatment.
42	8.2	Physiotherapy Management of Postural Disorders	Develop rehabilitation and home programmes.

43	9.1	Congenital Deformities	Assess and manage CTEV, CDH, torticollis, pes planus and pes cavus.
44	9.2	Acquired Deformities	Explain rehabilitation of scoliosis, kyphosis, coxa vara and genu deformities.
45	9.3	Orthopaedic Home Exercise Programme	Prescribe home programme for deformity correction.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VII – Neuromuscular Conditions and Amputations (25 Hours)			
46	10.1	Cerebral Palsy	Explain assessment, management and carrying techniques in cerebral palsy.
47	10.2	Physiotherapy Following Surgical Correction in Cerebral Palsy	Plan postoperative rehabilitation.
48	11.1	Poliomyelitis	Explain assessment and rehabilitation following poliomyelitis.
49	11.2	Tendon Transfer and Reconstructive Surgery	Describe postoperative physiotherapy management.
50	12.1	Leprosy	Explain physiotherapy assessment and management before and after tendon transfer surgery.
51	13.1	Introduction to Amputation	Classify amputations and describe indications.
52	13.2	Pre-operative Physiotherapy in Amputation	Plan physiotherapy before amputation surgery.
53	13.3	Post-operative Physiotherapy and Stump Care	Demonstrate stump care, bandaging and prevention of complications.
54	13.4	Prosthetic Rehabilitation	Plan pre-prosthetic and prosthetic training programmes.
55	13.5	Complications of Amputation	Explain prevention and management of amputation-related complications.

Practical No.	Topic	Guidelines / Competencies
1	Orthopaedic Physiotherapy Assessment	Perform history taking, SOAP documentation and comprehensive orthopaedic assessment.
2	Pain, ROM and Muscle Assessment	Assess pain, ROM, muscle strength, muscle length, limb length and girth.
3	Neurological & Functional Assessment	Perform neurological examination, special tests and functional assessment.
4	Fracture Assessment & Management	Classify fractures, assess healing and plan physiotherapy during and after immobilization.
5	Traction & Fracture Rehabilitation	Identify types of traction, fracture complications and functional rehabilitation principles.
6	Upper & Lower Limb Fractures	Assess and plan physiotherapy management for upper and lower limb fractures.
7	Dislocations, Pelvic & Spinal Fractures	Assess common dislocations and pelvic/spinal fractures; plan rehabilitation.
8	Orthopaedic Physiotherapeutic Modalities	Demonstrate therapeutic modalities and preventive and curative physiotherapy techniques.
9	Manual Therapy	Demonstrate basic Maitland and McKenzie concepts.
10	Orthopaedic Conditions	Assess and plan management for OA, RA, ankylosing spondylitis, gout and peri arthritis shoulder.
11	Bone & Joint Infections	Identify clinical features and physiotherapy management of osteomyelitis, septic arthritis and tuberculosis.
12	Postural Disorders & Deformities	Assess postural abnormalities, congenital and acquired deformities; prescribe corrective exercises.
13	Orthopaedic Home Exercise Programme	Design individualized home exercise programmes.
14	Cerebral Palsy & Poliomyelitis	Demonstrate physiotherapy management and postoperative rehabilitation principles.
15	Tendon Transfer, Leprosy & Amputation	Plan rehabilitation following tendon transfer, leprosy and amputation, including stump care and prosthetic training.

Recommended Text Books

1. Orthopaedic Physiotherapy, Robert A Donatelli, Churchill Livingstone.
2. Tidy's Physiotherapy, Ann Thomasons, Varghese publishing House.
3. Physical Rehabilitation Assessment and Treatment, Susan Sullivan, Japee brothers
4. Textbook of Orthopaedics, John Ebnezar, Japee Brothers.
5. Textbook of Orthopaedics and Rheumatology for Physiotherapists, Patricia A Downie.
6. Orthopedic Physical Assessment – David Magee
7. Clinical Orthopaedic Diagnosis – Surishwar Pandey
8. Orthopaedics for Physiotherapist – Jayant Joshi.
9. Therapeutic Exercise: Foundations and Techniques - Kolby & Carolyn Kisner

Recommended Reference Books

1. Apley's system of Orthopaedics and fractures -Louis Solomon, David J. Warwick Arnold Publishers, London
2. Turek's Orthopaedics: Principles and their Application, Weinstein SL and Buckwalter JA, Lippincott
3. Clinical Orthopaedic Rehabilitation, Brent Brotzman.
4. Peripheral Mobilisation – GD Maitlant, Butterworth
5. Vertebral Mobilisation – GD Maitland, Butterworth and Heinmann Publication.
6. Manual Therapy: Nags, Snags, MWMs, etc - 6th Edition Brian Mulligan
7. Neural tissue mobilization –Butler
8. Therapeutic Exercise: Moving Toward Function - Carrie M. Hall, Lori Thein Brody
9. Manual Mobilization of Extremity Joints-Kaltenborn
10. Clinical Orthopaedic rehabilitation- Broadsman

Programme: Bachelor of Physiotherapy (BPT) Paper VI

Subject Name: Physical & functional Diagnosis & Prescription

Subject Code:

Credit: 3

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Cardiovascular & Respiratory Evaluation Skills (15 Hours)			
1	1.1	Vital Parameters Assessment	Measure and interpret heart rate, blood pressure, respiratory rate, temperatur and oxygen saturation.
2	1.2	Chest Expansion Measurement	Assess chest expansion using standard measurement techniques.
3	1.3	Chest Symmetry and Breath Sounds	Examine chest symmetry and identify normal and abnormal breath sounds.
4	1.4	Breath Holding Test	Perform and interpret Breath Holding Test.

5	1.5	Rate of Perceived Exertion (RPE)	2024-25 Apply Borg RPE scale during functional assessment.
6	1.6	Peripheral Circulation Assessment	Perform peripheral arterial and venous circulation tests including Ankle Brachial Index.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Functional Capacity & Fitness Evaluation (15 Hours)			
7	2.1	Energy Systems in Exercise	Differentiate aerobic and anaerobic energy systems.
8	2.2	Physiological Response to Exercise and Immobility	Explain physiological adaptations to activity and inactivity.
9	2.3	Functional Capacity Assessment	Assess functional capacity using standardized protocols.
10	2.4	Six Minute Walk Test and Step Test	Perform and interpret submaximal exercise tests.
11	2.5	Exercise Testing Protocols	Differentiate Bruce, Modified Bruce and Balke protocols.
12	2.6	Health & Fitness Screening	Assess body composition, BMI, girth measurements and Physical Activity Readiness Questionnaire (PAR-Q).

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Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Interpretation of Diagnostic Investigations (15 Hours)			
13	3.1	Interpretation of Arterial Blood Gas (ABG)	Interpret normal and abnormal ABG reports.
14	3.2	Interpretation of Pulmonary Function Tests (PFT & PEFR)	Analyze pulmonary function reports.
15	3.3	Interpretation of ECG	Identify normal ECG and common ischemic and infarction changes.
16	3.4	Chest Radiograph Interpretation	Recognize common radiological findings relevant to physiotherapy.
17	3.5	Interpretation of Biochemical Investigations	Interpret laboratory findings commonly encountered in rehabilitation.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Neurotherapeutic Evaluation Skills (25 Hours)			
18	4.1	Principles of Human Growth and Development	Explain normal growth and developmental milestones.
19	4.2	Factors Influencing Development	Describe biological, environmental and hereditary influences.
20	4.3	Principles of Maturation	Explain cephalocaudal, proximodistal and motor developmental principles.
21	4.4	Reflex and Oromotor Development	Assess developmental reflexes and oromotor function.
22	4.5	Higher Mental Function Examination	Evaluate higher cortical functions.
23	4.6	Cranial Nerve Examination	Perform cranial nerve assessment.
24	4.7	Sensory Assessment	Assess superficial, deep and cortical sensations.
25	4.8	Muscle Tone and Reflex Assessment	Evaluate tone and superficial/deep reflexes.
26	4.9	Coordination, Balance and Endurance Assessment	Assess coordination, balance and endurance.
27	4.10	Neurological Movement Dysfunction	Identify movement abnormalities, trick movements and neurological gait deviations.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Electro diagnosis (20 Hours)			
28	5.1	Resting Membrane Potential and Action Potential	Explain electrophysiological principles.
29	5.2	Physiology of Muscle Contraction	Describe neuromuscular transmission and muscle contraction.
30	5.3	Motor Unit Recruitment	Explain motor unit recruitment and size principle.
31	5.4	Therapeutic Currents in Electro diagnosis	Describe the role of therapeutic currents in electro diagnosis.
32	5.5	Strength-Duration Curve	Perform and interpret Strength-Duration Curve testing.
33	5.6	Faradic-Galvanic Test	Perform and interpret Faradic-Galvanic testing.
34	5.7	Sensory Threshold, Pain Threshold and Pain Tolerance Tests	Demonstrate electro diagnostic sensory testing procedures.
35	5.8	Electromyography (EMG)	Explain instrumentation and interpretation of normal and abnormal EMG.
36	5.9	Nerve Conduction Studies	Explain principles, F-wave and H-reflex studies.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VI – Outcome Measures & Case Presentation (20 Hours)			
37	6.1	Neurological Outcome Measures	Apply Modified Ashworth Scale, Berg Balance Scale, Dynamic Gait Index, Glasgow Coma Scale, Barthel Index and Functional Independence Measure.
38	6.2	Musculoskeletal Case Presentation	Demonstrate clinical reasoning through musculoskeletal case presentation.
39	6.3	Neurological Case Presentation	Present neurological cases using evidence-based clinical reasoning.
40	6.4	Cardiovascular & Respiratory Case Presentation	Present cardiopulmonary cases with appropriate assessment findings.
41	6.5	Community Health, Fitness & Women's Health Cases	Apply clinical reasoning in community-based rehabilitation cases.

Practical No.	Topic	Guidelines / Competencies
1	Vital Parameters & Respiratory Assessment	Measure vital signs, chest expansion, chest symmetry, breath sounds and breath-holding time.
2	Exercise Assessment	Assess RPE, peripheral circulation and physiological response to exercise.
3	Functional Capacity Assessment	Perform Six-Minute Walk Test, Step Test and health & fitness screening.
4	Diagnostic Interpretation	Interpret ABG, PFT/PEFR, ECG, chest radiographs and basic biochemical investigations.
5	Growth & Development Assessment	Assess developmental milestones, maturation, reflexes and oromotor development.
6	Neurological Examination	Perform higher mental function, cranial nerve, sensory, muscle tone and reflex examination.
7	Balance & Movement Assessment	Assess coordination, balance, endurance and neurological movement dysfunction.
8	Electrodiagnosis	Demonstrate strength-duration curve, faradic-galvanic test and sensory threshold assessment.
9	EMG & Nerve Conduction Studies	Interpret basic EMG and nerve conduction study findings.
10	Outcome Measures & Case Presentation	Apply neurological outcome measures and present musculoskeletal, neurological, cardiopulmonary and community health cases.

Recommended Text Books

1. Orthopaedic Physical Examination–Magee
2. Clinical Electro Therapy – Nelson – Currier --- Appleton & Lange publication
3. Clinical Electromyography–Mishra
4. Physical Rehabilitation, Assessment and treatment - Susan BO's Sullivan
5. Neurological Examination –John Patten
6. Diagnostic and Interventional Radiology- Thomas J. Vogl, Wolfgang Reith, Ernst J. Rummeny
7. Learning Radiology- William Herring.
8. Ruppel's Manual of Pulmonary Function Testing by Carl Mottram 10th Edition
9. Pulmonary Function Tests & Interpretation In Health & Diseases By P.S.Shankar 3rd Edition
10. World Health Organization 2001. The International Classification of Functioning, Disability and Health (ICF). Geneva: WHO. <http://www.who.int/classifications/icf/en/>

Recommended Reference Books

1. Maitland's book on Manual therapy,
2. Mobilisation of Extremities – Kaltenborn
3. Clinical Electromyography–Kimura
4. Orthopaedic Physical therapy–Donnatelli
5. NAGS, SNAGS and MWMS – Brian Mulligan
6. Physical Dysfunction –Trombly Scoot
7. Infant Motor Development-Jan Piek
8. Neuro-developmental Therapy–Janett Howle

Programme: Bachelor of Physiotherapy (BPT) Paper VII

Subject Name: Research Methodology

Subject Code:

Credit: 3

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Research Methodology (20 Hours)			
1	1.1	Introduction to Research Methodology	Explain the meaning, objectives, motivation and importance of research.
2	1.2	Types of Research and Research Approaches	Differentiate between various types of research and research approaches.
3	1.3	Research Methods vs. Research Methodology	Distinguish research methods from research methodology.
4	1.4	Characteristics and Ethics of Good Research	Explain the criteria of good research and research ethics.
5	2.1	Research Problem	Formulate an appropriate research problem.
6	2.2	Statement of Purpose and Research Objectives	Develop research objectives and define the scope of a study.
7	2.3	Hypothesis, Limitations and Delimitations	Formulate hypotheses and identify limitations and delimitations.
8	2.4	Significance of Research	Explain the significance and justification of research.
9	3.1	Research Design	Describe the need, features and principles of research design.
10	3.2	Types of Research Designs	Differentiate between various research designs and their applications.
11	4.1	Sampling Fundamentals	Explain sampling concepts and the need for sampling.
12	4.2	Sampling Techniques	Compare probability and non-probability sampling methods.
13	4.3	Sample Design	Develop an appropriate sampling design for research studies.
14	5.1	Measurement and Scaling	Explain measurement scales and scaling techniques used in research.

15	5.2	Reliability, Validity, Sensitivity and Specificity	Evaluate the quality of measurement tools.
16	5.3	Development of Measurement Tools	Describe the process of developing research instruments.
17	6.1	Methods of Data Collection	Differentiate primary data collection methods including questionnaires and schedules.



18	6.2	Scientific Writing and Reporting	Prepare scientific protocols and understand the structure of research reports, systematic reviews and meta-analyses.
19	7.1	Computer Applications in Research	Explain the role of computers and software in research.
20	7.2	Introduction to Data Analysis Software	Demonstrate basic understanding of statistical software used in research.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Evidence-Based Practice (36 Hours)			
21	1.1	Introduction to Evidence-Based Practice	Explain the concept, background and importance of evidence-based practice.
22	1.2	Model of Evidence-Based Physiotherapy	Describe the components and process of evidence-based physiotherapy.
23	1.3	Role of Evidence-Based Practitioner	Explain the responsibilities of an evidence-based physiotherapist.
24	2.1	Validity and Reliability	Differentiate validity and reliability in research evidence.
25	2.2	Randomized Controlled Trials	Explain the design and importance of randomized controlled trials.
26	2.3	Systematic Reviews	Describe the methodology and significance of systematic reviews.
27	2.4	Meta-Analysis	Explain principles and interpretation of meta-analysis.
28	2.5	Case Studies	Describe the role and limitations of case study research.
29	2.6	Diagnostic Research Studies	Explain the design and application of diagnostic research.
30	2.7	Prognostic Research Studies	Describe prognostic research and outcome prediction.
31	2.8	Intervention Research Studies	Explain intervention study designs in physiotherapy research.
32	2.9	Levels of Evidence	Classify studies according to the hierarchy of evidence.
33	2.10	Critical Appraisal of Research Articles	Evaluate scientific literature using critical appraisal tools.
34	2.11	Literature Search Strategies	Perform literature searches using electronic databases.
35	2.12	Clinical Decision Making	Integrate research evidence into clinical practice.
36	2.13	Applying Evidence in Physiotherapy Practice	Apply evidence-based principles in patient management.
37	2.14	Barriers to Evidence-Based Practice	Identify barriers and strategies to implement evidence-based practice.

2024-25

38	2.15	Ethical Issues in Evidence-Based Practice	Discuss ethical considerations in evidence-based decision making.
39	2.16	Journal Club and Research Presentation	Present and critically appraise published research articles.
40	2.17	Revision and Case-Based Discussion	Integrate evidence into clinical case discussions.



Recommended Text Book

1. Mahajan, B. K. (2002). *Methods in biostatistics*. Jaypee Brothers Publishers.
2. Hicks, C. *Research for Physiotherapists: project design and analysis*. Churchill Livingstone.
3. Practical Evidence-Based Physiotherapy by Robert Herbert, Gro Jamtvedt, Kåre Birger Hagen, Judy Mead, Sir Iain Chalmers
5. Bajpai S.R. –Methods of Social Survey and Research, Kitab Ghar, Kanpur.
6. Mohsin S.M. – Research methods in Behavioral Sciences. Orient publications, New Delhi
7. Gupta S.P. – Statistical Methods. Sultan Chand and sons Publishers, New Delhi.

Recommended Reference Books

1. Evidence Based Physical Therapy by Linda Fettes, Julie Tilson
2. Guide to Evidence-Based Physical Therapy Practice by Dianne V. Jewell
3. Bailey N.T.J. – Statistical methods in Biology. The English University Press, London.
4. Colton – Statistics in medicine. Little Brown Company, Boston
5. Goulden C.H. – Methods of Statistical Analysis. Asia Publishing House, New Delhi.
6. Snedecor G.W. – Statistical Methods. Allied

SEMESTER VI**Programme:** Bachelor of Physiotherapy (BPT) Paper I**Subject Name:** General Medicine II**Subject Code:****Credit:** 3**Lecture Hours:**

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Cardiovascular Diseases (20 Hours)			
1	1.1	Examination of the Cardiovascular System	Perform systematic cardiovascular examination.
2	1.2	Cardiovascular Investigations	Interpret ECG, Exercise Stress Test and radiological investigations.
3	1.3	Clinical Manifestations of Cardiovascular Diseases	Recognize common signs and symptoms of cardiovascular disorders.
4	1.4	Pericarditis	Explain etiology, clinical features, diagnosis and management.
5	1.5	Myocarditis and Endocarditis	Describe clinical presentation and management of inflammatory heart diseases.
6	1.6	Rheumatic Fever and Valvular Disorders	Explain pathophysiology and complications of rheumatic heart disease.
7	1.7	Ischemic Heart Disease and Coronary Artery Disease	Discuss etiology, diagnosis and management.

8	1.8	Congenital Heart Diseases and Cardiac Arrest	Describe congenital cardiac disorders and emergency management of cardiac arrest.
9	1.9	Hypertension	Explain classification, assessment, investigations and management of hypertension.



Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Respiratory Diseases (25 Hours)			
10	2.1	Examination of the Respiratory System	Perform systematic respiratory examination.
11	2.2	Respiratory Investigations	Interpret Chest X-ray, Pulmonary Function Test and Arterial Blood Gas reports.
12	2.3	Clinical Manifestations of Lung Diseases	Identify common respiratory signs and symptoms.
13	2.4	Obstructive and Restrictive Lung Diseases	Differentiate obstructive and restrictive pulmonary disorders.
14	2.5	Chronic Bronchitis and Emphysema	Explain etiology, clinical features and management.
15	2.6	Asthma and Bronchiectasis	Describe diagnosis and management of obstructive airway diseases.
16	2.7	Cystic Fibrosis and Upper Respiratory Tract Infections	Explain pathophysiology and management.
17	2.8	Pneumonia, Tuberculosis and Fungal Diseases	Describe clinical presentation and treatment principles.
18	2.9	Interstitial Lung Diseases	Explain causes, diagnosis and management.
19	2.10	Diseases of Pleura, Diaphragm and Chest Wall	Describe common disorders affecting the pleura, diaphragm and chest wall.
20	2.11	Respiratory Failure	Explain types, causes, diagnosis and management of respiratory failure.

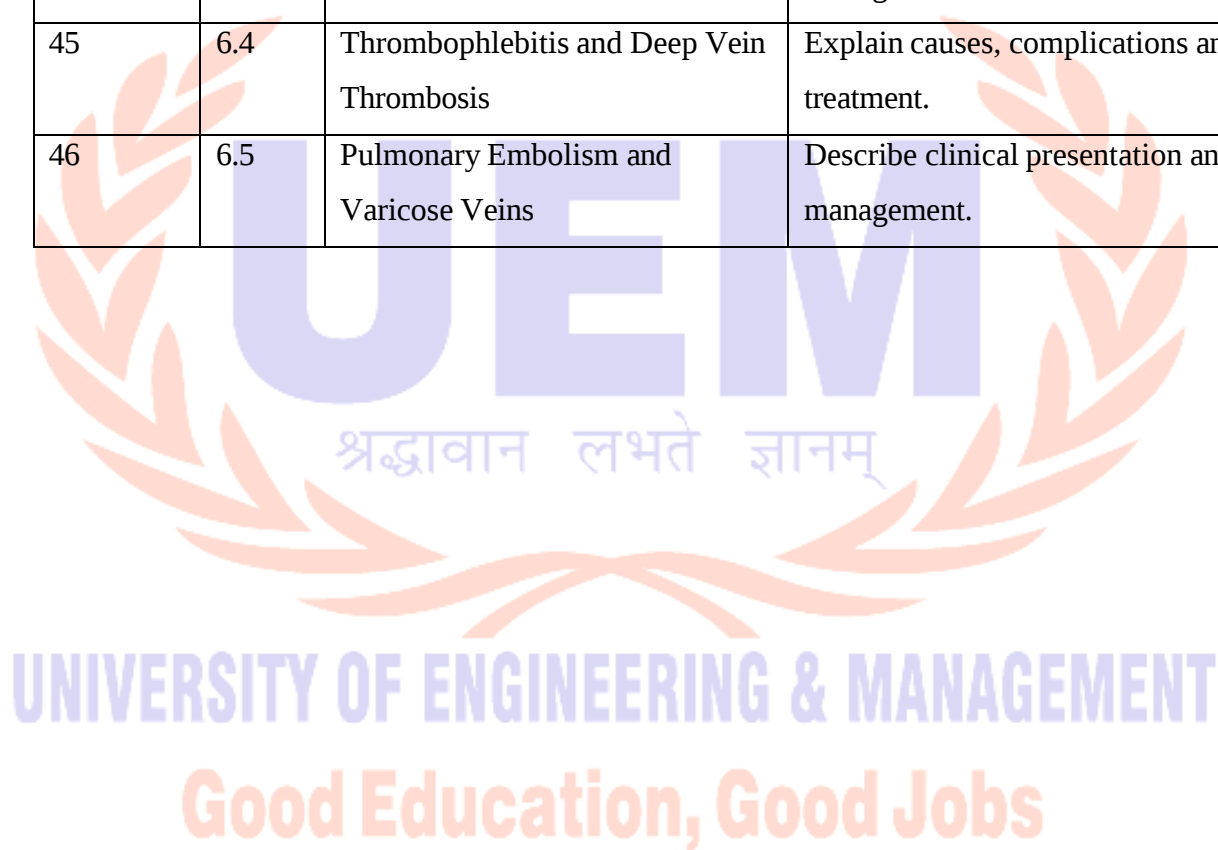
Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Diseases of the Skin (10 Hours)			
21	3.1	Examination of Skin Diseases	Perform systematic dermatological examination.
22	3.2	Leprosy and Psoriasis	Describe etiology, clinical features and management.
23	3.3	Pigmentary and Vasomotor Disorders	Explain common pigmentary and vascular skin disorders.
24	3.4	Dermatitis	Discuss causes, diagnosis and treatment.
25	3.5	Coccal, Fungal, Parasitic and Viral Skin Infections	Differentiate common infectious skin disorders.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Disorders of the Chest Wall, Lung and Mediastinum (20 Hours)			
26	4.1	Chest Wall Disorders	Explain chest wall deformities and tumours.
27	4.2	Pleural Disorders	Describe spontaneous pneumothorax, pleural effusion and empyema thoracis.
28	4.3	Lung Abscess and Bronchiectasis	Explain diagnosis and management.
29	4.4	Pulmonary Tuberculosis	Describe clinical features and management.
30	4.5	Bronchogenic Carcinoma and Bronchial Adenomas	Explain diagnosis and treatment principles.

31	4.6	Metastatic Lung Tumours	Describe clinical features and management options.
32	4.7	Tracheal Disorders	Explain tracheal stenosis, congenital tracheomalacia and tracheal neoplasms.
33	4.8	Mediastinal Lesions and Carcinoma Breast	Discuss diagnosis and management principles.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Disorders of the Heart (20 Hours)			
34	5.1	Congenital Heart Diseases	Classify congenital heart diseases into acyanotic and cyanotic lesions.
35	5.2	Patent Ductus Arteriosus and Coarctation of Aorta	Explain diagnosis and management.
36	5.3	Atrial and Ventricular Septal Defects	Describe clinical features and treatment.
37	5.4	Tetralogy of Fallot and Transposition of Great Vessels	Explain pathophysiology and management.
38	5.5	Mitral Valve Diseases	Describe mitral stenosis and insufficiency.
39	5.6	Aortic Valve Diseases	Explain aortic stenosis and insufficiency.
40	5.7	Ischemic Heart Disease	Discuss coronary artery disease and management.
41	5.8	Cardiac Tumours	Describe diagnosis and treatment principles.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VI – Diseases of Arteries and Veins (15 Hours)			
42	6.1	Arteriosclerosis and Atherosclerosis	Differentiate arteriosclerosis and atherosclerosis.
43	6.2	Aneurysm	Explain etiology, clinical features and management.
44	6.3	Buerger's Disease and Raynaud's Disease	Describe diagnosis and management.
45	6.4	Thrombophlebitis and Deep Vein Thrombosis	Explain causes, complications and treatment.
46	6.5	Pulmonary Embolism and Varicose Veins	Describe clinical presentation and management.



Practical No.	Topic	Guidelines / Competencies
1	Cardiovascular Examination	Perform systematic cardiovascular examination and assessment of vital signs.
2	Cardiovascular Investigations	Interpret ECG, echocardiography, cardiac biomarkers and other basic investigations.
3	Common Cardiovascular Diseases	Identify clinical features of pericarditis, myocarditis, endocarditis, rheumatic fever, valvular heart disease, CAD and hypertension.
4	Congenital Heart Diseases	Recognize common congenital heart diseases and their clinical presentation.
5	Respiratory Examination	Perform systematic respiratory examination including inspection, palpation, percussion and auscultation.
6	Respiratory Investigations	Interpret chest X-ray, pulmonary function tests, ABG and sputum investigations.
7	Obstructive & Restrictive Lung Diseases	Identify clinical features and physiotherapy considerations in common respiratory disorders.
8	Respiratory Infections & Respiratory Failure	Recognize pneumonia, tuberculosis, fungal diseases and respiratory failure.
9	Pleural & Chest Wall Disorders	Identify pleural diseases, chest wall disorders and bronchiectasis.
10	Lung Tumours & Tracheal Disorders	Recognize bronchogenic carcinoma, metastatic lung tumours and tracheal disorders.
11	Congenital & Valvular Heart Diseases	Differentiate congenital and valvular heart diseases through clinical findings.
12	Vascular Disorders	Identify aneurysm, atherosclerosis, DVT, pulmonary embolism, varicose veins, Buerger's disease and Raynaud's disease.

Recommended text books

1. Davidson's principles and Practices of Medicine – Edward – Churchill Livingstone.
2. Hutchinson's Clinical Methods – Swash – Bailliere Tindall.
3. A Short Text book of Medicine – Krishna Rao – Jaypee Brothers.

4. A Short Text book of Psychiatry – Abhishek – Jaypee Brothers.
5. Shah SN: API text book of Medicine. Vol I & II, 8th Ed, The Association of Physicians of India, Mumbai, 2008.
6. Golwalla SA, Golwalla AF: Medicine for students. 21st Ed, National book depot, Mumbai, 2005.
7. Das PC: Textbook of medicine. 4th Ed, Current books international, Kolkata, 2000.
8. Mehta PJ, Joshi SR, Mehta NP: Practical Medicine. 17th Ed, National Book Depot, New Delhi, 2005.

Recommended reference books

1. Fauci, Braunwald, Kasper, Longo, Jameson, Loscalzo: Harrison's principles of internal medicine. Vol I & II, 17th Ed, McGraw Hill, New York, 2008.
2. McPhee, Papadakis, Tierney: Current medical diagnosis and treatment. 46th Ed, McGraw Hill, New York, 2007.
3. Ogilvie & Evans: Chamberlain's symptoms and signs in clinical medicine – An introduction to medical diagnosis. 12th Ed, Butterworth Heinemann, Oxford,
4. Douglas, Nicol & Robertson: Macleod's clinical examination. 11th Ed, Elsevier – Churchill Livingstone, Edinburgh, 2005

Programme: Bachelor of Physiotherapy (BPT) Paper II

Subject Name: Cardio Thoracic & vascular Surgeries

Subject Code:

Credit: 3

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VI – Diseases of Arteries and Veins (15 Hours)			
1	1.1	Introduction to Cardiothoracic Surgery	Explain the scope and principles of cardiothoracic surgery.
2	1.2	Cardiopulmonary Resuscitation (CPR)	Describe the principles and indications of cardiopulmonary resuscitation.
3	1.3	Cardiopulmonary Bypass	Explain the principles and components of cardiopulmonary bypass.
4	1.4	Special Investigation Procedures	Describe investigations commonly performed before cardiac surgery.
5	1.5	Surgical Approaches in Cardiac Surgery	Explain common surgical approaches and incisions used in cardiac surgery.
6	1.6	Types of Cardiac Operations	Classify common cardiac surgical procedures.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Disorders of Chest Wall, Lung and Mediastinum (15 Hours)			

7	2.1	Chest Wall Disorders	2024-25	Describe surgical conditions affecting the chest wall.
8	2.2	Disorders of the Lung		Explain common lung disorders requiring surgery.
9	2.3	Mediastinal Disorders		Describe common mediastinal lesions and their surgical management.
10	2.4	Surgical Evaluation		Explain pre-operative evaluation for thoracic surgery.
11	2.5	Surgical Indications		Identify indications for thoracic surgical intervention.



Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Thoracic and Transplant Surgery (25 Hours)			
12	3.1	Thoracotomy	Explain indications, types of thoracotomy incisions and complications.
13	3.2	Pneumonectomy	Describe indications, physiological changes and complications.
14	3.3	Lobectomy	Explain surgical procedure and postoperative considerations.
15	3.4	Segmentectomy	Describe indications and complications.
16	3.5	Thoracoplasty	Explain indications and surgical principles.
17	3.6	Pleurectomy	Describe indications and postoperative management.
18	3.7	Pleurodesis	Explain indications and technique.
19	3.8	Decortication of Lung	Describe indications and surgical procedure.
20	3.9	Closed Heart Surgery	Explain principles and indications.
21	3.10	Open Heart Surgery	Describe principles and surgical techniques.
22	3.11	Extracardiac Operations	Explain commonly performed extracardiac procedures.
23	3.12	Heart, Lung and Kidney Transplantation	Explain indications, physiological changes and postoperative complications.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Peripheral Vascular Surgery (15 Hours)			
24	4.1	Arteriosclerosis and Atherosclerosis	Explain surgical relevance of arterial diseases.
25	4.2	Aneurysm	Describe indications for surgical management.
26	4.3	Buerger's Disease	Explain surgical management principles.
27	4.4	Raynaud's Disease	Describe indications for operative management.
28	4.5	Thrombophlebitis and Deep Vein Thrombosis	Explain surgical considerations and complications.
29	4.6	Pulmonary Embolism and Varicose Veins	Describe surgical and interventional management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Post-operative Management (15 Hours)			
30	5.1	Complications of Cardiac Surgery	Identify common postoperative cardiac complications.
31	5.2	Intensive Care Monitoring	Explain postoperative monitoring following cardiothoracic surgery.
32	5.3	Lines, Drains and Tubes	Identify and manage commonly used surgical tubes and drains.
33	5.4	Postoperative Care	Explain multidisciplinary postoperative management.
34	5.5	Surgical Emergencies	Recognize early postoperative complications requiring urgent management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
35	6.1	Surgeries of the Lung	Describe common pulmonary surgical procedures.
36	6.2	Surgeries of Pleura and Pericardium	Explain indications and techniques of pleural and pericardial surgeries.
37	6.3	Coronary Artery Bypass Surgery	Describe indications and principles of coronary artery bypass grafting.
38	6.4	Valvular Heart Surgery	Explain surgical management of valvular heart disease.
39	6.5	Surgery for Congenital Heart Disease	Describe commonly performed congenital cardiac procedures.
40	6.6	Peripheral Arterial Surgery	Explain surgical management of peripheral arterial disorders, Buerger's disease, Raynaud's disease and aneurysm.
41	6.7	Gangrene, Amputation and DVT	Describe indications for amputation and management of vascular complications.

Practical No.	Topic	Guidelines / Competencies
1	Introduction to Cardiothoracic Surgery & CPR	Demonstrate basic CPR and identify common cardiothoracic surgical procedures.
2	Cardiopulmonary Bypass & Investigations	Understand CPB principles and interpret common cardiothoracic investigations.
3	Cardiac Surgical Approaches	Identify surgical approaches and common cardiac operations.
4	Thoracic Disorders & Surgical Evaluation	Assess chest wall, lung and mediastinal disorders; identify surgical indications.
5	Thoracic Surgical Procedures	Identify thoracotomy, pneumonectomy, lobectomy, segmentectomy, pleurectomy and pleurodesis procedures.
6	Cardiac Surgical Procedures	Differentiate open heart, closed heart and extracardiac surgeries.
7	Peripheral Vascular Disorders	Recognize arteriosclerosis, aneurysm, Buerger's disease, Raynaud's disease, DVT and pulmonary embolism.
8	Postoperative Cardiac Care	Identify postoperative complications, ICU monitoring and management of lines, drains and tubes.
9	Cardiothoracic Rehabilitation	Plan physiotherapy following lung, pleural and pericardial surgeries.
10	Cardiac & Peripheral Vascular Surgery	Outline rehabilitation following CABG, valvular surgery, congenital heart surgery and peripheral arterial surgery, including amputation and DVT management.

Programme: Bachelor of Physiotherapy (BPT) **Paper III**

Subject Name: Orthopedics II

Subject Code:

Credit: 3

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Soft Tissue Injuries (20 Hours)			

1	1.1	Introduction to Soft Tissue Injuries	Classify soft tissue injuries and explain mechanisms of injury.
2	1.2	Sprains	Describe grading, clinical features and management of sprains.
3	1.3	Strains	Explain muscle strains and treatment principles.
4	1.4	Contusions	Describe diagnosis and management of muscle contusions.
5	1.5	Tendinitis, Tendinosis & Tenosynovitis	Differentiate tendon disorders and treatment approaches.
6	1.6	Bursitis	Explain common bursitis and management.
7	1.7	Meniscal Injuries	Explain mechanism, diagnosis and management.
8	1.8	Cruciate Ligament Injuries	Describe ACL and PCL injuries and treatment.
9	1.9	Collateral Ligament Injuries	Explain MCL and LCL injuries.
10	1.10	Tendon Ruptures	Discuss Achilles, rotator cuff, biceps and pectoralis tendon ruptures.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Hand Injuries, Amputation & Spinal Cord Injuries (15 Hours)			
11	2.1	Crush Injuries of Hand	Explain assessment and management.
12	2.2	Flexor & Extensor Tendon Injuries	Describe tendon injuries and repair principles.
13	2.3	Burn Injuries of Hand	Explain surgical management and complications.
14	2.4	Advanced Concepts in Amputation	Explain complications and reconstructive options after amputation.

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15	2.5	Traumatic Spinal Cord Injuries	Describe paraplegia, quadriplegia and surgical management.
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Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Deformities (20 Hours)			
16	3.1	Principles of Congenital Deformities	Explain congenital musculoskeletal deformities.
17	3.2	Congenital Foot Deformities	Discuss CTEV, vertical talus and flat foot.
18	3.3	Congenital Hip & Neck Deformities	Explain CDH, torticollis and cervical rib.
19	3.4	Congenital Limb & Hand Anomalies	Describe syndactyly, polydactyly, ectrodactyly, phocomelia and amelia.
20	3.5	Osteogenesis Imperfecta & Arthrogryposis	Explain pathology and management.
21	3.6	Acquired Spinal Deformities	Discuss scoliosis, kyphosis and lordosis.
22	3.7	Lower Limb Deformities	Explain genu deformities, coxa vara and foot deformities.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Bone & Joint Disorders (20 Hours)			
23	4.1	Brodie's Abscess	Explain diagnosis and management.
24	4.2	Advanced Osteomyelitis	Describe complications and surgical treatment.
25	4.3	Tuberculosis of Bone & Joint	Explain surgical management.
26	4.4	Septic & Pyogenic Arthritis	Describe diagnosis and treatment.
27	4.5	Syphilitic Arthritis	Explain pathology and management.
28	4.6	Benign Bone Tumours	Describe osteoma, osteochondroma and enchondroma.
29	4.7	Malignant Bone Tumours	Explain osteosarcoma, Ewing sarcoma, giant cell tumour, myeloma and metastatic lesions.
30	4.8	Perthes Disease, SCFE & AVN	Explain pathology and treatment.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Metabolic, Arthritic & Connective Tissue Disorders (20 Hours)			

31	5.1	Metabolic Bone Diseases	Explain rickets, osteomalacia, osteopenia and osteoporosis.
32	5.2	Degenerative Arthritis	Discuss osteoarthritis and surgical management.
33	5.3	Inflammatory Arthritis	Explain rheumatoid arthritis, ankylosing spondylitis and psoriatic arthritis.
34	5.4	Other Arthropathies	Describe gout, haemophilic arthritis, Still's disease and Charcot joints.
35	5.5	Connective Tissue Disorders	Explain SLE, scleroderma, dermatomyositis and MCTD.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VI – Syndromes, Spine & Neuromuscular Disorders (15 Hours)			
36	6.1	Cervicobrachial & Thoracic Outlet Syndromes	Explain diagnosis and management.
37	6.2	Other Compression Syndromes	Discuss vertebrobasilar, scalene and costoclavicular syndromes.
38	6.3	Neuromuscular Disorders	Describe spinal dysraphism and leprosy from an orthopaedic perspective.
39	6.4	Cervical & Lumbar Pathology	Explain PIVD, spinal stenosis, spondylosis, spondylolysis and spondylolisthesis.
40	6.5	Other Lumbar Disorders	Discuss lumbago, sacralisation, lumbarisation, coccydynia and hemivertebra.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module VII – Orthopaedic Surgeries & Regional Conditions (10 Hours)			
41	7.1	Orthopaedic Surgeries	Explain arthrodesis, arthroplasty, osteotomy, external fixation and spinal stabilization.
42	7.2	Limb Reattachment Surgery	Describe principles and indications.
43	7.3	Upper Limb Regional Conditions	Explain shoulder, elbow, wrist and hand disorders.
44	7.4	Lower Limb Regional Conditions	Describe hip, knee, ankle and foot regional disorders.

Practical No.	Module	Practical Topic	Practical Learning Outcome
1	Module I	Assessment of Soft Tissue Injuries	Perform clinical examination of ligament, tendon and muscle injuries.
2		Special Tests for Meniscal Injuries	Demonstrate McMurray's, Apley's Compression and Thessaly tests.
3		Cruciate Ligament Assessment	Perform Anterior Drawer, Posterior Drawer, Lachman and Pivot Shift tests.
4		Collateral Ligament Assessment	Assess MCL and LCL using valgus and varus stress tests.
5		Tendon Injury Assessment	Examine Achilles tendon, rotator cuff, biceps and quadriceps tendon injuries.
6		Clinical Case Discussion – Soft Tissue Injuries	Interpret findings and formulate diagnosis.

Recommended Text Books

1. Outline of Fracture-Adams
2. Outline of Orthopaedics-Adams
3. Orthopaedics and Traumatology-Natrajan
4. Apley's Orthopaedics
5. Textbook of orthopaedics- Maheshwari

Recommended Reference Books

1. Tureks Orthopaedics.
2. Cambells Operative Orthopaedics

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Programme: Bachelor of Physiotherapy (BPT) **Paper IV**

Subject Name: PT in Medical and Cardiovascular Surgical Conditions II

Subject Code:

Credit: 4

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Physiotherapy Management of Cardiovascular Diseases (20 Hours)			
1	1.1	Physiotherapy in Ischemic Heart Disease	Plan rehabilitation following ischemic heart disease.
2	1.2	Physiotherapy in Hypertension	Prescribe safe exercise programmes for hypertension.
3	1.3	Physiotherapy in Heart Failure	Design rehabilitation strategies for heart failure patients.
4	1.4	Physiotherapy in Valvular Heart Disease	Modify exercise according to valve pathology.
5	1.5	Physiotherapy in Congenital Heart Disease	Apply age-appropriate rehabilitation principles.
6	1.6	Cardiac Rehabilitation (Phase I–IV)	Explain principles of comprehensive cardiac rehabilitation.



Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II– Physiotherapy Management of Respiratory Disorders (25 Hours)			
7	2.1	Respiratory Physiotherapy Assessment	Perform respiratory examination and interpretation.
8	2.2	Airway Clearance Techniques	Demonstrate airway clearance techniques safely.
9	2.3	Breathing Retraining	Apply breathing exercises in respiratory dysfunction.
10	2.4	Physiotherapy in COPD	Plan rehabilitation in COPD.
11	2.5	Physiotherapy in Asthma	Apply physiotherapy interventions in asthma.
12	2.6	Physiotherapy in Bronchiectasis	Manage secretion clearance effectively.
13	2.7	Physiotherapy in Pneumonia & Tuberculosis	Plan rehabilitation after respiratory infections.
14	2.8	Pulmonary Rehabilitation	Develop pulmonary rehabilitation programmes.
15	2.9	Oxygen Therapy & Mechanical Ventilation	Apply physiotherapy in ICU respiratory care.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Physiotherapy in Cardiothoracic Surgery (20 Hours)			
16	3.1	Pre-operative Physiotherapy	Prepare patients for cardiothoracic surgery.
17	3.2	Thoracotomy Rehabilitation	Plan rehabilitation following thoracotomy.
18	3.3	CABG Rehabilitation	Apply evidence-based physiotherapy after CABG.
19	3.4	Valve Surgery Rehabilitation	Plan postoperative rehabilitation after valve surgery.
20	3.5	Lung Surgery Rehabilitation	Manage patients following lobectomy and pneumonectomy.
21	3.6	Heart & Lung Transplant Rehabilitation	Explain physiotherapy following transplantation.
22	3.7	ICU Physiotherapy	Perform ICU assessment and early mobilisation.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Peripheral Vascular Disorders & Surgery (15 Hours)			
23	4.1	Peripheral Arterial Disease	Plan physiotherapy management.

24	4.2	Buerger's Disease & Raynaud's Disease	Explain rehabilitation and patient education.
25	4.3	Deep Vein Thrombosis & Pulmonary Embolism	Describe physiotherapy precautions and mobilisation guidelines.
26	4.4	Varicose Veins	Prescribe exercise and compression therapy principles.
27	4.5	Vascular Surgery Rehabilitation	Plan rehabilitation following vascular procedures.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Postoperative Physiotherapy & Critical Care (10 Hours)			
28	5.1	Postoperative Monitoring	Interpret ICU monitoring parameters.
29	5.2	Lines, Tubes & Drains	Safely manage patients with medical devices.
30	5.3	Prevention of Postoperative Complications	Prevent pulmonary and vascular complications.
31	5.4	Early Mobilization	Design early mobilization protocols after surgery.

Practical No.	Topic	Guidelines / Competencies
1	Physiotherapy in Cardiac Conditions	Assess and plan physiotherapy for ischemic heart disease, hypertension, heart failure, valvular and congenital heart diseases.
2	Cardiac Rehabilitation	Demonstrate Phase I–IV cardiac rehabilitation and exercise prescription.
3	Respiratory Physiotherapy Assessment	Perform respiratory assessment including breathing pattern, chest expansion and auscultation.
4	Airway Clearance & Breathing Retraining	Demonstrate airway clearance techniques and breathing retraining exercises.
5	Physiotherapy in Respiratory Disorders	Plan physiotherapy management for COPD, asthma, bronchiectasis, pneumonia and tuberculosis.
6	Pulmonary Rehabilitation	Design pulmonary rehabilitation and exercise programmes.
7	Oxygen Therapy &	Identify oxygen delivery systems and physiotherapy

	Mechanical Ventilation	considerations in mechanically ventilated patients.
8	Cardiothoracic Surgery Rehabilitation	Plan pre- and postoperative physiotherapy following thoracic, CABG, valve, lung and transplant surgeries.
9	ICU Physiotherapy & Vascular Disorders	Demonstrate ICU physiotherapy and identify management principles for peripheral arterial disease, Buerger's disease, Raynaud's disease, DVT and pulmonary embolism.
10	Postoperative Monitoring & Early Mobilization	Monitor postoperative patients, manage lines, tubes and drains, prevent complications and demonstrate early mobilization.

Recommended text books

1. Physiotherapy in Gynecological & Obstetrical conditions–Mantle
2. Text of Physiotherapy for obstetrics and Gynecology – G.B. Madhuri&Pruthvish
3. Physical Rehabilitation-Susan B O’Sullivan, Thomas. J. Schmitz
4. Multani and Verma – Principles of Geriatric Physiotherapy
5. Tidys Textbooks of Physiotherapy. Elsevier
6. Cash Textbook of Physiotherapy in Medical and Surgical Conditions.
7. Physical Rehabilitation, Assessment and management; Susan Sullivan
8. Physiotherapy in Obstetrics and Gynaecology, Polden

Recommended reference books

1. Women’s Health – Sapsford
2. Geriatric Physical therapy- Andrew A. Guccione

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Programme: Bachelor of Physiotherapy (BPT) Paper V

Subject Name: Physiotherapy in Orthopedic Conditions-II **Subject Code:**

Credit: 4

Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT- I			
1	PTO 1.2	Informed Consent and Comprehensive Pain Assessment	Explain the ethical importance of informed consent and perform comprehensive pain assessment in orthopaedic patients.
2	PTO 1.2	Swelling Assessment and Clinical Documentation	Differentiate methods of swelling assessment and document clinical findings accurately.
3	PTO 1.2	External Fixation and Functional Cast Bracing	Explain the indications, principles and rehabilitation following external fixation and functional cast bracing.
4	PTO 1.2	Acute Complications of Fractures: Compartment Syndrome and Volkmann's Ischaemic Contracture	Recognize early clinical features and formulate appropriate physiotherapy interventions.

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5	PTO 1.2	Delayed Fracture Complications: Fat Embolism, Delayed Union and Malunion	Analyze fracture complications and correlate them with rehabilitation strategies.
6	PTO 1.2	Late Complications of Fractures: Reflex Sympathetic Dystrophy, Myositis Ossificans and Avascular Necrosis	Differentiate post-traumatic complications and justify appropriate physiotherapy management.
7	PTO 1.2	Pressure Injury Prevention, Goal Setting and Rehabilitation Planning	Formulate short- and long-term rehabilitation goals while preventing pressure injuries.
8	PTO 1.4	Principles of Pre-operative and Post-operative Orthopaedic Physiotherapy	Develop comprehensive rehabilitation plans for patients undergoing orthopaedic surgeries.
9	PTO 1.4	Arthrodesis, Osteotomy and Arthroplasty	Compare indications, surgical principles and rehabilitation protocols of common orthopaedic procedures.
10	PTO 1.4	Tendon Transfer, Tenotomy, Myotomy and Soft Tissue Lengthening Procedures	Explain indications and formulate postoperative rehabilitation programmes.
11	PTO 1.4	Arthroscopy, Synovectomy, Spinal Stabilization and Limb Reimplantation	Evaluate rehabilitation following minimally invasive and reconstructive orthopaedic surgeries.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT- II			
12	PTO 2.1	Upper Limb Sprains and Tendon Injuries	Differentiate ligament and tendon injuries and plan physiotherapy interventions.
13	PTO 2.2	Shoulder Instability and Thoracic Outlet Syndrome	Assess shoulder instability and thoracic outlet syndrome using appropriate clinical tests.
14	PTO 2.2	Shoulder Impingement Syndrome and AC Joint Injuries	Explain the pathomechanics and rehabilitation of common shoulder disorders.
15	PTO 2.2	Rotator Cuff Tears and Subacromial Decompression	Analyze rotator cuff pathologies and postoperative rehabilitation protocols.
16	PTO 2.2	Carpal Tunnel Syndrome and Upper Limb Deformities	Assess upper limb nerve entrapment syndromes and prescribe evidence-based physiotherapy.
17	PTO 2.3	Shoulder Arthroplasty and Tendon Repair Surgeries	Develop postoperative rehabilitation plans following shoulder surgeries.
18	PTO 2.3	Elbow and Wrist Arthroplasty	Explain rehabilitation following elbow and wrist replacement procedures.

19	PTO 2.3	Radial Head Excision and Tendon Reconstruction	Evaluate postoperative functional outcomes and rehabilitation techniques.
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Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT- III			
20	PTO 3.2	Tendinitis and Bursitis	Differentiate inflammatory soft tissue disorders and recommend appropriate physiotherapy management.
21	PTO 3.2	Plica Syndrome, Hoffa's Syndrome and Patellar Dysfunction	Assess knee disorders and formulate evidence-based rehabilitation programmes.
22	PTO 3.2	Congenital and Acquired Lower Limb Deformities	Identify lower limb deformities and explain corrective physiotherapy approaches.
23	PTO 3.3	Hip Arthroplasty	Develop rehabilitation protocols following hemi and total hip replacement.
24	PTO 3.3	ACL and PCL Reconstruction	Explain ligament reconstruction principles and progressive rehabilitation.
25	PTO 3.3	Meniscal Injuries and Surgical Management	Compare meniscectomy and meniscal repair with respect to rehabilitation outcomes.
26	PTO 3.3	Total Knee Replacement and Patellectomy	Design rehabilitation programmes following knee surgeries.
27	PTO 3.3	Ligament Repair and Realignment Procedures	Apply rehabilitation principles following lower limb reconstructive surgeries.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT- IV			
28	PTO 4.1	Spinal Cord Injury	Explain neurological deficits and physiotherapy management following spinal cord injury.
29	PTO 4.1	Prolapsed Intervertebral Disc, Sprains and Contusions	Differentiate spinal injuries and formulate conservative rehabilitation strategies.
30	PTO 4.2	Degenerative Disorders of the Spine	Assess cervical and lumbar degenerative disorders using clinical reasoning.
31	PTO 4.2	Spinal Deformities and Congenital Disorders	Evaluate spinal deformities and recommend corrective physiotherapy management.
32	PTO 4.2	Sacroiliac Dysfunction, Sacralization and Lumbarization	Correlate anatomical variations with functional impairments and

			rehabilitation.
33	PTO 4.3	Rehabilitation Following Spine Surgeries	Develop evidence-based postoperative rehabilitation protocols following spine surgeries.
34	PTO 4.4	McKenzie Concept and Back School	Apply McKenzie principles and Back School concepts for spinal rehabilitation.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT- V			
35	PTO 5.1	Rare Congenital Orthopaedic Disorders	Describe uncommon congenital musculoskeletal anomalies and their functional implications.
36	PTO 5.2	Slipped Capital Femoral Epiphysis and Avascular Necrosis	Differentiate pediatric hip disorders and plan physiotherapy interventions.
37	PTO 5.2	Metabolic Bone Diseases	Explain the pathology and rehabilitation of rickets and osteomalacia.
38	PTO 5.3	Pediatric Soft Tissue Injuries	Assess pediatric soft tissue injuries and select appropriate physiotherapy interventions.
39	PTO 5.4	Pediatric Fractures and Dislocations	Compare pediatric and adult fracture management and rehabilitation.
40	PTO 5.5	Pediatric Neck Pain and Low Back Pain	Assess spinal pain in children and formulate age-appropriate rehabilitation plans.
41	PTO 5.6	Pediatric Sports Injuries	Explain injury prevention and rehabilitation strategies for young athletes.
42	PTO 5.7	Ilizarov Technique	Explain the principles of distraction osteogenesis and rehabilitation following Ilizarov fixation.
43	PTO 5.8	Surgeries for Cerebral Palsy	Evaluate rehabilitation following rhizotomy, tendon lengthening, osteotomy and arthrodesis in children with cerebral palsy.

Practical No.	Topic	Guidelines / Competencies
1	Orthopaedic Assessment & Documentation	Perform informed consent, pain and swelling assessment, and clinical documentation.
2	Fracture Management	Identify external fixation, cast bracing and fracture complications.
3	Rehabilitation Planning	Develop rehabilitation goals and pre-/post-operative physiotherapy plans.
4	Orthopaedic Surgical Procedures	Identify arthrodesis, osteotomy, arthroplasty, tendon transfer and arthroscopy procedures.
5	Upper Limb Disorders	Assess upper limb sprains, tendon injuries, shoulder instability, impingement and thoracic outlet syndrome.
6	Upper Limb Surgical Rehabilitation	Plan rehabilitation following rotator cuff repair, shoulder, elbow and wrist arthroplasty, and tendon reconstruction.
7	Lower Limb Disorders	Assess tendinitis, bursitis, patellar disorders and lower limb deformities.
8	Hip & Knee Rehabilitation	Plan physiotherapy following hip arthroplasty, ACL/PCL reconstruction, meniscal repair and total knee replacement.
9	Spine Rehabilitation	Assess spinal disorders and plan rehabilitation following spinal surgery using McKenzie principles and Back School.
10	Paediatric Orthopaedics	Assess paediatric fractures, deformities, sports injuries and rehabilitation following cerebral palsy surgery and Ilizarov procedures.

Recommended Text Books

1. Orthopaedic Physiotherapy, Robert A Donatelli, Churchill Livingstone.
2. Tidy's Physiotherapy, Ann Thomasons, Varghese publishing House.
3. Physical Rehabilitation Assessment and Treatment, Susan Sullivan, Japee brothers
4. Textbook of Orthopaedics, John Ebnezar, Japee Brothers.
5. Textbook of Orthopaedics and Rheumatology for Physiotherapists, Patricia A Downie.
6. Orthopedic Physical Assessment – David Magee
7. Clinical Orthopaedic Diagnosis – Surishwar Pandey
8. Orthopaedics for Physiotherapist – Jayant Joshi.
9. Therapeutic Exercise: Foundations and Techniques - Kolby & Carolyn Kisner

Recommended Reference Books

1. Apley's system of Orthopaedics and fractures -Louis Solomon, David J. Warwick Arnold Publishers, London
2. Turek's Orthopaedics: Principles and their Application, Weinstein SL and Buckwalter JA, Lippincott
3. Clinical Orthopaedic Rehabilitation, Brent Brotzman.
4. Peripheral Mobilisation – GD Maitland, Butterworth
5. Vertebral Mobilisation – GD Maitland, Butterworth and Heinmann Publication.
6. Manual Therapy: Nags, Snags, MWMs, etc - 6th Edition Brian Mulligan
7. Neural tissue mobilization –Butler
8. Therapeutic Exercise: Moving Toward Function - Carrie M. Hall, Lori Thein Brody
9. Manual Mobilization of Extremity Joints-Kaltenborn
10. Clinical Orthopaedic rehabilitation- Broadsman

Programme: Bachelor of Physiotherapy (BPT)

Paper VI

Subject Name: Professional Issues (Including Ethics), Administration & Bioengineering

Subject Code:

Credit: 4

Lecture Hours:

Section A- Professional Issues (Including Ethics), Administration

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Medical Ethics and Professional Conduct (15 Hours)			
1	1.1	Introduction to Medical Ethics and Medical Law	Explain the concepts, goals and scope of medical ethics and medical law.
2	1.2	Code of Professional Conduct	Describe the code of conduct expected from physiotherapists.
3	1.3	Principles of Medical Ethics	Explain autonomy, beneficence, non-maleficence and justice.
4	1.4	Confidentiality and Patient Rights	Discuss confidentiality, patient rights and privacy in clinical practice.
5	1.5	Malpractice and Negligence	Differentiate malpractice and negligence with clinical examples.
6	1.6	Rational and Irrational Drug Therapy	Explain ethical issues related to drug therapy in healthcare.
7	1.7	Informed Consent	Explain legal and ethical principles of informed consent.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Professional Ethics and Medico-Legal Issues (15 Hours)			
8	2.1	Development of Standardized Protocols	Explain the importance of standardized clinical protocols.
9	2.2	Prevention of Near Miss and Sentinel Events	Describe strategies for patient safety and risk reduction.
10	2.3	Biomedical Ethical Principles	Apply biomedical ethical principles in physiotherapy practice.
11	2.4	Code of Ethics for Physiotherapists	Interpret ethical responsibilities of physiotherapists.
12	2.5	Ethics Documents and Laws Affecting Physiotherapy	Explain legal regulations governing physiotherapy practice.
13	3.1	Morality, Ethics and Legality	Differentiate morality, ethics and legal responsibilities.
14	3.2	Professional Conduct and Council Act	Explain the need for professional councils and regulatory bodies.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Medical Records and Professional Organizations (15 Hours)			
15	3.3	Medico-Legal Records	Explain documentation requirements in medico-legal cases.
16	3.4	Medical Records and Confidentiality	Describe ownership, maintenance and confidentiality of medical records.
17	3.5	Medico-Legal Cases	Identify types of medico-legal cases and required documentation.
18	4.1	Indian Association of Physiotherapists (IAP)	Describe the constitution and functions of IAP.
19	4.2	World Physiotherapy (Formerly WCPT)	Explain the role and functions of World Physiotherapy.
20	4.3	Special Interest Groups	Describe the role of Special Interest Groups in physiotherapy practice.

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Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Hospital and Physiotherapy Administration (20 Hours)			
21	5.1	Principles of Planning and Organization	Explain planning cycles and organizational principles.
22	5.2	Organizational Charts and Resource Management	Describe organizational structure and resource management.
23	5.3	Quality Management and Innovation	Explain quality assurance and innovation in healthcare.
24	5.4	Financial Management and Budgeting	Prepare basic departmental budgets and explain income generation.
25	5.5	Hospital Administration	Describe hospital organization, staffing and communication systems.
26	5.6	Monitoring and Evaluation	Explain monitoring, evaluation and quality improvement.
27	6.1	Organization of Physiotherapy Department	Plan space, manpower and resources for a physiotherapy department.

28	6.2	Meetings, Committees and Negotiation	Describe administrative procedures in healthcare organizations.
29	6.3	Personnel Management and Performance Appraisal	Explain staff management and performance evaluation systems.
30	6.4	National Health Policy and Healthcare System in India	Describe national health policies and healthcare delivery systems.

Section B- Bioengineering

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Bioengineering in Rehabilitation (35 Hours)			
31	1.1	Introduction to Bioengineering in Rehabilitation	Explain the role of bioengineering in physiotherapy practice.
32	1.2	Rehabilitation Robotics	Describe principles and applications of rehabilitation robots.
33	1.3	Virtual Reality Rehabilitation	Explain the use of virtual reality in rehabilitation.
34	1.4	Physical Prosthetics	Describe components and applications of physical prostheses.
35	1.5	Sensory Prosthetics	Explain sensory prosthetic devices and their clinical applications.
36	1.6	Brain–Computer Interface	Describe the principles and rehabilitation applications of brain–computer interfaces.
37	1.7	Modulation of Organ Function	Explain bioengineering techniques used for organ function modulation.
38	1.8	Navigation Aids	Describe assistive navigation technologies for persons with disabilities.
39	1.9	Closed-loop Braces for Limbs and Spine	Explain the design and applications of intelligent orthotic systems.
40	1.10	Automatic Page Turner and Block Holder	Describe assistive devices for activities of daily living.

41	1.11	Medication Dispenser with Alarm	Explain the role of smart medication management systems.
42	1.12	Advanced Kinematics to Monitor Human Function	Describe motion analysis and wearable technologies used in rehabilitation.

Recommended Text Books

1. CM Francis Medical Ethics jay pee new Delhi
2. Raja K **Davis** F Ethical Issues: Perspectives for the Physiotherapists Jaypee brothers new delhi
3. Percival, T. (2014). *Medical ethics*. Cambridge University Press.
4. Dunn, M., & Hope, T. (2018). *Medical ethics: a very short introduction*. Oxford University Press.
5. Sakharkar BM Principles of hospital administration and planning jaypee brothers new delhi

Recommended Reference Books

1. Hébert, P. C., & Rosen, W. (2009). Doing right: a practical guide to ethics for medical trainees and physicians (p. 352). Don Mills, ON: Oxford University Press.
2. American Medical Association, & New York Academy of Medicine. (1848). Code of medical ethics. H. Ludwig & Company
3. Blackburn, S. (2003). Ethics: A very short introduction (Vol. 80). Oxford University Press.
4. Joydeep Das Gupta Hospital Administration and Management: A Comprehensive Guide jaypee brothers

Programme: Bachelor of Physiotherapy (BPT) Paper VII

Subject Name: Biostatistics and Evidence based practice

Subject Code: Credit: 4 Lecture Hours:

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Biostatistics (20 Hours)			
1	1.1	Introduction to Biostatistics	Explain the meaning, scope and importance of biostatistics in health sciences and physiotherapy.
2	1.2	Types of Statistics and Variables	Differentiate descriptive and inferential statistics, variables and measurement scales.
3	1.3	Parameters and Estimates	Explain population parameters and sample estimates.
4	1.4	Tabulation of Data	Organize and present data using appropriate tabulation methods.

5	1.5	Graphical Representation of Data	Construct histograms, frequency polygons, cumulative frequency curves and pie charts.
6	1.6	Measures of Central Tendency	Explain the need for measures of central tendency.
7	1.7	Mean	Calculate and interpret mean for grouped and ungrouped data.
8	1.8	Median	Calculate and interpret median for grouped and ungrouped data.
9	1.9	Mode	Calculate mode and compare mean, median and mode.
10	1.10	Selection of Appropriate Measure of Central Tendency	Select suitable measures of central tendency for different datasets.
11	1.11	Probability	Explain basic concepts of probability in biomedical research.
12	1.12	Standard Distributions	Describe binomial and normal distributions.
13	1.13	Skewness and Kurtosis	Interpret skewness and kurtosis in data distribution.
14	1.14	Sampling Techniques	Explain probability and non-probability sampling methods.
15	1.15	Sample Size Estimation	Calculate sample size for survey and experimental research.
16	1.16	Sampling Variation and Errors	Explain sampling variation, Type I error, Type II error and statistical power.
17	1.17	Introduction to Hypothesis Testing	Explain null and alternative hypotheses and hypothesis testing procedures.
18	1.18	Parametric Tests	Select appropriate parametric statistical tests.
19	1.19	Non-Parametric Tests	Select appropriate non-parametric statistical tests.
20	1.20	Correlation and Association Tests	Interpret correlation and association between variables.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II– Evidence-Based Practice (36 Hours)			
21	2.1	Introduction to Evidence-Based Practice	Explain the concept, background and importance of evidence-based practice.
22	2.2	Evidence-Based Physiotherapy Model	Describe the components of evidence-based physiotherapy.
23	2.3	Role of an Evidence-Based Practitioner	Explain the responsibilities of an evidence-based physiotherapist.
24	2.4	Validity	Differentiate internal and external validity.
25	2.5	Reliability	Explain different types of reliability in research.
26	2.6	Randomized Controlled Trial (RCT)	Describe the design, strengths and limitations of RCTs.
27	2.7	Systematic Review	Explain methodology and interpretation of systematic reviews.
28	2.8	Meta-Analysis	Interpret the principles and outcomes of meta-analysis.
29	2.9	Case Study	Explain the structure, applications and limitations of case studies.
30	2.10	Diagnostic Research Studies	Describe diagnostic accuracy studies and their applications.
31	2.11	Prognostic Research Studies	Explain prognostic study designs and outcome prediction.
32	2.12	Intervention Research Studies	Describe intervention studies and their role in physiotherapy research.
33	2.13	Levels of Evidence	Classify research according to the hierarchy of evidence.
34	2.14	Literature Search Strategies	Perform literature searches using electronic databases.

35	2.15	Critical Appraisal of Research	Critically evaluate research articles using appraisal tools.
36	2.16	Clinical Practice Guidelines	Explain the development and application of clinical practice guidelines.
37	2.17	Applying Evidence in Clinical Practice	Integrate research evidence into patient management.
38	2.18	Barriers to Evidence-Based Practice	Identify barriers and propose strategies to improve implementation.
39	2.19	Ethical Considerations in Evidence-Based Practice	Discuss ethical issues related to evidence-based decision making.
40	2.20	Journal Club Presentation	Critically present and discuss published scientific literature.

Recommended Text Book

1. Mahajan, B. K. (2002). *Methods in biostatistics*. Jaypee Brothers Publishers.
2. Hicks, C. *Research for Physiotherapists: project design and analysis*. Churchill
3. Livingstone.
4. Practical Evidence-Based Physiotherapy by Robert Herbert, Gro Jamtvedt, Kåre Birger Hagen, Judy Mead, Sir Iain Chalmers
5. Bajpai S.R. –Methods of Social Survey and Research, Kitab Ghar, Kanpur.
6. Mohsin S.M. – Research methods in Behavioral Sciences. Orient publications, New Delhi
7. Gupta S.P. – Statistical Methods. Sultan Chand and sons Publishers, New Delhi.

Recommended Reference Books

1. Evidence Based Physical Therapy by Linda Fettes, Julie Tilson
2. Guide to Evidence-Based Physical Therapy Practice by Dianne V. Jewell
3. Bailey N.T.J. – Statistical methods in Biology. The English University Press, London.
4. Colton – Statistics in medicine. Little Brown Company, Boston
5. Goulden C.H. – Methods of Statistical Analysis. Asia Publishing House, New Delhi.
6. Snedecor G.W. – Statistical Methods. Allied

SEMESTER-VII

Paper 1

19 Neurology, and Neuro-surgery -I

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT I – Fundamentals of Neurosciences (12 Hours)			
1	1.1	Functional Neuroanatomy	Explain the organization and functions of the central and peripheral nervous systems.
2	1.2	Functional Neurophysiology	Describe the physiological basis of neural transmission and neurological function.
3	1.3	Cortical Mapping and Functional Localization	Explain cortical localization and its clinical significance.
4	1.4	Pathophysiology of Neurological Disorders	Describe the basic mechanisms underlying neurological diseases.
5	1.5	Classification of Neurological Lesions	Differentiate UMN, LMN, brain, brainstem, spinal cord and peripheral nerve lesions.
6	1.6	Neurophysiology of Tone and Posture	Explain mechanisms regulating muscle tone and posture.
7	1.7	Neurophysiology of Movement	Describe neural control of voluntary and involuntary movement.
8	1.8	Neurophysiology of Pain	Explain pain pathways and mechanisms of neurological pain.
9	1.9	Neural Control of Bladder Function	Describe neurological regulation of bladder control.

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10	1.10	Electrical Stimulation of Brain and Spinal Cord	Explain principles and clinical applications of electrical stimulation.
11	1.11	Trauma Localization and First Aid	Identify neurological trauma and describe immediate management principles.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT II – Neurological Examination & Investigations (12 Hours)			
12	2.1	Principles of Neurological Diagnosis	Explain the systematic approach to neurological diagnosis.
13	2.2	History Taking in Neurology	Obtain relevant neurological history for clinical diagnosis.
14	2.3	Higher Mental Functions	Assess orientation, memory, speech and cognition.
15	2.4	Cranial Nerve Examination	Examine and interpret cranial nerve function.
16	2.5	Motor and Sensory Examination	Assess muscle power, tone, coordination and sensory function.
17	2.6	Reflexes and Cerebellar Examination	Differentiate normal and abnormal reflexes and cerebellar signs.
18	2.7	Gait and Autonomic Nervous System Examination	Evaluate gait abnormalities and autonomic dysfunction.
19	2.8	Higher Cortical Functions	Assess apraxia, agnosia and cortical deficits.
20	2.9	Neuroimaging and Electrodiagnostic Investigations	Interpret CT, MRI, Skull X-ray, EMG and NCV findings.
21	2.10	CSF Analysis and Evoked Potentials	Explain indications and interpretation of lumbar puncture, CSF and evoked potentials.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT III – Cranial Nerve & Vestibular Disorders (12 Hours)			

22	3.1	Physiology of Hearing and Vestibular System	Explain normal hearing and vestibular physiology.
23	3.2	Deafness and Vestibular Function Tests	Describe causes of deafness and interpretation of vestibular tests.
24	3.3	Peripheral and Central Vestibular Disorders	Differentiate peripheral and central causes of vertigo.
25	3.4	Trigeminal Disorders	Explain clinical features and management of trigeminal disorders.
26	3.5	Facial Nerve Disorders	Describe facial palsy, Bell's palsy and hemifacial spasm.
27	3.6	Lower Cranial Nerve Disorders	Explain glossopharyngeal, vagus, spinal accessory and hypoglossal nerve lesions.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT IV – Cerebrovascular Disorders (12 Hours)			
28	4.1	Introduction to Stroke	Explain classification and risk factors of stroke.
29	4.2	Ischemic Stroke	Describe etiology, clinical features and investigations.
30	4.3	Hemorrhagic Stroke	Explain pathophysiology and diagnosis of hemorrhagic stroke.
31	4.4	Stroke Syndromes	Differentiate common stroke syndromes and localization.
32	4.5	TIA, Stroke in Evolution and Lacunar Infarct	Describe transient cerebrovascular disorders.
33	4.6	Medical and Surgical Management of Stroke	Explain principles of acute stroke management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT V – Movement & Higher Cortical Disorders (12 Hours)			
34	5.1	Parkinson's Disease	Explain clinical features and management of Parkinson's disease.

35	5.2	Hyperkinetic Movement Disorders	Differentiate dystonia, chorea, ballism, athetosis, tics and myoclonus.
36	5.3	Wilson Disease	Describe neurological manifestations and management.
37	5.4	Epilepsy	Explain classification, investigations and management of epilepsy.
38	5.5	Childhood and Adult Epilepsy Syndromes	Differentiate epilepsy syndromes across age groups.
39	5.6	Dementia, Coma and Brain Death	Describe diagnosis and clinical significance of higher cortical disorders.
40	5.7	Speech and Perceptual Disorders	Explain neurological disorders affecting speech and perception.

Practical No.	Practical Topic	Learning Outcome
1	Identification of neuroanatomical structures using models, charts and brain specimens	Identify major structures of the central and peripheral nervous systems and correlate them with their functions.
2	Demonstration of cortical mapping and functional localization	Explain functional areas of the cerebral cortex and predict neurological deficits following lesions.
3	Neurological history taking and clinical documentation	Obtain a systematic neurological history and document relevant clinical findings.
4	Assessment of higher mental functions	Examine orientation, memory, attention, language, speech and higher cortical functions.
5	Cranial nerve examination	Perform systematic examination of all cranial nerves and interpret abnormal findings.
6	Motor system examination	Assess muscle bulk, tone, power, coordination and involuntary movements using standard neurological examination techniques.

7	Sensory system examination	Examine superficial, deep and cortical sensations and localize sensory pathway lesions.
8	Examination of reflexes, cerebellar function and gait	Elicit superficial and deep tendon reflexes, perform cerebellar tests and analyze common gait abnormalities.
9	Demonstration and interpretation of neurological investigations	Interpret CT, MRI, EMG, NCV, evoked potentials and CSF reports in common neurological disorders.
10	Vestibular assessment and hearing evaluation	Perform basic vestibular function tests and recognize clinical features of vestibular disorders.
11	Clinical demonstration of common neurological disorders	Identify characteristic clinical signs in stroke, Parkinson's disease, epilepsy, cranial nerve palsies and movement disorders through case demonstrations.
12	Neurological case presentation and differential diagnosis	Analyze clinical findings, formulate differential diagnoses and correlate them with lesion localization and investigations.

Recommended Text Books

1. Davidson's Principles and practices of medicine - Edward – Churchill Livingstone.
2. API- Text book of Medicine, 5th edition
3. Medicine and Neurology by Golewala.

Recommended Reference Books

1. Brain's Diseases of the Nervous System - Nalton – ELBS.
2. Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone. 3. Principles of Neurology - Victor – McGraw Hill International edition.
3. Neurological Rehabilitation - Darcy Umphred.

Section- A

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Fetal Growth, Neonatal Care & Development (12 Hours)			
1	1.1	Intrauterine Development of the Fetus	Explain normal fetal development with emphasis on CNS, neuromuscular, cardiovascular and respiratory systems.
2	1.2	Normal Growth and Development	Describe developmental milestones from birth through childhood.
3	1.3	Immunization and Breastfeeding	Explain national immunization schedule and importance of breastfeeding.
4	1.4	Prematurity and Perinatal Problems	Describe causes, complications and management of premature infants and common perinatal conditions.
5	1.5	Neonatal Sepsis and Birth Asphyxia	Explain clinical features, diagnosis and medical management.
6	1.6	Hyperbilirubinemia and Birth Injuries	Discuss neonatal jaundice, birth trauma and principles of management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Developmental Disorders & Childhood Disabilities (12 Hours)			
7	2.1	Developmental Delay	Recognize developmental delay and identify common causes.
8	2.2	Orthopaedic Disorders in Childhood	Describe common paediatric orthopaedic disorders and their management.
9	2.3	Neuromuscular Disorders in Childhood	Explain common neuromuscular disorders affecting children.
10	2.4	Sensory Disorders	Describe visual and hearing impairments and their impact on development.

11	2.5	Learning and Behavioural Disorders	Explain educational delay, hyperactivity, challenging behaviour and clumsy child syndrome.
12	2.6	Central and Peripheral Nervous System Disorders in Childhood	Describe common paediatric CNS and PNS disorders requiring medical management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Childhood Neurological & Genetic Disorders (12 Hours)			
13	3.1	Mental Retardation (Intellectual Disability)	Explain causes, clinical presentation and management principles.
14	3.2	Down Syndrome	Describe genetics, clinical features and multidisciplinary management.
15	3.3	Genetically Transmitted Neuromuscular Disorders	Discuss inherited neuromuscular disorders affecting children.
16	3.4	Childhood Epilepsies (Overview)	Describe classification, diagnosis and principles of management.
17	3.5	Neurological Case Discussions	Apply knowledge to common paediatric neurological disorders.
18	3.6	Integrated Revision	Correlate developmental and neurological disorders in children.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Nutrition, Rheumatology & Childhood Infections (12 Hours)			
19	4.1	Malnutrition in Children	Explain protein-energy malnutrition and nutritional deficiencies.
20	4.2	Vitamin Deficiency Disorders	Identify common vitamin deficiency disorders and management.
21	4.3	Juvenile Rheumatoid Arthritis	Describe clinical presentation and medical management.

22	4.4	Other Rheumatological Disorders	Explain common paediatric rheumatologic diseases.
23	4.5	Common Childhood Infectious Diseases	Discuss typhoid, rubella, measles, mumps, diphtheria, malaria and chikungunya.
24	4.6	Prevention of Childhood Infections	Explain preventive measures including immunization and early diagnosis.

Section -B

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Introduction to Psychiatry & Mental Health (12 Hours)			
1	1.1	Introduction to Psychiatry and Mental Health	Explain the scope, classification and importance of psychiatry in healthcare.
2	1.2	Classification of Psychiatric Disorders	Classify common psychiatric disorders using standard diagnostic systems.
3	1.3	Causes and Etiopathogenesis of Mental Illness	Explain biological, psychological and social causes of psychiatric disorders.
4	1.4	Psychiatric History Taking	Demonstrate systematic psychiatric history taking.
5	1.5	Mental Status Examination (MSE)	Perform and interpret a comprehensive mental status examination.
6	1.6	Physiotherapy in Psychiatry	Describe the role of physiotherapy in multidisciplinary psychiatric rehabilitation.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Neurotic, Mood & Psychotic Disorders (12 Hours)			
7	2.1	Anxiety Disorders and Phobias	Explain etiology, clinical features and management of anxiety disorders and phobias.

8	2.2	Obsessive Compulsive Disorder and Post-Traumatic Stress Disorder	Describe clinical manifestations and treatment of OCD and PTSD.
9	2.3	Depression and Bipolar (Manic-Depressive) Disorder	Explain diagnosis and management of mood disorders.
10	2.4	Schizophrenia and its Types	Classify schizophrenia and discuss clinical features and treatment.
11	2.5	Other Psychotic Disorders	Describe psychotic disorder, delusional disorder, schizoaffective disorder and postpartum psychosis.
12	2.6	Organic Brain Disorders	Explain delirium, dementia, amnestic syndrome and organic personality disorders.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Somatoform, Personality & Substance Use Disorders (12 Hours)			
13	3.1	Somatic Symptom and Related Disorders	Explain somatization, hypochondriasis and pain disorder.
14	3.2	Dissociative Disorders	Describe conversion disorder, dissociative amnesia and dissociative fugue.
15	3.3	Personality Disorders	Classify personality disorders and explain their clinical features.
16	3.4	Substance Use Disorders	Describe alcohol dependence and substance-related disorders.
17	3.5	Drug Dependence and Alcoholism	Explain causes, complications and management of substance dependence.
18	3.6	Psychosomatic Disorders, Stress and Health	Explain stress theories, psychosomatic reactions and stress-related illnesses.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Child & Geriatric Psychiatry (12 Hours)			

19	4.1	Child Psychiatry	Describe principles of child and adolescent psychiatry.
20	4.2	Neurodevelopmental Disorders	Explain Attention Deficit Hyperactivity Disorder (ADHD), intellectual disability and pervasive developmental disorders.
21	4.3	Behavioural Disorders of Childhood	Describe conduct disorder, enuresis, speech disorders and eating disorders.
22	4.4	Developmental and Behavioural Problems	Discuss learning disability, behavioural problems and developmental disorders.
23	4.5	Geriatric Psychiatry	Explain common psychiatric disorders in the elderly.
24	4.6	Case-Based Discussion in Child and Geriatric Psychiatry	Apply clinical reasoning to paediatric and geriatric psychiatric cases.

Practical No.	Practical Topic	Learning Outcome
1	Assessment of Growth and Development	Assess physical growth parameters and developmental milestones appropriate for different pediatric age groups.
2	Developmental Screening	Perform developmental screening and identify early signs of developmental delay and high-risk infants.
3	Pediatric History Taking	Obtain a comprehensive pediatric history including antenatal, natal, postnatal, developmental, nutritional and immunization history.
4	Pediatric Neurological Examination	Demonstrate systematic examination of the central and peripheral nervous system in infants and children.
5	Assessment of Childhood Orthopaedic and Neuromuscular Disorders	Identify common clinical features of congenital, orthopaedic and neuromuscular disorders in children.

6	Assessment of Sensory and Behavioural Disorders	Recognize clinical features of visual, hearing, learning and behavioural disorders including ADHD and autism spectrum disorders.
7	Interpretation of Pediatric Investigations	Interpret growth charts, developmental charts, immunization schedules and common laboratory and radiological investigations used in pediatric practice.
8	Observation and Case Discussion of Common Pediatric Disorders	Discuss clinical presentation, diagnosis and medical management of cerebral palsy, Down syndrome, epilepsy, malnutrition, juvenile rheumatoid arthritis and childhood infectious diseases through case-based learning.
9	Psychiatric History Taking	Obtain a systematic psychiatric history including presenting complaints, past psychiatric history, family history and psychosocial history.
10	Mental Status Examination (MSE)	Perform a complete Mental Status Examination including appearance, behaviour, mood, thought, perception, cognition, insight and judgment.
11	Clinical Demonstration of Psychiatric Disorders	Identify characteristic features of anxiety disorders, depression, bipolar disorder, schizophrenia, personality disorders, substance use disorders and psychosomatic disorders through clinical observation and case discussions.
12	Case Presentation and Differential Diagnosis	Present pediatric and psychiatric cases, formulate differential diagnoses and correlate clinical findings with investigations and medical management.

RECOMMENDED TEXTBOOKS:

1. Morgan C.T. & King R.A. Introduction to Psychology – recent edition [Tata McGraw-Hill publication]
2. Munn N.L. Introduction to Psychology [Premium Oxford, I.B.P. publishing Co.]
3. Clinical Psychology – Akolkar
4. Developmental Psychology-Elizabeth B. Hurlock(5 th edition, Tata Mc-Graw Hill)
5. A short book of Psychiatry – 3 rd edn- Ahuja – Jaypee bros – medical publishers
6. Short Textbook of Psychiatry- 7TH edition -M.S. Bhatia
7. Shah L.P. Handbook of Psychiatry

Paper- 3

Physiotherapy in Neurological and Neurosurgical conditions I

Unit	Sub-unit	Topics	Learning Outcome
Unit I (12 Hours)	PTN 1.1	Principles of Neurological Physiotherapy Assessment	Perform systematic physiotherapy assessment in patients with neurological disorders.
	PTN 1.2	Neurological History Taking and Clinical Reasoning	Formulate clinical hypotheses using subjective and objective assessment findings.
	PTN 1.3	Observation, Postural Assessment and Functional Analysis	Identify postural abnormalities and functional impairments.
	PTN 1.4	Assessment of Higher Mental Functions and Cranial Nerves	Assess cognitive status and cranial nerve functions relevant to physiotherapy.
	PTN 1.5	Motor, Sensory and Reflex Examination	Perform comprehensive motor and sensory evaluation.
	PTN 1.6	Balance, Coordination and Gait Assessment	Analyze balance deficits and gait abnormalities using clinical methods.
	PTN 1.7	Outcome Measures in Neurorehabilitation (MAS, Berg, FIM, Barthel, GCS, MMSE etc.)	Select and interpret appropriate neurological outcome measures.

Unit	Sub-unit	Topics	Learning Outcome
Unit II (12 Hours)	PTN 2.1	Principles of Neurorehabilitation and Neuroplasticity	Explain principles of neurological recovery and rehabilitation.
	PTN 2.2	Motor Learning and Motor Control	Apply principles of motor learning during rehabilitation.

	PTN 2.3	Goal Setting, Treatment Planning and Clinical Decision Making	Develop individualized rehabilitation goals and treatment plans.
	PTN 2.4	Positioning, Bed Mobility and Transfer Training	Demonstrate safe positioning and transfer techniques.
	PTN 2.5	Balance and Coordination Training	Design rehabilitation programmes to improve postural control.
	PTN 2.6	Neurophysiological Treatment Approaches (NDT, PNF, Rood, Brunnstrom, MRP, Sensory Integration, CIMT, Task-Oriented Training)	Apply appropriate neurophysiological treatment approaches for neurological rehabilitation.
	PTN 2.7	Functional Electrical Stimulation, Orthoses and Assistive Devices	Select suitable therapeutic modalities and assistive devices.

Unit	Sub-unit	Topics	Learning Outcome
Unit III (12 Hours)	PTN 3.1	Physiotherapy Assessment of Stroke	Evaluate impairments and functional limitations following stroke.
	PTN 3.2	Acute, Subacute and Chronic Stroke Rehabilitation	Plan stage-specific physiotherapy interventions.
	PTN 3.3	Upper Limb Rehabilitation after Stroke	Design upper limb rehabilitation programmes.
	PTN 3.4	Lower Limb Rehabilitation and Gait Re-education	Improve gait and mobility through evidence-based interventions.
	PTN 3.5	Functional Training, ADL and Community Reintegration	Facilitate independence in activities of daily living.
	PTN 3.6	Physiotherapy Management of Higher Cortical Disorders (Perceptual Disorders, Neglect, Apraxia, Dementia, Coma)	Incorporate cognitive and perceptual rehabilitation into physiotherapy management.

	PTN 3.7	Physiotherapy Considerations in Epilepsy	Implement safe physiotherapy interventions for individuals with epilepsy.
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Unit	Sub-unit	Topics	Learning Outcome
Unit IV (12 Hours)	PTN 4.1	Physiotherapy Assessment and Management of Parkinson's Disease	Design rehabilitation programmes to improve mobility and balance.
	PTN 4.2	Physiotherapy Management of Hyperkinetic Movement Disorders (Dystonia, Chorea, Ballism, Athetosis, Myoclonus, Wilson Disease)	Apply appropriate rehabilitation strategies for movement disorders.
	PTN 4.3	Vestibular Assessment and Rehabilitation	Assess vestibular dysfunction and prescribe vestibular rehabilitation exercises.
	PTN 4.4	Balance Retraining and Fall Prevention	Develop balance rehabilitation and fall prevention programmes.
	PTN 4.5	Facial Rehabilitation following Cranial Nerve Lesions	Implement facial muscle retraining techniques following facial nerve disorders.
	PTN 4.6	Functional Rehabilitation in Vestibular and Cranial Nerve Disorders	Restore functional mobility and daily activities through rehabilitation.

Unit	Sub-unit	Topics	Learning Outcome
Unit V (12 Hours)	PTN 5.1	Functional Mobility Training	Improve functional mobility through task-specific interventions.
	PTN 5.2	Wheelchair Skills, Transfers and Stair Climbing	Demonstrate safe mobility training techniques.

	PTN 5.3	Gait Training and Community Ambulation	Develop gait rehabilitation programmes for neurological patients.
	PTN 5.4	Prescription of Orthoses, Walking Aids and Assistive Technology	Select appropriate assistive devices based on functional needs.
	PTN 5.5	Home Programme, Caregiver Education and Home Modification	Educate caregivers and recommend home modifications for safe discharge.
	PTN 5.6	Prevention of Secondary Complications and Health Promotion	Prevent complications associated with neurological disability.
	PTN 5.7	Evidence-Based Neurophysiotherapy, Documentation and Outcome Evaluation	Apply evidence-based practice and evaluate rehabilitation outcomes.

Practical No.	Practical Topic	Practical Guidelines / Competencies
1	Neurological History Taking	Obtain complete neurological history including chief complaints, history of present illness, past history, family history, occupational history and functional limitations.
2	General Neurological Examination	Perform observation, posture analysis, gait observation, muscle wasting, deformity, involuntary movements and functional status assessment.
3	Assessment of Higher Mental Functions	Assess consciousness, orientation, memory, speech, language, cognition, perception, judgment and higher cortical functions.
4	Cranial Nerve Examination	Demonstrate examination of all twelve cranial nerves and identify normal and abnormal findings.
5	Motor System Examination	Assess muscle bulk, tone, power (MMT), coordination, involuntary movements and motor control.
6	Sensory System Examination	Examine superficial, deep and cortical sensations using standard neurological assessment techniques.

7	Reflex Examination	Demonstrate superficial, deep tendon and pathological reflex testing and grading.
8	Cerebellar Assessment	Perform coordination tests including finger-to-nose, heel-to-shin, dysdiadochokinesia, rebound phenomenon and Romberg's test.
9	Balance and Gait Assessment	Assess static and dynamic balance and perform qualitative gait analysis in neurological conditions.
10	Outcome Measures	Demonstrate use of Modified Ashworth Scale, Glasgow Coma Scale, Barthel Index, Functional Independence Measure (FIM), Berg Balance Scale and MMSE.
11	Interpretation of Neurological Investigations	Identify common findings in CT, MRI, EMG, NCV, Evoked Potentials and CSF reports relevant to neurological disorders.
12	Vestibular Assessment	Demonstrate bedside vestibular examination and vestibular function assessment techniques.
13	Stroke Assessment	Perform comprehensive physiotherapy assessment of patients with ischemic and hemorrhagic stroke including functional evaluation.
14	Parkinson's Disease Assessment	Assess posture, rigidity, tremor, bradykinesia, balance and functional mobility in Parkinson's disease.
15	Assessment of Cranial Nerve Disorders	Evaluate facial palsy, trigeminal disorders and lower cranial nerve dysfunction using appropriate assessment methods.
16	Case Presentation	Present complete neurological case including assessment findings, clinical reasoning, problem list and treatment goals.
17	Documentation	Prepare standardized neurological assessment charts and maintain clinical documentation using SOAP format.
18	Clinical Demonstration & Viva	Demonstrate neurological examination techniques and interpret clinical findings through viva voce and case discussions.

Recommended Text Books

1. Patricia A D. Cash's Text book for Physio Therapist in Neurological disorders. Jaypee

bros;

2. Adler B. PNF in practice. Springer.
3. Hollis M. Practical Physical Therapy
4. O'Sullivan S. Physical Rehabilitation
5. Johnstone M. Therapy for stroke. Edinburgh: Churchill Livingstone;
6. Bromley I. Tetraplegia and Paraplegia: A guide for physiotherapists
7. Carr and shepherd neurological rehabilitation

Recommended Reference Books

1. Umphred D. Neurological rehabilitation. Saint Louis: Mosby/Elsevier;
2. Donaghy M. Brain's diseases of the nervous system. Oxford: Oxford University Press; 2009
3. Bobath B. Adult hemiplegia. Oxford (England): Heinemann Medical Books.
Patricia M D. Right in the middle. Springer-Verlag

Paper- 4

Cardiopulmonary diseases and surgery

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT I – Cardiovascular Disorders			
1	CPM 1.1	Functional Anatomy and Physiology of the Cardiovascular System	Explain the anatomy and physiology of the cardiovascular system relevant to physiotherapy practice.
2	CPM 1.2	Aetiopathogenesis, Investigations and Differential Diagnosis of Cardiovascular Disorders	Describe the pathophysiology, investigations and principles of diagnosis of cardiovascular disorders.
3	CPM 1.3	Cardiac Failure	Explain the causes, clinical features, investigations and medical management of cardiac failure.
4	CPM 1.4	Rheumatic Fever and Rheumatic Heart Disease	Describe the etiology, clinical manifestations, complications and treatment of rheumatic fever.

5	CPM 1.5	Congenital Heart Diseases (ASD, VSD, PDA, Tetralogy of Fallot)	Differentiate common congenital heart diseases and explain their clinical features and management.
6	CPM 1.6	Ischemic Heart Disease	Discuss the pathophysiology, classification, diagnosis and medical management of ischemic heart disease.
7	CPM 1.7	Hypertension	Explain the classification, clinical presentation, complications and treatment of hypertension.
8	CPM 1.8	Infective Endocarditis	Describe the etiology, clinical features, diagnosis and medical management of infective endocarditis.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT II – Respiratory Disorders			
9	CPM 2.1	Functional Anatomy and Physiology of the Respiratory System	Explain the anatomy and physiology of the respiratory system relevant to physiotherapy practice.
10	CPM 2.2	Chronic Bronchitis and Emphysema	Describe the etiology, clinical features, investigations and treatment of chronic obstructive pulmonary diseases.
11	CPM 2.3	Bronchial Asthma	Explain the pathophysiology, clinical features, diagnosis and management of bronchial asthma.
12	CPM 2.4	Pneumonia	Describe the classification, clinical manifestations, investigations and treatment of pneumonia.
13	CPM 2.5	Pulmonary Tuberculosis	Explain the pathogenesis, diagnosis, complications and treatment of pulmonary tuberculosis.
14	CPM 2.6	Lung Abscess and Bronchiectasis	Discuss the clinical features, investigations and management of lung abscess and bronchiectasis.

15	CPM 2.7	Chest Wall Deformities and Occupational Lung Diseases	Identify common chest wall deformities and occupational lung diseases and explain their clinical implications.
16	CPM 2.8	Respiratory Failure	Explain the classification, causes, clinical features and principles of management of respiratory failure.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Unit III – Principles of Cardiothoracic Surgery (12 Hours)			
1	CTS 1.1	Introduction to Cardiothoracic Surgery	Explain the scope, indications and principles of cardiothoracic surgery.
2	CTS 1.2	Surgical Anatomy of Thorax, Heart and Great Vessels	Describe the surgical anatomy relevant to cardiothoracic procedures.
3	CTS 1.3	Surgical Incisions and Approaches	Identify common thoracic and cardiac surgical approaches and incisions.
4	CTS 1.4	Pre-operative Assessment	Perform physiotherapy-oriented preoperative evaluation and risk assessment.
5	CTS 1.5	Cardiopulmonary Bypass	Explain the principles, components and physiological effects of cardiopulmonary bypass.
6	CTS 1.6	Surgical Instruments, Sterility and Operating Room Principles	Describe basic operating room protocols and surgical instrumentation.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
7	CTS 2.1	Valvular Heart Surgery	Explain indications and principles of valve repair and replacement surgeries.
8	CTS 2.2	Coronary Artery Bypass Grafting (CABG)	Describe indications, surgical procedure and postoperative considerations of CABG.
9	CTS 2.3	Surgery for Congenital Heart Diseases	Explain commonly performed congenital cardiac surgical procedures.

10	CTS 2.4	Pacemakers and Implantable Cardiac Devices	Describe indications and physiotherapy considerations following device implantation.
11	CTS 2.5	Heart Transplantation	Explain indications, surgical principles and postoperative complications of heart transplantation.
12	CTS 2.6	Pericardial and Great Vessel Surgeries	Discuss common surgeries involving the pericardium and major vessels.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
13	CTS 3.1	Thoracotomy	Describe indications, types and postoperative complications of thoracotomy.
14	CTS 3.2	Lung Resection Procedures	Differentiate pneumonectomy, lobectomy and segmentectomy.
15	CTS 3.3	Pleural Surgeries	Explain pleurectomy, pleurodesis and decortication procedures.
16	CTS 3.4	Tracheostomy and Airway Procedures	Describe indications, care and complications of tracheostomy.
17	CTS 3.5	Mediastinal and Chest Wall Surgery	Explain common mediastinal and chest wall surgical procedures.
18	CTS 3.6	Lung Transplantation	Describe indications, surgical principles and rehabilitation considerations after lung transplantation.

Practical No.	Practical Topic	Practical Guidelines / Competencies
1	Cardiovascular Examination	Perform history taking, pulse examination, blood pressure measurement, JVP observation, peripheral circulation assessment and cardiovascular inspection, palpation and auscultation (demonstration).
2	Respiratory Examination	Perform respiratory history taking, inspection, palpation, percussion, auscultation, chest expansion measurement and breathing pattern assessment.

3	Interpretation of Cardiopulmonary Investigations	Interpret ECG (basic), Chest X-ray, Echocardiography, Pulmonary Function Test (PFT), ABG, Cardiac enzymes and laboratory reports.
4	Functional Capacity Assessment	Demonstrate assessment of dyspnea, exercise tolerance and functional capacity using Borg Scale, NYHA Classification, MRC Dyspnea Scale and 6-Minute Walk Test (observation/demo).
5	Assessment in Cardiac Disorders	Assess patients with cardiac failure, ischemic heart disease, hypertension, rheumatic heart disease and congenital heart disease using standardized examination procedures.
6	Assessment in Respiratory Disorders	Perform clinical assessment of patients with asthma, COPD, pneumonia, pulmonary tuberculosis, bronchiectasis and respiratory failure.
7	Pre-operative Assessment	Demonstrate pre-operative cardiopulmonary assessment including respiratory evaluation, functional status, risk assessment and patient education.
8	ICU Orientation	Identify ICU equipment including monitors, ventilators, infusion pumps, oxygen delivery systems and understand ICU safety protocols.
9	Airway Management Observation	Observe endotracheal tubes, tracheostomy tubes, suction apparatus, humidification devices and oxygen delivery systems.
10	Post-operative Monitoring	Observe postoperative monitoring including heart rate, blood pressure, respiratory rate, oxygen saturation, chest drains, lines and catheters.
11	Cardiothoracic Surgical Instruments	Identify commonly used cardiothoracic surgical instruments, surgical incisions and operating room protocols.
12	Case Presentation	Present complete cardiopulmonary case including history, examination findings, investigations, diagnosis and physiotherapy implications.

13	Documentation	Record cardiopulmonary assessment findings and prepare clinical documentation using standard formats.
14	Clinical Posting & Ward Observation	Observe medical and surgical management of cardiopulmonary patients in medical wards, ICU, CCU and operation theatre (where permitted).
15	Viva Voce	Demonstrate clinical reasoning, interpretation of investigations and application of cardiopulmonary assessment skills during viva and case discussions.

Reference Books

1. Cardiothoracic Surgery: Recent Advances and Techniques- by Daniel Willson
2. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine - By Douglas P. Zipes , Peter Libby
3. Textbook of Interventional Cardiology Hardcover – by Eric J. Topol MD and Paul S. Teirstein MD
4. Textbook of Pulmonary and Critical Care Medicine (vol 1&vol 2)by SK Jindal
5. Principles of Respiratory Medicine - by Farokh Erach, Zarir Farokh Udwadia, Anirudh Kohli Udwadia
6. Davidson's Principles and Practice of Medicine, International Edition
7. Murray & Nadel's Textbook of Respiratory Medicine – by Robert J. Mason MD
8. Bailey & Love's Short Practice of Surgery text book
9. Oxford Textbook of Fundamentals of Surgery- by William E. G. Thomas, Malcolm W. R. Reed, Michael G. Wya
10. Surgery by Nan.
11. Short Practice of Surgery by Rain & Ritelife.
12. Russell, R.C.G. Short practice In Surgery Arnold, London Gupta, R. L. Text

Sports Physiotherapy & Exercise Prescription-I

Sub-unit	Topics	Learning Outcomes
UNIT I – Introduction to Sports		
PTS 1.1	Introduction to Sports – Importance of sports in health promotion, types of sports (contact, non-contact, team and individual sports), socio-economic importance of sports, role of physiotherapist in sports	Explain the importance of sports in health promotion, classify different types of sports, and describe the role of the physiotherapist in sports practice.
PTS 1.2	Sports Injuries – Classification of sports injuries (acute and overuse injuries), soft tissue injuries, stages of tissue healing, principles of treatment during acute, subacute and chronic stages	Classify sports injuries, describe the healing process of soft tissues, and formulate stage-wise management strategies.

Sub-unit	Topics	Learning Outcomes
UNIT II – Injury Prevention & Physical Fitness		
PTS 1.3	Safe Participation and Injury Prevention – Causes and risk factors of sports injuries, levels of prevention, active and passive preventive measures, protective equipment	Identify risk factors for sports injuries and apply preventive strategies to ensure safe participation in sports and physical activity.
PTS 2.1	Physical Fitness – Components of physical fitness (strength, endurance, flexibility, power, aerobic & anaerobic capacity, agility, coordination, body composition)	Explain the components of physical fitness and their importance in athletic performance and health promotion.

Sub-unit	Topics	Learning Outcomes
UNIT III – Fitness Assessment & Wellness Promotion		
PTS 2.2	Physical Fitness Assessment – PAR-Q, fitness screening, physical fitness tests, Body Mass Index (BMI)	Perform standardized fitness assessments and interpret

		findings to evaluate physical fitness levels.
PTS 2.3	Health, Fitness and Wellness Promotion – Exercise methods for cardiopulmonary endurance (continuous, intermittent, fartlek), anaerobic training, strength, flexibility, agility and coordination training	Design evidence-based exercise programmes to improve health, fitness, endurance, strength, flexibility, agility and coordination.

Sub-unit	Topics	Learning Outcomes
UNIT IV – Health Promotion		
PTS 2.3	Health Education – Balanced nutrition, healthy lifestyle, relaxation techniques	Develop health promotion strategies integrating nutrition, lifestyle modification and relaxation for improved wellness.
PTS 2.4	Health, Fitness and Wellness for Special Populations – Childhood and adolescence, pregnancy, older adults, hypertension and diabetes	Plan age-appropriate and condition-specific fitness programmes for diverse populations.

Sub-unit	Topics	Learning Outcomes
UNIT V – Sports for Special Populations		
PTS 2.5	Special Ability in Sports – Paralympic sports, classification of athletes, specific problems	Explain the classification of para-athletes and identify the unique rehabilitation and training needs of athletes with disabilities.

Practical No.	Practical Topic	Practical Guidelines / Competencies
1	Introduction to Sports Physiotherapy	Identify different types of sports (contact, non-contact, team and individual sports), explain the role of the physiotherapist in sports, and understand sports-specific demands.

2	Sports Injury Assessment	Perform history taking and clinical examination of common sports injuries, identify mechanisms of injury, and classify acute and overuse injuries.
3	Soft Tissue Injury Assessment	Assess sprains, strains, contusions and other soft tissue injuries, and correlate findings with stages of tissue healing.
4	Physical Fitness Assessment	Measure components of physical fitness including flexibility, muscular strength, muscular endurance, agility, coordination, balance, power and body composition using standardized tests.
5	Fitness Screening	Demonstrate Physical Activity Readiness Questionnaire (PAR-Q), Body Mass Index (BMI), resting vital signs and basic pre-participation fitness screening.
6	Aerobic Fitness Testing	Perform assessment of aerobic capacity using field tests such as the Cooper Test, 6-Minute Walk Test, Step Test or Shuttle Walk Test (as applicable).
7	Flexibility Assessment	Demonstrate flexibility assessment using Sit-and-Reach Test, Goniometry and muscle length tests for major muscle groups.
8	Muscle Strength and Endurance Testing	Assess muscle strength using Manual Muscle Testing (MMT), hand-held dynamometry (if available) and muscular endurance tests.
9	Agility, Balance and Coordination Assessment	Perform agility tests (T-Test, Illinois Agility Test), balance tests (Stork Stand, Y-Balance Test) and coordination assessment.
10	Exercise Prescription	Develop basic exercise programmes for improving strength, endurance, flexibility and cardiovascular fitness using FITT principles.
11	Health Promotion and Wellness Counselling	Demonstrate counselling regarding healthy lifestyle, balanced nutrition, hydration, warm-up, cool-down and recovery strategies.
12	Exercise Prescription for Special Populations	Plan safe exercise programmes for children, older adults, pregnant women and individuals with hypertension and diabetes.

13	Paralympic Sports Awareness	Identify classifications of para-athletes, understand sport-specific modifications and discuss the role of physiotherapy in adaptive sports.
14	Case Presentation	Present a sports fitness or injury prevention case including assessment findings, fitness profile and exercise recommendations.
15	Documentation and Viva	Record assessment findings using standardized formats and demonstrate understanding through practical viva and case discussions.

Paper-6

Community Physiotherapy & Rehabilitation- I

Unit	Sub-unit	Topics	Learning Outcome
Unit I	CPTR 1.1	Introduction to Community-Based Rehabilitation (CBR): Concept, history, objectives, scope, need, institution-based vs community-based rehabilitation, models of CBR, extension services, mobile rehabilitation units and camp approach.	Explain the concept, objectives, models and scope of Community-Based Rehabilitation and distinguish it from institution-based rehabilitation.
	CPTR 1.2	National and Community Rehabilitation Services: Primary Rehabilitation Unit, Regional Training Centre, District Rehabilitation Centre, Primary Health Centre, Village Rehabilitation Worker, Anganwadi Worker and community health infrastructure.	Describe the structure of rehabilitation services in India and the role of different community rehabilitation workers.
	CPTR 1.3	Role of Physiotherapist in Community Rehabilitation: Disability screening, community assessment, exercise prescription, low-cost assistive devices, home modification, architectural barrier removal, disability prevention, ADL training and rehabilitation for neuro-musculoskeletal and cardiopulmonary disabilities.	Apply physiotherapy principles in community settings for disability prevention, functional independence and rehabilitation.

Unit	Sub-unit	Topics	Learning Outcome
Unit II	CPTR 2.1	Foundations of Rehabilitation: Introduction, history, concepts of rehabilitation, epidemiology of disability, impairment, disability process,	Explain the principles of rehabilitation and the

		rehabilitation models and rehabilitation team approach.	multidisciplinary approach in disability management.
	CPTR 2.2	Disability Concepts and Evaluation: ICF framework, impairment, disability, handicap, activity limitation, participation restriction, environmental and contextual factors, disability evaluation methods and Government of India guidelines.	Classify disability using standard frameworks and perform basic disability evaluation.
	CPTR 2.3	Disability Legislation and Rehabilitation Policies: Rights of Persons with Disabilities Act 2016, National Trust Act, role of family members, rehabilitation services and disability welfare programmes.	Describe major disability legislations and discuss their role in rehabilitation services.

Unit	Sub-unit	Topics	Learning Outcome
Unit III	CPTR 3.1	Functional Independence and Occupational Therapy: Introduction to Occupational Therapy, ADL assessment and training, functional independence, communication disorders and their rehabilitation implications.	Assess functional independence and explain the role of occupational therapy and communication in rehabilitation.
	CPTR 3.2	Psychosocial and Vocational Rehabilitation: Psychosocial aspects, vocational rehabilitation, community reintegration and counselling.	Discuss psychosocial and vocational rehabilitation strategies for individuals with disabilities.
	CPTR 3.3	Community Education and Preventive Rehabilitation: Community education programmes, preventive rehabilitation, health promotion and physiotherapy services in rural and urban communities.	Plan community education and preventive rehabilitation programmes for diverse populations.

Practical

Practical No.	Practical Topic	Learning Outcome
1	Community posting orientation and primary health care setup	Explain the organization of community health and rehabilitation services.

2	Screening for disability at community level	Identify individuals with disabilities using basic screening methods.
3	Functional disability assessment	Perform basic disability assessment using observation and simple assessment tools.
4	Community health survey	Conduct household surveys and identify common health problems.
5	Health education programme	Plan and deliver health education on posture, exercise, hygiene and lifestyle modification.
6	Assessment of Activities of Daily Living (ADL)	Assess functional independence using standardized methods.
7	Home environment assessment	Identify environmental barriers and recommend modifications for accessibility.
8	Community exercise programme	Demonstrate preventive and health promotion exercises for different age groups.
9	Low-cost assistive devices	Identify locally available assistive devices and recommend appropriate use.
10	Community awareness programme	Organize awareness activities on disability prevention and healthy living.
11	Visit to Primary Health Centre/Community Rehabilitation Centre	Understand functioning of rehabilitation services at primary care level.
12	Case presentation	Present community-based assessment findings and propose rehabilitation goals.

Recommended Text Books

1. Handbook of Rehabilitation – Sunder
2. Orthotics in Rehabilitation : Mckee and Morgan – F. A. Davis
3. Orthotics and prosthetic and assistive devices for physiotherapists by sinha, sharma and tripathy jaypee brothers

4. Park's Textbook of Preventive & Social Medicine - K.Park
5. Physical Rehabilitation – Assessment and Treatment – Sullivan & Schmitz F. A. Davis.
6. Occupational Therapy and Physical Dysfunction. Principles, Skills and Practices – Hand Splinting
- Tuner, Forster & Johnson – Churchill Living- stone
7. Piyush Gupta O.P.Ghai; T.B. of Preventive & social medicine 2nd edition
CBS publishers & distributors 2007.

Recommended Reference Books

1. Status of Disabled in India -2000-RCI publication
2. Legal Rights of disabled in India- Gautam Bannerjee
3. ICF –WHO Health Organisation 2001 publication
4. Training in the Community for the people with disability – Hallender Padmini
5. Mendes
6. Disabled Village Children—David
Werner Chorin C& M Desai, C Gonsalves,
Women

Semester- 8th

Paper 1

Neurology, and Neuro-surgery -II

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT I – Spinal Cord Disorders (12 Hours)			
1	1.1	Functional Anatomy of Spinal Cord	Explain spinal cord anatomy and ascending and descending tracts.
2	1.2	Spinal Cord Injury	Describe classification, clinical features and management of SCI.
3	1.3	Compressive Myelopathies	Explain IVD prolapse, epidural abscess and conus medullaris syndrome.
4	1.4	Inflammatory Myelopathies	Describe transverse myelitis, viral myelitis and progressive encephalomyelitis.
5	1.5	Developmental & Degenerative Disorders	Explain syringomyelia, spina bifida, hereditary spastic paraplegia and radiation myelopathy.

6	1.6	Bladder, Bowel Dysfunction & Sarcoidosis	Discuss neurological complications and management.
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Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT II – Brain Tumours, CNS Infections & Head Injury (12 Hours)			
7	2.1	Brain and Spinal Tumours	Classify CNS tumours and explain clinical presentation and management.
8	2.2	CNS Infections	Describe meningitis, encephalitis, poliomyelitis and post-polio syndrome.
9	2.3	Neurological Complications of Systemic Infections	Explain neurological manifestations of systemic infections.
10	2.4	Head Injury	Describe classification, diagnosis and complications of head injury.
11	2.5	Medical and Surgical Management of Head Injury	Explain principles of acute and surgical management.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT III – Neuromuscular Disorders (12 Hours)			
12	3.1	Motor Neuron Diseases	Describe ALS, SMA, bulbar palsy and neuromyotonia.
13	3.2	Multiple Sclerosis	Explain pathophysiology, diagnosis and management.
14	3.3	Neuromuscular Junction Disorders	Describe Myasthenia gravis, Lambert-Eaton syndrome and Botulism.
15	3.4	Muscle Diseases	Explain muscular dystrophy, myopathy and myotonic disorders.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome

UNIT IV – Peripheral Neurology (12 Hours)			
16	4.1	Polyneuropathies	Differentiate hereditary and acquired polyneuropathies including GBS and CIDP.
17	4.2	Peripheral Nerve Injury	Differentiate neuropraxia, axonotmesis and neurotmesis.
18	4.3	Upper Limb Peripheral Nerve Disorders	Explain clinical features and management of median, ulnar, radial and plexus lesions.
19	4.4	Lower Limb Peripheral Nerve Disorders	Describe sciatic, femoral, tibial, peroneal and obturator nerve lesions.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
UNIT V – Paediatric Neurology & Neurosurgery (12 Hours)			
20	5.1	Paediatric Neurological Disorders	Describe cerebral palsy, hydrocephalus, Arnold-Chiari malformation, Dandy-Walker syndrome, Down syndrome, autism and congenital CNS anomalies.
21	5.2	Introduction to Neurosurgery	Explain indications and principles of common neurosurgical procedures.
22	5.3	Cranial Neurosurgical Procedures	Describe craniotomy, cranioplasty, burr hole, VP shunt and stereotactic surgery.
23	5.4	Spinal Neurosurgical Procedures	Explain laminectomy, hemilaminectomy, rhizotomy and deep brain stimulation.
24	5.5	Advanced Neurosurgical Procedures	Describe microvascular decompression, endarterectomy, embolization, pituitary surgery, thalamotomy, pallidotomy, aneurysm clipping, aneurysm coiling and neural implants.
25	5.6	Post-operative Neurosurgical Care	Explain postoperative management, complications and rehabilitation following neurosurgical procedures.

Practical No.	Practical Topic	Practical Guidelines / Competencies
1	Spinal Cord Examination	Perform neurological examination in patients with spinal cord disorders including motor, sensory, reflex, autonomic and functional assessment.
2	Assessment of Spinal Cord Injury	Identify neurological level of injury, completeness of lesion (ASIA overview), bladder and bowel involvement, and functional status.
3	Examination of Compressive and Inflammatory Myelopathies	Assess patients with spinal cord compression, transverse myelitis and other myelopathies, and identify clinical features.
4	Assessment of Brain and Spinal Tumours	Perform clinical examination, identify neurological deficits and interpret common investigations related to CNS tumors.
5	Examination in CNS Infections	Assess patients with meningitis, encephalitis and other CNS infections, recognizing neurological signs and complications.
6	Head Injury Assessment	Demonstrate neurological assessment in head injury including Glasgow Coma Scale (GCS), pupil examination, cranial nerve screening and functional evaluation.
7	Assessment of Motor Neuron and Demyelinating Disorders	Examine patients with Motor Neuron Disease and Multiple Sclerosis, identifying upper and lower motor neuron signs and functional impairments.
8	Neuromuscular Junction and Muscle Disease Assessment	Perform assessment of Myasthenia Gravis, muscular dystrophy and myopathies including muscle strength, fatigue and functional performance.
9	Peripheral Nerve Examination	Assess peripheral nerve injuries including sensory testing, motor testing, reflexes and nerve-specific clinical examination of upper and lower limb nerves.
10	Pediatric Neurological Assessment	Observe and assess developmental milestones, primitive reflexes and neurological examination in common pediatric neurological disorders.

11	Interpretation of Neurological Investigations	Interpret CT, MRI, EMG, NCV, CSF findings and other investigations relevant to neurology and neurosurgery.
12	Neurosurgical Ward & ICU Observation	Observe pre-operative and post-operative neurosurgical care including monitoring, drains, shunts, ICP monitoring, positioning and precautions.
13	Neurosurgical Procedures Demonstration	Identify common neurosurgical procedures including craniotomy, laminectomy, VP shunt, burr hole, stereotactic surgery and deep brain stimulation (demonstration/OT observation).
14	Case Presentation	Present complete neurological/neurosurgical case including history, examination findings, investigations, diagnosis and physiotherapy implications.
15	Documentation & Viva	Maintain neurological examination records, prepare case reports and demonstrate clinical reasoning through practical viva and case discussions.

Recommended Text Books

4. Davidson's Principles and practices of medicine - Edward – Churchill Livingstone.
5. API- Text book of Medicine, 5th edition
6. Medicine and Neurology by Golewala.

Recommended Reference Books

4. Brain's Diseases of the Nervous System - Nalton – ELBS.
5. Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone. 3. Principles of Neurology - Victor – McGraw Hill International edition.
6. Neurological Rehabilitation - Darcy Umphred.

Paper 2

PT in Pediatrics conditions and psychosomatic disorders

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Pediatric Physiotherapy Assessment (12 Hours)			
1	1.1	Principles of Pediatric Physiotherapy	Explain the scope and principles of pediatric physiotherapy practice.
2	1.2	Growth, Development and Motor Milestones	Assess developmental milestones and identify deviations.
3	1.3	Developmental Screening Tools	Apply developmental screening and functional assessment tools.
4	1.4	Pediatric Physiotherapy Assessment	Perform neurological, musculoskeletal and functional assessment in children.
5	1.5	Goal Setting and Family-Centred Care	Develop individualized treatment goals with family participation.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Physiotherapy in Pediatric Neurological Disorders (12 Hours)			
6	2.1	Physiotherapy Management of Cerebral Palsy	Plan physiotherapy interventions for children with cerebral palsy.
7	2.2	Physiotherapy in Developmental Delay	Design intervention programmes for delayed motor development.
8	2.3	Physiotherapy in Spinal Dysraphism and Hydrocephalus	Apply rehabilitation principles in spinal dysraphism and hydrocephalus.
9	2.4	Physiotherapy in Genetic and Neuromuscular Disorders	Plan rehabilitation for children with neuromuscular disorders.
10	2.5	Early Intervention Programmes	Explain principles of early intervention and developmental stimulation.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome

Module III – Pediatric Rehabilitation (12 Hours)

11	3.1	Neurodevelopmental Treatment (NDT)	Apply NDT principles in pediatric rehabilitation.
12	3.2	Sensory Integration Approaches	Explain sensory integration techniques for functional improvement.
13	3.3	Positioning, Handling and Functional Training	Demonstrate therapeutic handling and positioning techniques.
14	3.4	Orthotic Prescription and Assistive Devices	Select appropriate orthoses and mobility aids.
15	3.5	Play Therapy and School-based Rehabilitation	Integrate play and school participation into rehabilitation programmes.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Psychosomatic Disorders (12 Hours)			
16	4.1	Introduction to Psychosomatic Disorders	Explain psychosomatic disorders and mind-body interactions.
17	4.2	Stress and Physical Health	Describe the influence of stress on physical function.
18	4.3	Pain, Fatigue and Functional Somatic Disorders	Explain physiotherapy approaches in functional disorders.
19	4.4	Relaxation and Behavioural Modification Techniques	Demonstrate relaxation and stress-management techniques.
20	4.5	Physiotherapy in Multidisciplinary Mental Health Care	Describe the role of physiotherapy within mental health teams.

Practical No.	Topic	Guidelines / Competencies
1	Growth, Development and Motor Milestones	Identify normal developmental milestones (0–5 years); Demonstrate motor progression; Assess

		developmental age; Perform anthropometric measurements
2	Developmental Screening Tools	Administer DDST; Interpret screening results; Use ASQ; Record and report findings
3	Pediatric Physiotherapy Assessment	Take pediatric history; Perform neurological & MSK exam; Assess tone; Test primitive & postural reflexes
4	Goal Setting and Family-Centred Care	Formulate SMART goals; Develop treatment plans; Involve family; Prepare home exercise programs
5	Cerebral Palsy Management	Demonstrate positioning & handling; Apply NDT principles; Train mobility & gait; Manage spasticity
6	Developmental Delay	Design stimulation activities; Facilitate milestones; Apply sensory-motor integration; Parent education
7	Spinal Dysraphism & Hydrocephalus	Positioning care; Wheelchair & transfer training; Pressure sore prevention; Use orthoses & assistive devices
8	Genetic & Neuromuscular Disorders	MRC strength testing; Energy conservation; Breathing exercises; Contracture prevention
9	Early Intervention Programmes	Design infant stimulation; Identify high-risk infants; Parent education; Sensory-motor play activities
10	Neurodevelopmental Treatment (NDT)	Reflex inhibiting patterns; Key point control handling; Facilitation of normal movement; Tone inhibition
11	Sensory Integration Approaches	Sensory stimulation (vestibular, tactile, proprioceptive); Balance training; Coordination activities; Use of therapy equipment
12	Positioning, Handling & Functional Training	Correct positioning; Safe handling & transfers; Functional task training; Deformity prevention
13	Orthotic Prescription & Assistive Devices	Identify orthoses; Check fitting; Gait training with devices; Caregiver education

14	Play Therapy & School-Based Rehab	Therapeutic play design; Fine motor development; School adaptation; Classroom modification
15	Psychosomatic Disorders	Identify symptoms; Psychological observation; Differentiate functional vs organic; Referral practice
16	Stress & Physical Health	Relaxation techniques; Monitor stress response; Stress management exercises; Coping education
17	Pain, Fatigue & Functional Somatic Disorders	Use pain scales; Assess fatigue; Graded activity; Pacing techniques
18	Relaxation & Behavioural Modification	PMR techniques; Breathing retraining; Positive reinforcement; Behaviour management
19	Multidisciplinary Mental Health Care	Rol

Paper 3

Physiotherapy in Neurological and Neurosurgical conditions II

Unit	Sub-unit	Topics	Learning Outcome
Unit I (12 Hours)	PTN 6.1	Physiotherapy Assessment and Management of Spinal Cord Injuries	Evaluate spinal cord injuries and formulate comprehensive rehabilitation plans.
	PTN 6.2	Physiotherapy Management of Non-traumatic Spinal Cord Disorders (Myelitis, Syringomyelia, Conus Medullaris Syndrome, Spina Bifida)	Design rehabilitation programmes for traumatic and non-traumatic spinal cord disorders.
	PTN 6.3	Bladder and Bowel Rehabilitation	Implement bladder and bowel rehabilitation strategies in neurological patients.
	PTN 6.4	Wheelchair Prescription, Seating and Pressure Relief	Prescribe wheelchairs and seating systems to

			improve functional independence.
	PTN 6.5	Functional Mobility, Transfers and Community Reintegration following SCI	Restore functional mobility and community participation after spinal cord injury.

Unit	Sub-unit	Topics	Learning Outcome
Unit II (12 Hours)	PTN 7.1	Physiotherapy Management of Brain Tumours and Head Injury	Plan rehabilitation programmes following brain tumours and traumatic brain injury.
	PTN 7.2	Physiotherapy Following Neurosurgical Procedures (Craniotomy, Burr Hole, VP Shunt, Cranioplasty)	Develop postoperative physiotherapy protocols following neurosurgical interventions.
	PTN 7.3	Physiotherapy Following Spinal Neurosurgery (Laminectomy, Hemilaminectomy, Discectomy)	Apply postoperative rehabilitation principles following spinal surgery.
	PTN 7.4	ICU Rehabilitation and Early Mobilization	Implement early rehabilitation strategies in critically ill neurological patients.
	PTN 7.5	Prevention and Management of Postoperative Complications	Prevent respiratory, musculoskeletal and neurological postoperative complications.

Unit	Sub-unit	Topics	Learning Outcome
Unit III (12 Hours)	PTN 8.1	Physiotherapy Management of Motor Neuron Diseases	Plan rehabilitation for ALS, SMA and related disorders.
	PTN 8.2	Physiotherapy Management of Multiple Sclerosis	Apply evidence-based physiotherapy

			interventions for multiple sclerosis.
	PTN 8.3	Physiotherapy Management of Neuromuscular Junction Disorders (Myasthenia Gravis, Lambert-Eaton Syndrome)	Develop fatigue management and functional rehabilitation programmes.
	PTN 8.4	Physiotherapy Management of Muscle Disorders (Muscular Dystrophy, Myopathy, Myotonic Dystrophy)	Design rehabilitation programmes to preserve function and prevent deformities.
	PTN 8.5	Respiratory Physiotherapy in Progressive Neurological Disorders	Apply respiratory physiotherapy techniques in neuromuscular diseases.

Unit	Sub-unit	Topics	Learning Outcome
Unit IV (12 Hours)	PTN 9.1	Physiotherapy Management of Peripheral Neuropathies (GBS, CIDP, Hereditary Neuropathies)	Plan rehabilitation for peripheral neuropathies.
	PTN 9.2	Physiotherapy Management of Peripheral Nerve Injuries	Design rehabilitation following peripheral nerve injuries and repair.
	PTN 9.3	Rehabilitation of Plexus Injuries (Brachial and Lumbosacral Plexus)	Restore upper and lower limb function following plexus injuries.
	PTN 9.4	Splinting, Orthotic Prescription and Electrical Stimulation in Peripheral Nerve Disorders	Select appropriate orthoses and electrotherapy interventions.
	PTN 9.5	Functional Hand Rehabilitation and Upper Limb Training	Improve upper limb function through task-specific rehabilitation.

Unit	Sub-unit	Topics	Learning Outcome
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Unit V (12 Hours)	PTN 10.1	Physiotherapy Assessment and Management of Pediatric Neurological Disorders	Plan rehabilitation for developmental and pediatric neurological conditions.
	PTN 10.2	Physiotherapy Management of Cerebral Palsy, Hydrocephalus and Developmental Disorders	Apply evidence-based physiotherapy interventions in pediatric neurorehabilitation.
	PTN 10.3	Rehabilitation following Spina Bifida and Neural Tube Defects	Develop rehabilitation programmes to maximize functional independence.
	PTN 10.4	Advanced Gait Training, Robotics and Technology-Assisted Neurorehabilitation	Utilize advanced rehabilitation technologies for neurological recovery.
	PTN 10.5	Community-Based Rehabilitation, Vocational Rehabilitation and Evidence-Based Neurophysiotherapy	Integrate community participation and evidence-based practice into long-term neurological rehabilitation.

Practical No.	Topic	Guidelines / Competencies
1	Physiotherapy Assessment and Management of Spinal Cord Injuries	Perform SCI assessment (AIS grading); Identify level of lesion; Plan acute and long-term rehabilitation; Prevent complications (pressure sores, contractures)
2	Non-traumatic Spinal Cord Disorders	Assess myelitis, syringomyelia, conus medullaris syndrome, spina bifida; Develop individualized rehab plan; Functional mobility training; Complication prevention
3	Bladder and Bowel Rehabilitation	Perform bladder training programs; Educate intermittent catheterization principles; Bowel management techniques; Patient and caregiver education
4	Wheelchair Prescription, Seating and Pressure Relief	Assess wheelchair needs; Prescription and fitting; Pressure mapping concepts; Pressure relief techniques and positioning

5	Functional Mobility, Transfers and Community Reintegration following SCI	Train bed mobility and transfers; Gait training with assistive devices; Community reintegration planning; ADL training
6	Brain Tumours and Head Injury	Assess neurological deficits; Post-operative rehabilitation; Balance and coordination training; Cognitive-motor rehabilitation
7	Neurosurgical Procedures Rehabilitation	Post-craniotomy rehabilitation; Post burr hole, VP shunt, cranioplasty care; Mobility progression; Neurological monitoring
8	Spinal Neurosurgery Rehabilitation	Post-laminectomy, hemilaminectomy, discectomy rehab; Pain management; Core stabilization; Safe mobility training
9	ICU Rehabilitation and Early Mobilization	Perform ICU positioning; Prevent complications of immobilization; Early mobilization protocols; Respiratory and functional training
10	Motor Neuron Diseases	Assess functional decline; Energy conservation techniques; Assistive device training; Palliative rehabilitation approach
11	Multiple Sclerosis	Assess fatigue and disability; Balance and gait training; Aerobic conditioning; Relapse management strategies
12	Neuromuscular Junction Disorders	Assess myasthenia gravis and Lambert-Eaton syndrome; Fatigue management; Breathing exercises; Activity pacing
13	Muscle Disorders	Assess muscular dystrophy and myopathies; Contracture prevention; Respiratory care; Mobility assistance training
14	Respiratory Physiotherapy in Progressive Neurological Disorders	Chest physiotherapy techniques; Breathing exercises; Airway clearance methods; Monitoring respiratory function
15	Peripheral Neuropathies	Assess GBS, CIDP, hereditary neuropathies; Sensory and motor

		evaluation; Strengthening and mobility training; Pain management
16	Peripheral Nerve Injuries	Assess nerve injury level; Sensory re-education; Muscle re-education; Functional recovery training
17	Brachial and Lumbosacral Plexus Injuries	Assess plexus involvement; Functional impairment analysis; Motor recovery training; Splinting and positioning
18	Splinting, Orthotic Prescription & Electrical Stimulation	Fabrication principles; Orthotic fitting; Electrical stimulation application; Functional recovery enhancement
19	Functional Hand Rehabilitation & Upper Limb Training	Fine motor skill training; Grip strengthening; Coordination exercises; Task-specific training
20	Pediatric Neurological Disorders Assessment & Management	Assess C

Recommended Text Books

8. Patricia A D. Cash's Text book for Physio Therapist in Neurological disorders. Jaypee bros;
9. Adler B. PNF in practice. Springer.
10. Hollis M. Practical Physical Therapy
11. O'Sullivan S. Physical Rehabilitation
12. Johnstone M. Therapy for stroke. Edinburgh: Churchill Livingstone;
13. Bromley I. Tetraplegia and Paraplegia: A guide for physiotherapists
14. Carr and shepherd neurological rehabilitation

Recommended Reference Books

4. Umphred D. Neurological rehabilitation. Saint Louis: Mosby/Elsevier;
5. Donaghy M. Brain's diseases of the nervous system. Oxford: Oxford University Press; 2009
6. Bobath B. Adult hemiplegia. Oxford (England): Heinemann Medical Books.
Patricia M D. Right in the middle. Springer-Verlag

Paper 4

PT in Cardiopulmonary diseases and surgery

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module I – Cardiopulmonary Physiotherapy Assessment (12 Hours)			
1	CPT 1.1	Principles of Cardiopulmonary Physiotherapy	Explain the scope and goals of cardiopulmonary physiotherapy.
2	CPT 1.2	Subjective and Objective Cardiopulmonary Assessment	Perform comprehensive cardiopulmonary physiotherapy assessment.
3	CPT 1.3	Assessment of Breathing Pattern and Chest Expansion	Evaluate breathing mechanics and thoracic mobility.
4	CPT 1.4	Respiratory Muscle Assessment and Dyspnoea Evaluation	Assess respiratory muscle performance using standardized measures.
5	CPT 1.5	Functional Capacity Assessment	Perform and interpret functional exercise tests (6MWT, ISWT, TUG, Sit-to-Stand).
6	CPT 1.6	Outcome Measures in Cardiopulmonary Rehabilitation	Select and interpret outcome measures for cardiopulmonary patients.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module II – Airway Clearance and Pulmonary Rehabilitation (12 Hours)			
7	CPT 2.1	Breathing Retraining Techniques	Demonstrate diaphragmatic, segmental and pursed-lip breathing techniques.
8	CPT 2.2	Airway Clearance Techniques	Perform postural drainage, percussion, vibration, huffing and coughing techniques safely.

9	CPT 2.3	Lung Expansion Therapy	Apply incentive spirometry, thoracic expansion exercises and inspiratory muscle training.
10	CPT 2.4	Pulmonary Rehabilitation Programme	Design individualized pulmonary rehabilitation programmes.
11	CPT 2.5	Oxygen Therapy and Aerosol Therapy	Explain physiotherapy precautions during oxygen and nebulizer therapy.
12	CPT 2.6	Non-invasive Ventilation and Mechanical Ventilation (Physiotherapy Aspects)	Plan physiotherapy interventions for ventilated patients.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module III – Cardiac Rehabilitation (12 Hours)			
13	CPT 3.1	Principles of Cardiac Rehabilitation	Explain phases and components of cardiac rehabilitation.
14	CPT 3.2	Exercise Prescription in Cardiac Patients	Prescribe aerobic, resistance and flexibility exercises safely.
15	CPT 3.3	Monitoring During Exercise	Monitor heart rate, blood pressure, ECG changes, SpO ₂ and perceived exertion during exercise.
16	CPT 3.4	Risk Stratification and Exercise Progression	Classify patients according to exercise risk and progress rehabilitation safely.
17	CPT 3.5	Lifestyle Modification and Patient Education	Educate patients regarding risk-factor modification and secondary prevention.
18	CPT 3.6	Home-based and Community Cardiac Rehabilitation	Plan community and home-based rehabilitation programmes.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module IV – Physiotherapy after Cardiothoracic Surgery (12 Hours)			
19	CPT 4.1	Physiotherapy Assessment in Cardiothoracic Surgery	Perform preoperative and postoperative physiotherapy assessment.
20	CPT 4.2	Physiotherapy after Cardiac Surgery	Plan rehabilitation following CABG, valve surgery and congenital heart surgery.
21	CPT 4.3	Physiotherapy after Thoracic Surgery	Design rehabilitation following thoracotomy, lung resection and pleural surgeries.
22	CPT 4.4	ICU Physiotherapy	Demonstrate chest physiotherapy and early mobilization in ICU patients.
23	CPT 4.5	Management of Postoperative Pulmonary Complications	Prevent and manage atelectasis, retained secretions and postoperative respiratory dysfunction.
24	CPT 4.6	Functional Recovery after Cardiothoracic Surgery	Develop discharge planning and functional rehabilitation programmes.

Lecture No.	Sub-unit	Lecture Topic	Learning Outcome
Module V – Advanced Cardiopulmonary Rehabilitation (12 Hours)			
25	CPT 5.1	Physiotherapy in Critical Care	Apply evidence-based physiotherapy in critically ill cardiopulmonary patients.
26	CPT 5.2	Early Mobilization in ICU	Demonstrate safe mobilization techniques in intensive care settings.

27	CPT 5.3	Energy Conservation and Breathing Economy	Teach energy conservation and pacing strategies for chronic cardiopulmonary conditions.
28	CPT 5.4	Functional Training and Activities of Daily Living	Integrate functional training into cardiopulmonary rehabilitation.
29	CPT 5.5	Patient Education and Self-management	Design education programmes promoting long-term self-management.
30	CPT 5.6	Evidence-based Cardiopulmonary Physiotherapy	Critically appraise current evidence and apply best practices in cardiopulmonary physiotherapy.

Practical No.	Topic	Guidelines / Competencies
1	Principles of Cardiopulmonary Physiotherapy	Understand basic principles; identify indications & contraindications; apply clinical reasoning in cardio-respiratory care
2	Subjective and Objective Cardiopulmonary Assessment	Take detailed respiratory and cardiac history; perform inspection, palpation, percussion, auscultation; record findings systematically
3	Breathing Pattern and Chest Expansion Assessment	Assess abnormal breathing patterns; measure chest expansion; identify restrictive/obstructive patterns
4	Respiratory Muscle Assessment and Dyspnoea Evaluation	Assess respiratory muscle strength; use dyspnoea scales (Borg, MRC); interpret functional limitation
5	Functional Capacity Assessment	Perform 6MWT/Shuttle tests; assess exercise tolerance; interpret cardiovascular response
6	Outcome Measures in Cardiopulmonary Rehabilitation	Use standardized scales (Borg, Barthel Index, CAT score); document progress; evaluate treatment effectiveness

7	Breathing Retraining Techniques	Demonstrate diaphragmatic breathing; pursed lip breathing; segmental breathing; relaxation breathing
8	Airway Clearance Techniques	Perform percussion, vibration, postural drainage; huffing and coughing techniques; suctioning principles (theoretical/practical demo)
9	Lung Expansion Therapy	Incentive spirometry; deep breathing exercises; sustained maximal inspiration techniques
10	Pulmonary Rehabilitation Programme	Design rehab program; exercise prescription; endurance and strength training; patient education
11	Oxygen Therapy and Aerosol Therapy	Identify oxygen delivery systems; calculate flow rates; nebulization techniques; safety precautions
12	Non-invasive Ventilation and Mechanical Ventilation (Physiotherapy Aspects)	Understand NIV modes; patient positioning; secretion management; monitoring ventilated patients
13	Principles of Cardiac Rehabilitation	Understand phases of cardiac rehab; risk factor modification; exercise principles in cardiac patients
14	Exercise Prescription in Cardiac Patients	Apply FITT principle; calculate target heart rate; prescribe safe exercise intensity
15	Monitoring During Exercise	Monitor HR, BP, SpO ₂ , ECG (theoretical); recognize warning signs; ensure patient safety
16	Risk Stratification and Exercise Progression	Classify low/moderate/high risk patients; design graded progression plan; ensure safety guidelines
17	Lifestyle Modification and Patient Education	Counsel on diet, smoking cessation, stress management; promote adherence to rehab
18	Home-based and Community Cardiac Rehabilitation	Design home exercise program; promote self-monitoring; community reintegration strategies

19	Physiotherapy Assessment in Cardiothoracic Surgery	Pre and post-operative assessment; respiratory function evaluation; mobility assessment
20	Physiotherapy after Cardiac Surgery	Post CABG care; breathing exercises; early mobilization; prevention of complications
21	Physiotherapy after Thoracic Surgery	Chest physiotherapy techniques; pain management strategies; lung expansion exercises
22	ICU Physiotherapy	Positioning; airway clearance; early mobilization; monitoring critically ill patients
23	Management of Postoperative Pulmonary Complications	Prevent atelectasis, pneumonia; lung expansion techniques; secretion clearance strategies
24	Functional Recovery after Cardiothoracic Surgery	ADL training; endurance building; safe return to activity; functional independence
25	Early Mobilization in ICU	Passive to active mobilization; bed mobility; sitting/standing progression; safety monitoring
26	Energy Conservation and Breathing Economy	Teach pacing techniques; work simplification; breathing coordination during activity
27	Functional Training and ADLs in Critical Care	Bed mobility; transfer training; early ADL participation; rehabilitation progression
28	Patient Education and Self-management	Educate on disease management; breathing techniques; adherence to therapy
29	Evidence-based Cardiopulmonary Physiotherapy	Apply research-based protocols; clinical decision making; outcome-based practice

Recommended Text Books

1. Cash's Textbook for Physiotherapists in Chest, Heart & Vascular diseases
2. Cash's text book in General Medicine & Surgical conditions for Physiotherapists

3. Chest Physical therapy & pulmonary rehabilitation -- Donna Frown Filter
4. Brompton's hospital guide
5. Physiotherapy in respiratory and cardiac problem - Pryor and Prasad
6. Physiotherapy in Cardio – Vascular rehabilitation –Webber
7. Chest physiotherapy in intensive care Colin Mackenzie
8. Mechanical ventilation – Ashfaq Hasan
9. Management of Mechanical ventilation –Pierce

Paper- 5

Sports Physiotherapy & Exercise Prescription-II

Sub-unit	Topics	Learning Outcomes
UNIT I – Management of Common Sports Injuries		
PTS 3.1	Management of Common Sports Injuries – Sprains, strains, contusions, lacerations, lateral ankle ligament injuries, rotator cuff injuries, knee ligament and meniscal injuries, tendinitis and bursitis, tennis & golfer's elbow, hamstring strain, quadriceps contusion, Achilles tendon rupture, De Quervain's tenosynovitis, trigger finger, mallet finger, plantar fasciitis and wrist sprains	Assess common sports injuries and formulate evidence-based physiotherapy management programmes for athletic populations.

Sub-unit	Topics	Learning Outcomes
UNIT II – Sports Physiotherapy Techniques and Sports rehabilitation		
PTS 3.2	Sports Physiotherapy Techniques – Sports taping, bandaging, safe transfer and stretcher techniques, cardiopulmonary resuscitation (CPR), causes and management of athlete collapse, recovery methods	Demonstrate sports physiotherapy techniques, emergency care, and immediate management of injured athletes during training and competition.
PTS 3.3	Sports Rehabilitation – Principles of rehabilitation, functional rehabilitation, sport-specific rehabilitation, return-to-play criteria, prevention of re-injury	Develop comprehensive rehabilitation programmes and determine safe return-to-play using functional and sport-specific criteria.

Sub-unit	Topics	Learning Outcomes
UNIT IV – Exercise Testing and Prescription		
PTS 3.4	Exercise Testing and Prescription – Pre-participation health screening, guidelines for exercise testing, general principles of exercise prescription, benefits and risks associated with physical activity	Perform pre-participation screening, conduct exercise testing, and prescribe individualized exercise programmes based on current evidence and guidelines.

Sub-unit	Topics	Learning Outcomes
UNIT V – Exercise Prescription for Special Populations		
PTS 3.5	Exercise Prescription for Special Populations – Exercise prescription for healthy populations with special considerations, childhood and adolescence, pregnancy, older adults, hypertension, diabetes, Paralympic sports (classification and special considerations), exercise prescription for chronic diseases and health conditions	Design individualized exercise programmes for healthy individuals, special populations, para-athletes, and individuals with chronic health conditions while considering safety and functional goals.

Practical No.	Topic	Guidelines / Competencies
1	Management of Common Sports Injuries	Identify and assess sprains, strains, contusions, lacerations; understand injury mechanisms; basic management principles (RICE/PRICE)
2	Lateral Ankle Ligament Injuries	Perform clinical tests (anterior drawer, talar tilt); assess severity grading; rehabilitation protocol planning
3	Rotator Cuff Injuries	Shoulder assessment; special tests (Hawkins, Neer); strengthening and rehab exercises

4	Knee Ligament & Meniscal Injuries	ACL/PCL/MCL/LCL assessment; meniscal tests (McMurray, Thessaly); rehab progression planning
5	Tendinitis & Bursitis	Identify inflammatory conditions; load management principles; therapeutic exercise prescription
6	Tennis & Golfer's Elbow	Elbow assessment; grip strength testing; eccentric strengthening and activity modification
7	Hamstring Strain	Flexibility testing; strength assessment; staged rehabilitation program
8	Quadriceps Contusion	Injury grading; swelling management; early mobilization strategies
9	Achilles Tendon Rupture	Clinical diagnosis (Thompson test); post-injury rehab; return-to-sport training
10	De Quervain's Tenosynovitis	Finkelstein test; splinting principles; pain management strategies
11	Trigger Finger & Mallet Finger	Identification and assessment; splinting techniques; functional recovery training
12	Plantar Fasciitis	Foot biomechanics assessment; stretching protocols; taping and orthotic support
13	Wrist Sprains	Ligament assessment; stability tests; rehabilitation and strengthening
14	Sports Physiotherapy Techniques	Sports taping methods; bandaging techniques; safe transfer and stretcher handling skills
15	CPR and Athlete Collapse Management	Perform basic life support (BLS/CPR); recognize athlete collapse causes; emergency management protocols
16	Sports Rehabilitation Principles	Understand stages of rehabilitation; f

Recommended Reference Books

1. Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.

2. Bartlett R. Introduction to sports biomechanics: Analysing human movement patterns. Routledge;2007 Oct25.
 3. William D. McArdle, Frank I. Katch, Victor L. KatchAstrand, P.-O. and Rodahl, K. Text book of Work Physiology Physiological basis of exercise
 4. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams andWilkins.
- Kulund: The Injured Athlete, Lippincott

Paper-6

Community Physiotherapy & Rehabilitation- II

Unit	Sub-unit	Topics	Learning Outcome
Unit I	CPTR 4.1	Orthotics: Principles, classification, indications, contraindications, assessment, fitting and prescription of upper limb, lower limb and spinal orthoses.	Explain the principles of orthotic prescription and select appropriate orthotic devices for different conditions.
	CPTR 4.2	Prosthetics and Assistive Technology: Principles, types, indications, contraindications, fitting, assessment, prosthetic prescription and assistive devices.	Describe prosthetic principles and recommend appropriate assistive devices for functional independence.

Unit	Sub-unit	Topics	Learning Outcome
Unit II	CPTR 5.1	Rehabilitation of Intellectual Disabilities: Identification, classification, etiology, prevention, management, vocational training and home education programmes.	Explain the assessment and rehabilitation principles for individuals with intellectual disabilities.
	CPTR 5.2	Speech, Hearing and Visual Disabilities: Communication mechanisms, speech and hearing disorders, visual disabilities, assessment and rehabilitation principles.	Describe rehabilitation strategies for communication, hearing and visual impairments.

Unit	Sub-unit	Topics	Learning Outcome
Unit III	CPTR 6.1	Vocational and Social Rehabilitation: Vocational assessment, vocational goals, employment opportunities, role of medical social worker and community reintegration.	Develop vocational rehabilitation plans and explain the importance of social rehabilitation.
	CPTR 6.2	Architectural Barriers and Accessibility: Environmental modifications, universal accessibility, barrier-free design and modifications for individuals with neurological, orthopaedic and rheumatological disabilities.	Identify architectural barriers and recommend accessibility modifications to improve functional independence.

Unit	Sub-unit	Topics	Learning Outcome
Unit IV	CPTR 7.1	Health Education: Concepts, principles, methods, models, planning and implementation of health education programmes in the community.	Design and implement health education programmes for disease prevention and health promotion.
	CPTR 7.2	Occupational Health and Ergonomics: Occupational hazards, ergonomic principles, workplace assessment, prevention of work-related musculoskeletal disorders, stress management and role of physiotherapist in industrial health.	Apply ergonomic principles to evaluate workplaces and develop preventive strategies for occupational health problems.
	CPTR 7.3	Role of National and International Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World Bank, USAID, SIDA, DANIDA, CARE, Red Cross and voluntary organizations in community rehabilitation.	Explain the contribution of national and international organizations in community health and rehabilitation services.

Practical guidelines

Practical No.	Practical Topic	Learning Outcome
1	Assessment for orthotic prescription	Perform assessment and identify indications for upper limb, lower limb and spinal orthoses.
2	Assessment for prosthetic rehabilitation	Assess amputees and understand principles of prosthetic fitting and training.
3	Assistive technology demonstration	Select appropriate assistive devices according to patient needs.
4	Architectural barrier assessment	Evaluate buildings for accessibility and recommend barrier-free modifications.
5	Vocational assessment	Assess functional capacity and vocational rehabilitation requirements.
6	Ergonomic assessment of workplace	Evaluate workplace ergonomics and suggest preventive modifications.
7	Communication disability assessment	Identify communication disorders and understand referral pathways.
8	Community rehabilitation programme planning	Develop individualized Community-Based Rehabilitation (CBR) plans.
9	Disability certification and documentation	Demonstrate documentation procedures and understand disability evaluation guidelines.
10	Community rehabilitation camp	Participate in disability screening and rehabilitation camps.
11	Interdisciplinary rehabilitation team discussion	Demonstrate effective teamwork with rehabilitation professionals.
12	Case presentation and rehabilitation planning	Formulate comprehensive rehabilitation programmes for community-dwelling individuals with disabilities.

Recommended Text Books

1. Handbook of Rehabilitation – Sunder
2. Orthotics in Rehabilitation : Mckee and Morgan – F. A. Davis

3. Orthotics and prosthetic and assistive devices for physiotherapists by sinha, sharma and tripathy jaypee brothers
4. Park's Textbook of Preventive & Social Medicine - K.Park
5. Physical Rehabilitation – Assessment and Treatment – Sullivan & Schmitz F. A. Davis.
6. Occupational Therapy and Physical Dysfunction. Principles, Skills and Practices – Hand Splinting
7. Tuner, Forster & Johnson – Churchill Living- stone
8. Piyush Gupta O.P.Ghai; T.B. of Preventive & social medicine 2nd edition CBS publishers & distributors 2007.

Recommended Reference Books

1. Status of Disabled in India -2000-RCI publication
2. Legal Rights of disabled in India- Gautam Bannerjee
3. ICF –WHO Health Organisation 2001 publication
4. Training in the Community for the people with disability – Hallender Padmini
5. Mendes
6. Disabled Village Children—David Werner
7. Chorin C& M Desai, C Gonsalves, Women & the Law, Vol. I & II Socio - legal Information Centre Mumbai
8. Hand Splinting – Wilson – W. B. Saunders.
9. Atlas of Limb Orthotics and Limb Prosthetics American Academy of Orthopedic Surgeons – Mosby.
10. Krusens Handbook of Physical Medicine and Rehabilitation.

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