BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY)
PUNE

CURRICULUM DOCUMENT
For
BACHELOR OF PHYSIOTHERAPY
(BPTh)

UNDERGRADUATE DEGREE PROGRAM

SCHOOL OF PHYSIOTHERAPY

BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY)

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FIRST BPTH SYLLABUS

TRANSCRIPT HOURS 1400

SR.NO	COURSE NAME	TOPIC	DIDACTIC HOURS
1	PROFESSIONAL PRACTICE & ETHICS	1. Introduction to the history of Physiotherapy	15
		2. Orientation to the curriculum, clinical areas and geographical location,	
		3. Concept of morality and ethics,	
		4. Concept of professionalism and Professional dress code	
2	ANATOMY	1. General Anatomy And Histology and Embryology	212
		2. Musculoskeletal System	
		3. NeuroAnatomy	
		4. Systemic Anatomy	
		5. Sensory Organs	
		6. Endocrine & Exocrine System	
		7. Radiology	
3	PHYSIOLOGY	1. General Physiology	200
		2. Nervous System	
		3. Excretory System	
		4. Endocrine System	
		5. Reproductive System	
		6. Special Senses	
		7. Respiratory System	
		8. Cardiovascular System	
		9. Gastro Intestinal System	
		10. Exercise Physiology	
		11. Physiology Of Ageing	

4	**BIOCHEMISTRY**	1. Carbohydrates	**54**
		2. Proteins	
		3. Enzymes	
		4. Vitamins	
		5. Minerals	
		6. Hormones	
		7. Nutrition	
		8. Clinical Biochemistry	
		9. Lipid	
		10. Muscle Contraction	
5	**FUNDAMENTALS OF KINESIOLOGY & KINESIOTHERAPY**	1. Mechanics & Basic Biomechanics	**250**
		2. Bio-Physics Related To Kinesiotherapy	
		3. Classification Of Movements	
		4. Basic Evaluation	
		5. Massage	
		6. Relaxation	
		7. Aerobic Exercise	
		8. Yoga	
6	**FUNDAMENTALS OF ELECTROTHERAPY**	1. Medical Electronics and Electricity	**200**
		2. Electrical Modalities	
		3. Superficial Thermal Agents	
7	**SEMINAR**	Seminar (applied to Anatomical structures and Physiological functions,Fundamentals of Kinesiology & Kinesiotherapy, Fundamentals of Electrotherapy)	**69**
8	**OBSERVATIONAL CLINICAL PRACTICE**	He /She shall observe the technical aspects of fixation of electrotherapeuticmodalities, basic movements and starting positions used, learn bedside manners and communication skills with the seniors, peers and patients.	**400**

PROFESSIONAL PRACTICE AND ETHICS

[Total= 15 Hours]

(COLLEGE EXAMINATION IN FINAL YEAR)

COURSE DESCRIPTION

This course(s) will be taught in continuum from first year to final year. An exam will be conducted only in final year. Professional and ethical practice curriculum content addresses the Knowledge, Skills and Behaviors required of the physiotherapist in a range of practice elation ships and roles.The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning decision-making strategies and professional communication.

SR.NO	TOPIC	HOURS	SUPERVISION HOURS
1	Introduction to the history of Physiotherapy	2	5
2	Orientation to the curriculum, clinical area sand Geographical location	3	
3	Concept of morality and ethics	3	
4	Concept of professionalism and Professional Dress code	2	

HUMAN ANATOMY

[Theory 150 Hours+ Practical/Laboratory 62 Hours = Total 212 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

The focus of this course is an in-depth study and analysis of the regional and systemic organization of the body. Emphasis is placed up on structure and function of human movement. A comprehensive study of human anatomy with emphasis on the nervous, musculoskeletal and circulatory systems is incorporated. Introduction to general anatomy lays the foundation of the course. Dissection and identification of structures in the cadaver supplemented with the study of charts, models, prosecuted material and radiographs are utilized to identify anatomical landmarksand configurations.

SR.NO.	TOPICS	THEORY HOURS	PRACTICAL HOURS
1	**GENERAL ANATOMY, HISTOLOGY AND EMBRYOLOGY**	**19**	**3**
A	**General Anatomy**	6	
	i. Fascia ii. Muscles iii. Bones iv. Joints v. Nerve vi. Vessels		
B	**General Histology**	7	3
	i. Epithelial ii. Connective tissue iii. Muscle iv. Bone and cartilage v. Nerve and vessels		
C	**Embryology**	6	

	i. Formation of Germ layers &Neural Tube ii. Formation of Bones, Muscles &Nervous Tissue iii. Formation of Limbs iv. Formation of Brain & Spinal cord v. Formation of Heart & Lungs		
D	**Abdomen and Pelvis**	**7**	**2**
	Muscles of Abdomen Muscles of Pelvic Floor and CavityVertebral Column & vertebrae		
E	**Head, Neck & Face**	**13**	**5**
	i. Skull and Mandible ii. Facial Muscle, blood supply, nerve supply Triangles of neck, Glands, Tongue & Palate Larynx & Pharynx iii. Muscles of mastication & T.M Joint Extra ocular muscles with never supply iv. Nose & Para nasal sinuses		
F	**Living Anatomy**	**4**	**2**
	i. Upper extremity ii. Lower extremity iii. Head , Neck &Face iv. Trunk		
2	**MUSCULOSKELETAL SYSTEM**	**64**	**34**
	a. Upper extremity	15	10
	b. Lower extremity	15	10
	c. Back & Thoracic Cage	10	5
	i. Back Muscles Ribs & Sternum ii. Intercostal Muscles iii. Diaphragm & Mechanism of respiration		
3	**NEUROANATOMY**	**32**	**12**
	a. General organization of Nervous System	5	
	b. Central Nervous System	15	8

	c. Cranial nerves	10	4
	d. Peripheral Nerves (should be done with Respective parts)	2	
	e. Autonomic Nervous System: i. Sympathetic ii. Parasympathetic		
4	**SYSTEMIC ANATOMY**	**17**	**11**
A	**Abdominal & Pelvic Organs**	**4**	**2**
	a. Alimentary system		
	b. Urinary System		
	c. Genital system		2
	i. Male organs ii. Female organs		
B	**Cardiovascular & Respiratory Anatomy**	**9**	**3**
	a. Thoracic wall		
	b. Mediastinum		
	c. Heart and major blood vessels		2
	d. Lungs		1
5	**SENSORY ORGANS**	**4**	**2**
	a. Ear		
	b. Eye		
	c. Skin		
6	**ENDOCRINE & EXOCRINE SYSTEM**	**4**	
7	**RADIOLOGY**	**10**	

RECOMMEMDED TEXTBOOKS

1. B. D. Chaurasia, Volume- I, II , III & IV ; Human Anatomy; CBS Publishers and Distributers
2. Inderbir Singh; Neuroanatomy; Jaypee Brothers Medical Publishers
3. Kadasne, Human Anatomy; Volume- I, II & III; Jaypee Brothers Medical Publishers
4. B D Chaurasia; General Anatomy; CBS Publishers and Distributers
5. Sampath Madhyastha: Manipal Manul of Anatomy, CBS Publishers.

RECOMMEMDED REFERENCE BOOKS

1. Richard Drake, A. Wayne Vogl, Adam Mitchell; Gray's Anatomy; Elsevier
2. Quining Wasb; Extremities; Lippincott Williams and Wilkins
3. Mariano De Fiore; Atlas of Histology; Lea & Febiger
4. Smoutand McDowell; Anatomy & Physiology; Edward Arnold
5. Katherine Wells; Kinesiology; Saunders (W.B.) Co Ltd
6. Splittgerber; Snell's Neuroanatomy; Wolters Kluwer
7. Textbook of Clinical Neuroanatomy; VisHoursam Singh; Elsevier India
8. G. J. Romanes;Cunnigham's- Practical Anatomy; Volume I II and III; Oxford University Press

INTERNAL ASSESSMENT

Two exams –Terminal and prelims of 80 marks each (Theory & Practical) Total=160 marks

I.A. to be calculated out of 20 marks (Theory & Practical)

Internal assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus.		**MARKS** **100**
SECTION A	**Q1 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 Marks]** **(**should be based on Musculoskeletal anatomy) **Q2 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 Marks]** Should be based on: Digestive/ Uro-genital /Reproductive system / Special senses- Eye / Ear / Skin / Circulatory system / General Anatomy/General Histology	**40**
SECTION B	**Q3 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 Marks]** (Should be based on Neuro –Anatomy- including cranial nerves with emphasis to III to XII nerves) **Q4 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 Marks]** (Should be based on: Thorax / Soft parts Upper Limb / Soft part Lower Limb/ Thorax/Spine/Neck/ Abdominal /Pelvic Muscle)	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL **80 MARKS+ I.A.- 20 MARKS**		**MARKS** **100**
SPOTS	**Based on:** Musculoskeletal **[7x3 = 21 marks]** Systemic **[5x3 = 15 mark]** Neuroanatomy **[3x3 = 09 marks]**	**45**
RADIOLOGY		**05**
LIVING ANATOMY		**05**
VIVA	Hard parts Soft parts	**20**
JOURNAL	Year work on practicals performed	**05**
TOTAL MARKS		**80**

HUMAN PHYSIOLOGY

[Theory-150 Hours + Practical /Laboratory-50 Hours= Total 200 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

The course is designed to study the function of the human body at the molecular, cellular, tissue and systems levels. The major underlying themes are; the mechanisms for promoting homeostasis, cellular processes of the metabolism, membrane function and cellular signaling; the mechanisms that match supply of nutrients to tissue demands at different activity levels; the mechanisms that matchthe rate of excretion of waste products to their rate of production; the mechanisms that defend the body against injury and promote healing.

These topics address the consideration of nervous and endocrine regulation of the cardio vascular, hematopoietic, pulmonary, renal, gastro-intestinal and musculoskeletal systems including the control of cellular metabolism. The course stresses on the integrative nature of physiological responses in normal function and disease.

This course will serve as a pre-requisite/foundation for the further courses i.e. Exercise physiology or Pathology.

SR.NO.	TOPICS	THEORY HOURS
	GENERAL PHYSIOLOGY	
1	**CELL**	**8**
	a. Structure of cell membrane Transport a cross cell membrane R.M.P& action potential b. Homeostasis	
2	**BLOOD**	**8**
	a. Composition and functions of blood (WBC, RBC, Platelets) Blood group systems b. Immunity c. Hemostasis	
3	**NERVE -MUSCLE PHYSIOLOGY**	**14**
	a. Nerve:	6

	i. Structure, classification & Properties ii. EMG iii. Propagation of nerve impulse iv. Nerve injuries–degeneration, regeneration and reaction of degeneration	1 1 1 3
	b. Muscle:	**8**
	i. Structure properties classification-smooth, skeletal, cardiac, excitation/contraction coupling ii. Factors affecting development of muscle tension, fatigue, load. iii. Neuro -muscular transmission; applied physiology: Myasthenia gravis, Lambert Eaton Syndrome.	3 3 2
4	**NERVOUS SYSTEM**	**30**
	a. Introduction of nervous system, classification – C.N.S., P.N.S.& A.N.S.	4
	b. Synapse-structure, properties & transmission;	1
	c. Reflexes-classification & properties;	3
	d. Receptor physiology: classification, properties.	3
	e. Physiology of Touch, Pain, Temperature & Proprioception	2
	f. Sensory and motor tracts: effect of transaction (complete andincomplete) at various levels	4
	g. Physiology of Muscle Tone (muscle spindle); Stretch reflex	2
	h. Connection & function of Basal ganglia, Thalamus , Hypothalamus ,Sensory and Motor cortex, Cerebellum, Limbicsystem ,Vestibular Apparatus	8
	i. Autonomic nervous system: Structure and functions of the sympathetic and the parasympathetic nervous system.	1
	j. Learning, memory & conditioned reflex	1
	k. Physiology of Voluntary movement	1
5	**EXCRETORY SYSTEM**	**10**
	a. Kidneys- structure &function;	1

	b. Urine formation; (to exclude concentration and dilution)	2
	c. Juxta glomerular apparatus	1
	d. Fluid and electrolyte balance–Na, K, H2O	1
	e. Neural control of Micturition	1
	f. Applied physiology: Types of bladder	2
	g. Temperature Regulation:	2
6	**ENDOCRINE SYSTEM**	**10**
	a. Secretion-regulation & function of Pituitary, Thyroid, Adrenal, Parathyroid, Pancreas	9
	b. Applied physiology (abnormalities) of the above mentioned Glands	1
7	**REPRODUCTIVE SYSTEM**	**8**
	a. Physiology of ovary and testis	
	b. Physiology of menstrual cycle and spermatogenesis	
	c. Functions of progesterone, estrogen and testosterone	
	d. Puberty & menopause	
	e. Physiological changes during pregnancy	
8	**SPECIAL SENSES**	**9**
	a. Structure and function of the eye	
	b. Applied physiology: errors of refraction, accommodation, reflexes– dark and light adaptation, photosensitivity.	
	c. Structure and function of the ear	
	d. Applied physiology –types of deafness	
9	**RESPIRATORY SYSTEM**	**14**
	a. Introduction, structure and function of the RS	
	b. Mechanics of respiration;	
	c. Pulmonary Volumes & capacities;	
	d. Anatomical & Physiological Dead space- ventilation/ perfusion ratio, alveolar ventilation	
	e. Transport of respiratory gases	
	f. Nervous & Chemical control of respiration	
	g. Pulmonary function tests- Direct & indirect method of	

	Measurement	
	h. Physiological changes with altitude & acclimatization	
10	**CARDIOVASCULAR SYSTEM**	**19**
	a. Structure & properties of cardiac muscle	
	b. Cardiac impulse- initiation and conduction	
	c. Cardiac cycle	
	d. Heart rate	
	e. Cardiac output regulation& function affecting Peripheral Resistance, venous return.	
	f. Blood pressure, definition , regulation	
	g. Regional circulation-coronary-muscular, cerebral, pulmonary.	
	h. Normal ECG.	
11	**GASTRO INTESTINAL SYSTEM**	**6**
	a. Absorption and digestion in brief	
	b. Liver function	
12	**EXERCISE PHYSIOLOGY**	**12**
	a. Basal Metabolic Rate and Respiratory Quotient	
	b. Energy metabolism	
	c. Fatigue	
	d. Oxygen debt	
	e. Acute cardio vascular changes during exercise, difference between mild, moderate and severe exercise, concept of Endurance	
	f. Acute respiratory changes during exercise	
	g. Concept of training/conditioning, effects of chronic exercise/ effect of training on the cardiovascular & respiratory system	
	h. Body temperature regulation during exercise	
	i. Hormonal and metabolic effects during exercise	
	j. Effects of exercise on muscle strength, power, endurance	
	k. Physical fitness and its components	

13	**PHYSIOLOGY OF AGEING (With respect to all systems)**	**2**

SR. NO.	PRACTICALS	HOURS
1	Haematology – (demonstration only)	6
2	GRAPHS:	5
	a. Skeletal muscle and its properties	
	b. Cardiac muscle-properties-effect of Ach & Adrenaline	
3	Examination of pulse	2
4	Blood pressure- effects of change in posture & exercise	4
5	ECG	2
6	Physical fitness	6
	a. Breath holding	
	b. Mercury column test;	
	c. Cardiac efficiency test- Harvard step test- Master step test	
7	Spirometry	2
	Lung volumes and capacities	
8	Perimetry	1
9	Clinical examination: History taking and general examination / Respiratory system / cardio vascular system /Higher functions / Cranial nerves /Reflexes / Motor & Sensory system	20
10	Test of Deafness	1
11	Visual Acuity & Visual Reflexes	1

RECOMMENDED TEXTBOOKS

1. Chatterjee cc; Text book of Physiology; CBS Publishers and Distributers
2. Sujit Kumar Chaudhuri; Concise Medical Physiology; NCBA Publications

RECOMMENDED REFERENCE BOOKS

1. Ganong; Review of Medical Physiology; McGraw-Hill Education / Medical
2. Keele A. Cyril; Samson & Wright's Applied Physiology; OUP India

3. Bruce M. Koeppen; Bern and Levy Textbook of Medical Physiology; Elsevier
4. Textbook on Medical Physiology–Guyton; Elsevier
5. K Sambulingam, Essentials of Medical Physiology, Jaypee Brothers, 7th Edition

INTERNAL ASSESSMENT

Two exams–Terminal and prelims of 80 marks each (Theory & Practical) = Total =160 marks

I. A. to be calculated out of 20 marks (Theory & Practical)

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus.		**MARKS** **100**
SECTION A	**Q1 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 Marks]** **(**should be based on Musculoskeletal and CVRS) **Q2 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 Marks]** (Should be based on: Cardio-vascular system / Respiratory system / Exercise Physiology/Special Senses (Eye/Ear/Skin)/ Reproductive system/ GIT/ Excretory.)	**40**
SECTION B	**Q3 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 Marks]** (Should be based on CNS) **Q4 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 Marks]** **(**Should be based on: Blood/ Electrolyte balance / Endocrine/ Generalphysiology/Nerve Muscle Physiology/ Exercise Physiology)	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL 80 MARKS+I.A.– 20 MARKS		MARKS 100
SPOTS	Based on: Topic 1,2,5,7,8,10,11 **[10 X 2 Marks]**	**20**
VIVA	Based on theory	**20**
DEMONSTRATION	On Clinical Physiology C.V.S. **[10 Marks]** R.S. **[10 Marks]** C.N.S. Cranial Nerves and Special Senses **[15 Marks]**	**35**
JOURNAL	Year work on practicals performed	**05**
TOTAL MARKS		**80**

BIOCHEMISTRY

[Theory 50 Hours + Demonstrations 4 Hours =Total 54 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course provides the knowledge and skills in fundamental organic chemistry and introductory biochemistry that are essential for further studies It covers basic biochemical, cellular, biological and microbiological processes, basic chemical reactions in the prokaryotic and eukaryotic cells, the structure of biological molecules, introduction other nutrients i.e. Carbohydrates, fats, enzymes, nucleic acids and amino acids.

SR.NO.	TOPICS	THEORY HOURS
1	**CARBOHYDRATES**	**9**
	a. Chemistry, Definition, Classification with Examples, Functions	
	b. Digestion and Absorption, Glycogenesis, Gluconeogenesis, Glycogenolysis and HMP pathway, Glycolysis, Electron transport chain for ATP synthesis, TCA cycle. Hormonal regulation of blood	
	c. Glucose, Glycogen storage disorders, Diabetes mellitus, Glycosuria, changes in Carbohydrate, Protein & Lipid metabolism.	
	d. All the metabolisms should be taught based on the following points such as starting and ending products, tissues of occurrence and the conditions when the pathway is activated, deactivated and significance of the pathway.	
2	**PROTEINS**	**6**
	a. Definition, Importance, Functional Classification, Digestion & Absorption, decarboxylation, deamination, transamination, transmethylation, Urea cycle, clinical significance of serum urea, function of glycine, Phenylalanine, trytophan, methioninetyrosine.	
	b. There should be an emphasis on understanding the structure of protein, the essential and non- essential amino acids.	
3.	**ENZYMES**	**4**

	a. Definition, Modern Classification, Factors affecting enzymes Action, b. diagnostic & therapeutics uses & enzymes, Isoenzymes,	
	c. Competitive & Noncompetitive inhibition.	
4.	**VITAMINS**	**4**
	a. Definition, Classification, Fat- & water-soluble vitamins, functions, deficiency manifestations, sources & RDA (Vit. C,B12, Folic acid, Thiamin)	
	b. Rest all vitamins	
5.	**MINERALS**	**5**
	Ca, P, Fe, I, Zinc, Selenium, Fluorine, Magnesium include Na and K. Function sources, Deficiency manifestations	
6	**HORMONES**	**5**
	Definition with the mechanism of action, classification. Thyroid Hormone- Synthesis, Biochemical functions, Assessment of abnormality with thyroid function test	
7	**NUTRITION**	**3**
	Composition of food, balanced diet, Kwashiorkor, Marasmus, Nitrogen balance, major Dietary constituent & their importance. Include energy requirements, factors affecting B.M.R., S.D.A. (Specific Dynamic Action) and R.Q. (Respiratory Quotient)	
8	**CLINICAL BIOCHEMISTRY**	**6+4(demo)**
	a. Liver Function Test, Renal Function Test, Lipid profile in serum	
	b. Starvation metabolism, Haemoglobin chemistry and metabolism	
	c. Demonstrations: Demonstration of estimation of various biomolecules and their interpretation Interpret reports of variousconditions (including Diabetic profile, Cardiac profile, Uric acid and Gout)	
9	**LIPID**	**4**

	Definition, classification with examples biomedical importance, Phospholipids & lipoproteins functions. Digestion & absorption of lipid,β oxidation of fatty acid with Energetics, Ketone bodies and their metabolism, Prostaglandins and essential fatty acids , Cholesterol, importance of Cholesterol, obesity	
10	**MUSCLE CONTRACTION**	**4**
	Mechanism & Biochemical events Connective Tissue- Biochemistry of connective tissue Collagen Glycoprotein proteoglycans	

RECOMMENDED TEXTBOOKS

1. U Satyanarayana; Biochemistry; Elsevier India
2. Vasudevan DM; Textbook of Biochemistry for Medical students; Jaypee Brothers MedicalPublishers
3. Naik Pankaja; Essentials Of Biochemistry; Jaypee Brothers Medical Publishers

RECOMMENDED REFERENCE BOOK

1. Robert K. Murray; Harpers Biochemistry (24th ed); Appleton & Lange

INTERNAL ASSESEMENT

Two exams –Terminal and prelims of 40 marks each Total = 80 marks

I.A.to be calculated out of 10 marks (Theory only)

Internal assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATION

THEORY **40 MARKS + I.A. – 10 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus. [There shall be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q1 Answer any FOUR out of FIVE** **[4 x 5 Marks = 20]**	**20**
SECTION B	**Q2 Answer any FOUR out of FIVE** **[4 x 5 Marks = 20]**	**20**
TOTAL MARKS		**40**

FUNDAMENTALS OF KINESIOLOGY & KINESIOTHERAPY

[Didactic 100 Hours +Practical / Laboratory 150 Hours = Total 250 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course covers the definition of various terms used in mechanics, biomechanics kinesiology as well as its importance in physical therapy. It applies the mechanical principles to simple equipment'sof therapeutic gymnasium and familiarizes the candidate to its use. It covers the types of human motions as well as planes and relative axes of motion. It also explains the inter-relationship among kinematic variables and utilizes this knowledge to describe and analyze motion. It covers the classification of the joints and muscles along their distinguishing characteristics and skill of measurement of its ranges in various planes and axes. This course additionally covers therapeutic principles and skills of application of massage, yoga, aerobic exercise and use of suspension therapy. It also enhances the skill of evaluation of vital parameters & sensory system.

SR.NO	TOPICS	THEORY HOURS	PRACTICAL HOURS
1	**MECHANICS & BASIC BIOMECHANICS**	**25**	
	a. Mechanics & Application to human body i. Explain in Detail: Mechanics (Statics & Dynamics), Biomechanics, Kinetics, Kinematics (Osteo kinematics, Arthrokinematics, Open Chain & Closed Chain kinematics) ii. Axes /planes, iii. Laws of inertia &motion, iv. Gravity, C.O.G, L.O.G. and B.O.S. v. Equilibrium–Types and affecting factors vi. Mechanics of Forces Work, Energy, Speed, Power, Friction, Momentum, Parallelogram of Forces. vii. Torque	**20**	

	viii. Pendulum ix. Mechanical and Anatomical pulleys x. Levers xi. Fluid mechanics related to Hydrotherapy (physics, statics & dynamics)		
	b. Muscle Mechanics i. Types of Muscles-Anatomical & Physiological ii. Types of muscle work / Contraction iii. Muscle Action: Roles as Agonist, Antagonist, iv. Fixators, Synergist v. Active & Passive insufficiency vi. Range of muscle work, Angle of pull – with importance to efficiency of muscle work and stability of joint	**5**	
2	**BIO-PHYSICS RELATED TO KINESIOTHERAPY**	**20**	**37**
	a. Starting Positions & Derived Positions i. Application of stability ii. BOS, Gravity and muscle work in relation to various positions iii. Application of Position & uses	10	5
	b. Therapeutic Gymnasium i. Stability training equipment's: ii. Swiss Ball, wobble board, Bosu ball iii. Mobility training equipment's: iv. Walking aids, pulleys, shoulder wheel, finger ladder,ankle mobilize, knee ratchets, foam roller, roller skates v. Strength training equipment's: vi. Weights, resistance bands and wands, medicine vii. ball,springs, ankle mobilize, dumbells viii. Effects, uses and Applied mechanics of all	5	17

	above accessories		
	c. Suspension Therapy i. Principles ii. Suspension Apparatus iii. Types of Suspensioniv. Effects and uses iv. Techniques for individual joints	5	15
3	**CLASSIFICATION OF MOVEMENTS**	**10**	**15**
	i. Definition and classification ii. Principles of movements iii. Effects, uses and Techniques (active: assisted, iv. free, assisted- resisted, resisted & passive)		
4	**BASIC EVALUATION**	**15**	**35**
	a. Assessment of Vital Parameters i. Temperature ii. Blood Pressure iii. Heart Rate/ Pulse rate iv. Respiratory Ratev. Chest expansion	5	5
	b. Assessment of Sensations and Reflex testing	5	5
	c. Goniometry i Definition and Types of Goniometers ii. Principles iii. Techniques for individual joints with biomechanical principles iv. Uses	5	25
5	**MASSAGE**	**5**	**8**
	i. Definition ii. Classification iii. Principles iv. Effects & uses v. Indications and contra indications vi. Techniques- Upper limb, Lower Limb, Neck, Back,Abdomen, Face & Scalp		
6	**RELAXATION**	**5**	**10**

	a. Principles, b. Techniques along with their effects & uses i. General-Jacobson's, Shavasana & Reciprocal (LauraMitchell) ii. Local -Heat, Massage ,Gentle / Rhythmic passive movements		
7	**AEROBIC CONDITIONING AND BASIC PRINCIPLES OF GENERALFITNESS** (as applied to self and group)	**5**	**5**
	Physiology of aerobic and anaerobic exercise. Components of fitness (definition of terms only) Warm up & Cool down exercises and its effects. Group & Recreational activities		
8	**YOGA**	**15**	**40**
	a. Definition b. Principles of Yoga c. Yogasana- Technique, Benefits, Indications, Contraindications & cautions for each Asanas	**3**	
	A. Asanas in supine i Pawanamuktasana ii. Ardha Halasana iii. Halasana iv. Setubandhasana v. Naukasana vi. Matsyasana vii. Shavasana viii. Sarvangasana	**3**	
	B. Asanas in prone i. Bhujangasana ii. Ardha-Shalabhasana iii. Dhanurasana iv. Makarasana	**3**	

	C. Asanas in sitting i. Padmasana, Siddhasana, Sukhasana ii. Yogamudrasana iii. Virasana iv. Vajrasana v. Gomukhasana vi. Pashchimottanasana	**3**	
	D. Asanas in standing i. Padhastasana, ii. Padangusthasana, iii. Uttanasana iv. Utkatasana v. Tadasana vi. Trikonasana **E. Pranayama** i. Anulom-vilom ii. Kapalbhati	**3**	

RECOMMENDED TEXTBOOKS

1. M. Dena Gardiner; Principles of Exercise Therapy; CBS Publishers and Distributers
2. M. Hollis; Massage for Therapists: A Guide to Soft Tissue therapy; Wiley-Blackwell
3. Margaret Hollis, Phyllis Fletcher Cook; Practical Exercise therapy; Wiley
4. Hydrotherapy– Kisner ,Hollis
5. Cynthia C Norkin, D Joyce White- Measurement of Joint Motion: A Guide to Goniometry; Jaypee Brothers Medical Publishers
6. Cynthia C. Norkin, Pamela Levangie; Joint Structure and Function; F.A. Davis Company
7. S. Datta Ray; Yogic Exercises-Physiologic and Psychic processes; Jaypee Brothers Medical Publishers
8. Lynn Allen Colby Carolyn Kisner John Borstad; Therapeutic Exercise:Foundations and Techniques; F A Davis C

RECOMMENDED REFERENCE BOOKS

1. Sidney Licht; Massage, Manipulation &Traction; Krieger Pub Co

2. Sydney Litch; Therapeutic Exercise; Weaverly Press
3. Omprakash Tiwari; Asanas Why & How; Zen Publications
4. Peggy A Houghlum Dolores B. Beroti; Brunnstrom's Clinical Kinesiology

INTERNAL ASSESSMENT

Two exams–Terminal and preliminary examination (Theory &Practical) of 80 marks each

Total =160 marks

Internal Assessment to be calculated out of 20 marks.

Internal Assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics inthe syllabus.		**MARKS** **100**
SECTION A	**Q1 Answer any TWO out of THREE (LAQ)** **[2x10 =20 marks]** **(**Basic, mechanics & Biomechanics, Starting & Derived position, Suspension) **Q2 Answer any FOUR out of FIVE (SAQ)** (All topics) [**4 x 5= 20 marks]**	**40**
SECTION B	**Q3 Answer any TWO out of THREE (LAQ)** **[2x10 =20 marks]** (Movements , Relaxation, Goniometric, Yoga) **Q4 Answer any FOUR out of FIVE (SAQ)** (All topics) **[4 x 5= 20 marks]**	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL **80 MARKS+ I.A.– 20 MARKS**		**MARKS** **100**
LONG CASE	Based on Suspension Therapy/Goniometry/Movements (passive) Cognitive– Biophysics, Biomechanical principles, indications, contraindication Documentation of findings etc. **[20 Marks]** Psychomotor + Affective skills - **[10 Marks]**	**30**
SHORT CASE	**Two Short case based on: [2x20=40marks]** Basic evaluation (**any one**): Sensation / Reflex testing /B.P./ & Pulse Rate/ Chest Expansion /.Respiratory Rate/Aerobic fitness for self-Skill performance Relaxation / Yoga posture / Starting / Derivedposition & Massage (**any one**) Cognitive **[05 Marks]** Psychomotor **[15 Marks]**	**40**
COMMUNICATION SKILL		**5**
JOURNAL	Year work on practicals performed.	**5**
TOTAL MARKS		**80**

FUNDAMENTALS OF ELECTROTHERAPY

[Didactic 95 Hours+ Practical 105 Hours =Total 200 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course will cover the basic principles of Physics that are applicable in medical equipment's used in Physiotherapy. It will also help to understand the fundamentals of currents, sound waves, Heat & its effects, electro medical radiations and their effects as well as their application in physical therapy. It covers the skill of application of superficial thermal agent sand Cryotherapy.

SR. NO.	TOPIC	THEORY HOURS	PRACTICAL HOURS
1	**MEDICAL ELECTRONICS AND ELECTRICITY**	**55**	**15**
	A. Fundamentals of Low frequency currents	**32**	**9**
	I. Basic Physics	**3**	
	Structure of atom, Isotopes, States of matter; Compound formation-(covalent formation), Properties of Electric linesof forces, Conductors, Non-conductors, Latent heat, Transmission of heat		
	II. Condenser	**3**	
	a. Principles		
	b. Capacity		
	c. Types &construction		
	d. Electric field		
	e. Charging and discharging of the condenser		
	f. Duration of Discharge		
	g. Discharge through inductance		
	h. Capacitive reactance & uses of condenser		
	III. Main supply	**3**	**3**
	a. Production of Electricity		
	b. Types: A.C. / D.C.		

	c. Distribution/Grid system wiring of the house, colour coding of electrical supply to the apparatus		
	d. Eart hing and its importance		
	e. Types of Plugs & Switches		
	IV. Shock	**2**	
	a. Definition		
	b. Types (Electric Shock & Earth shock)		
	c. Severity Causes, Effects & Precaution		
	V. Static Electricity	**3**	
	a. Theory of Electricity		
	b. Production of Electric Charge		
	c. Characteristics of charged electrical body and capacitor and inductance: types &uses		
	d. Potential difference		
	VI. Current electricity	**6**	**6**
	a. EMF		
	b. Resistance: Combination of resistance in series and parallel		
	c. Ohms Law		
	d. D.C., A.C.		
	e. Devices for regulating current: Identification, functioning & Uses- Rheostat Potentiometer, Ammeters, Oscilloscopes,Voltmeter		
	f. Voltage and Power		
	g. Thermal effects of electric current- Joule's Law.		
	VII. Electrical Skin Resistance	**2**	
	a. Skin Resistance		
	b. Factors affecting Skin resistance: types of electrodes used,electrode gels, skin threshold, skin type, skin temperature, exercises		
	c. Methods to reduce skin resistance		

	VIII. Faradic currents Duration, frequency, wave forms & graphical representation, surging, faradic type current, pulse width modulation,	**5**	
	IX. Galvanic currents/Direct current and interrupted galvanic current, duration, frequency, waveforms &graphical representation	**5**	
	B. Fundamentals of High frequency currents	**13**	**6**
	I. Electro Magnetic Induction	**3**	
	a. Production		
	b. Direction of induced EMF		
	c. Strength of induced EMF		
	d. Type–Self & Mutual induction		
	e. Inductive Reactance		
	f. Eddy currents		
	g. Principles and Laws–Faraday's, Lenz's		
	h. Dynamo		
	II. Apparatus for Modification of Currents	**2**	
	a. Interruption of current–Switch &Valve		
	b. C-R timing circuit		
	c. Multi vibrator Circuit, Pulse Generator		
	d. Current supplied to patient – Impulse type		
	III. Magnetism	**2**	
	a. Nature and Types		
	b. Molecular theory of Magnetism		
	c. Property of Magnet		
	d. Magnetic effect of electric current– Electro Magnets		
	e. Meters for measuring A.C.		
	IV. Sound	**2**	
	a. Wave motion in sound		

	b. Infrasonics		
	c. Normal hearing band		
	d. Characteristics of sound waves and their velocities		
	e. Ultrasonics		
	f. Reflection, Refraction and Attenuation of Sound waves		
	g. Interference of sound waves		
	V. D.C. and A.C.:	**4**	**6**
	a. Source–Cell and rectified AC		
	b. Rectification of AC		
	c. Thermionic valves– Diode and Triode		
	d. Metal Rectifier		
	e. Types of Rectification		
	f. Transformers-Types &Functions		
	g. Smoothing circuit		
	h. Semiconductor and its types		
	i. Diodes & Transistors		
	j. Choke coil		
	C. Electro Magnetic Spectrum	**5**	
	a. Laws of transmission, Reflection, Refraction, Absorption, Attenuation		
	b. Electro Magnetic Radiation		
	c. Laws Governing E.M.R.		
	d. Laws of Reflection, Refraction, Absorption, Attenuation, Cosine Law, Inverse Square Law, Grothus Law.		
	D. Cellular Bio-physics	**3**	
	a. Action potential,		
	b. Resting membrane potential		
	c. Transmission of impulses: Saltatory conduction		

	d. Reception &emission of E.M.F. signals		
	E. Environmental currents	**2**	
	Environmental currents & fields risk factors on Prolonged exposure to E.M. field.		
2	**ELECTRICAL MODALITIES**	**25**	**40**
	Production, Physical principles, Panel diagrams, Testing of apparatus of the following:		
	a. S.W.D		
	b. Ultrasound		
	c. U.V.R.		
	d. I.F.T.		
	e. I.R.		
	f. LASER (no panel diagram)		
	g. Diagnostic Electrical muscle Stimulator		
	h. T.E.N.S.		
3	**SUPERFICIAL THERMAL AGENTS**	**15**	**50**
	a. Construction/ Design of the Modalities, Scales of temperature, Specific heat & modes of energy transfer, Physiological effects, Therapeutic effects/ Uses, Merits/demerits, Indications/ contra-indications, Skills of application		
	b. Home remedies		
	c. Paraffin wax bath		
	d. Whirl pool		
	e. Contrast bath		
	f. Hydro-collator hot packs		
	g. Cryotherapy		

RECOMMENDED TEXTBOOKS

1. Forster A.; Claytons Electrotherapy Theory And Practice –3rd & 10thedition; CBS Publishers and Distributers
2. Val Robertson PhD, Alex Ward PhD, John Low et el; Electrotherapy explained

Principles andPractice; Butterworth-Heinemann

3. Joseph Kahn; Principles and Practice of Electrotherapy; Churchill Livingstone
4. Sheila Kitchen; Electrotherapy Evidence Based Practice 11th edition; Churchill Livingstone.

RECOMMENDED REFERENCE BOOK

1. Roger M. Nelson, Dean P. Currier, Karen W. Hayes; Clinical Electrotherapy; Pearson

INTERNALASSESSMENT

Two exams - Terminal and preliminary examination (Theory & Practical) of 80 marks each.

Total =160 marks

Internal Assessment to be calculated out of 20 marks.

Internal Assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics inthe syllabus.		**MARKS** **100**
SECTION A	**Q1 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 Marks]** Based on superficial Thermal agents **Q2 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 Marks]**	**40**
SECTION B	**Q3 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 Marks]** (Based on Production /Panel Diagram of high frequency current / Actinotherapy) **OR** (Based on Production / Panel Diagram of low/Medium frequency current) **Q4 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 Marks]**	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL **80 MARKS+ I.A.– 20 MARKS**		**MARKS** **100**
LONG CASE	Based on Superficial thermal agent: Cognitive Medical Electronic, Physiological, Biophysical principles, Therapeutic effects, indications- contraindication **[20 Marks]** Psychomotor + Affective skills **[10 Marks]**	**30**
SHORT CASE	Two Short case on Testing of equipment's: Low & Medium frequency High frequency/ Actino-therapy **[2 x 20=40 marks**] Cognitive [**05 Marks]** Psychomotor [**15 Marks]**	**40**
COMMUNICATION SKILL		**5**
JOURNAL	Year work of practical's performed.	**5**
TOTAL MARKS		**80**

SECOND BPTH SYLLABUS

TRANSCRIPT HOURS 1400

SR.NO.	COURSE NAME	TOPIC	DIDACTIC HOURS
1	PROFESSIONAL PRACTICE & ETHICS	1. Ethical code of conduct	15
		2. Communication Skill	
2	PHARMACOLOGY	1. General Pharmacology	50
		2. Drugs acting on C. N. S	
		3. Drugs acting on Autonomic Nervous System	
		4. Drugs acting on C.V.S	
		5. Drugs acting on Respiratory System	
		6. Chemotherapy	
		7. Other Chemo therapeutic drugs	
		8. Endocrine	
		9. Drugs in G.I. Tract	
		10. Haematinics	
		11. Dermatological drugs	
3	PATHOLOGY & MICROBIOLOGY	**PATHOLOGY**	85
		1. General Pathology	
		2. Inflammation & Repair	
		3. Immunopathology	
		4. Circulatory disturbances	
		5. Pathologic changes in vitamin deficiencies	
		6. Growth disturbances	
		7. Medical Genetics	
		8. Specific Pathology	
		9. Muscular disorders	
		10. Neuro-muscular junction	
		11. Bone & joints	
		12. Endocrine	

		13. Hepatic diseases	
		14. G. I. System	
		15. Clinical Pathology	
		MICROBIOLOGY	
		1. General microbiology	
		2. Laboratory diagnosis of infection	
		3. Immunology	
		4. Systemic bacteriology	
		5. Mycology	
		6. Virology	
		7. Parasitology	
		8. Applied microbiology	
4	**PSYCHOLOGY**	1. Psychology: Nature & its fields	**30**
		2. Developmental Psychology	
		3. Theories of Learning	
		4. Memory	
		5. Attention & Perception	
		6. Conflict and Frustration	
		7. Clinical Psychology	
5	**KINESIOLOGY**	1. Introduction to Biomechanics	**100**
		2. Regional Kinesiology	
		3. Motor Control	
		4. Kinetics And Kinematics Of Various activities of Daily Living	
6	**KINESIOTHERAPY**	1. Biophysics	**245**
		2. Posture	
		3. Functional Re-education	
		4. Neuromuscular co-ordination and Balance	
		5. Gait	
		6. Walking Aids	
		7. Bronchial Hygiene	
7	**ELECTROTHERAPY**	1. Pain	**200**

		2. Low frequency Currents	
		3. Medium frequency Currents	
		4. Biofeedback	
		5. High frequency Currents	
		6. Actinotherapy	
		7. Advanced Electrotherapeutics	
		8. Wound care	
8	**COMPUTER APPLICATION**	1. Basics Of Computer	**40**
		2. Hardware and Software	
		3. Multimedia	
		4. Operating System	
		5. Network	
		6. Microsoft	
		7. Power Point Presentation	
		8. Scientific Poster Designing	
9	**ENVIRONMENTAL SCIENCES**	1. Introduction To EVS	**30**
		2. Ecosystems	
		3. Natural Resources: Renewable and Non--renewableResources	
		4. Biodiversity And Conservation	
		5. Environmental Pollution	
		6. Environmental Policies & Practices	
		7. Human Communities and the Environment	
		8. Field Work	
10	**SEMINAR**	Seminar: On Biomechanics, Electrotherapy, Kinesiotherapy. Kinesiology	**105**
11	**SUPERVISED CLINICAL PRACTICE**	To practice clinical skills under the supervision, at the O.P.D./ I.P.D. set up.Clinical assignments should include Observation, Clinical History taking & technical assistance to the clinicians	**500**

PROFESSIONAL PRACTICE AND ETHICS

[Total =15 Hours]

(COLLEGE EXAMINATION IN FINAL YEAR)

COURSE DESCRIPTION

This course would be taught in continuum from first year to final year. An exam in theory would be conducted only in final year. Professional and ethical practice curriculum content addresses the Knowledge, Skills and Behaviors required of the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning and decision- making strategies, professional communication.

SR. NO.	TOPIC	THEORY HOURS	SUPERVISION HOURS	TOTAL HOURS
1	Ethical code of conduct	3	10	15
2	Communication skills			
	a. Physiotherapist -Patient Relationship	1		
	b. Interviewing -Types of interviews,Skills of interviewing	1		

PHARMACOLOGY

[Total Hours = 50 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course covers the basic knowledge of Pharmacology including administration, physiologic response and adverse effects of drugs under normal and pathologic conditions. Topics focus on the influence of drugs in rehabilitation patient/client management. Drugs used in iontophoresis and phonophoresis will be discussed in detail.

SR.NO	TOPICS	DIDACTIC HOURS
1	**GENERAL PHARMACOLOGY**	**4**
	i. Pharmacokinetics	
	ii. Routes of administration	
	iii. Adverse drug reaction and reporting	
	iv. Factors modifying drug effect	
2	**DRUGS ACTING ON C.N.S.**	**11**
	i. Introduction	1
	ii. Alcohols + Sedatives & Hypnotics	2
	iii. Anti-convulsant	1
	iv. Drug therapy in Parkinsonism	2
	v. Analgesics & antipyretics –especially Gout & R.A.	3
	vi. Psycho Therapeutics	1
	vii. Local anesthetics, counter irritants	1
3	**DRUGS ACTING ON AUTONOMIC NERVOUSSYSTEM**	**7**
	i. Adrenergic	
	ii. Cholinergic	
	iii. Skeletal muscle relaxants	
4	**DRUGS ACTING ON C.V.S.**	**7**
	i. Antihypertensives	2
	ii. Antianginal- Antiplatelets, Myocardial Infarction	2

	iii. C.C.F.	1
	iv. Shock	1
	v. Coagulants and Anticoagulants	1
5	**DRUGS ACTING ON RESPIRATORY SYSTEM**	**3**
6	i. Cough	
	ii. Bronchial Asthma	
	iii. C.O.P.D.	
	CHEMOTHERAPY	**3**
	i. General principles	
	ii. Anti-Tuberculosis	
	iii. Anti –Leprosy	
7	**OTHER CHEMO THERAPEUTIC DRUGS**	**3**
	i. Drugs used in Urinary Tract Infection	
	ii. Tetra / chloral	
	iii. Penicillin	
	iv. Cephalosporin	
	v. Aminoglycosides	
	vi. Macrolides	
8	**ENDOCRINE**	**8**
	i. Insulin and oral Anti diabetic drugs	2
	ii. Steroids-Anabolic steroids	2
	iii .Drugs for osteoporosis, Vitamin D, Calcium, Phosphorus	2
	iv. Thyroid & Antithyroid	1
	v. Estrogen + Progesterone	1
9	**DRUGS IN G.I. TRACT**	**2**
	i. Peptic ulcer	
	ii. Diarrhea, Constipation & Antiemetics	
10	**HEAMATINICS**	**1**
	i. Vitamin B, Iron	
11	**DERMATOLOGICAL DRUGS**	**1**
	i. Scabies, Psoriasis, Local antifungal	

RECOMMENDED TEXT BOOKS

1. Padmaja Udaykumar ,Pharmacology For Physiotherapy; (CBS)
2. H. L. Sharma, K. K. Sharma, Pharmacology For Physiotherapist; (JaypeeBrothers Medical)
3. K. D. Tripathi , Essentials Of Medical Pharmacology – (Jaypee Brothers Medical)

RECOMMENDED REFERENCE TEXT BOOKS

1. Pharmacology and Pharmacotherapeutics – Dr. R S Satoskar, Dr. Nirmala N. Rege, Dr. S. D.Bhandarkar (Elsevier India)

INTERNAL ASSESSMENT

Two exams – Terminal and preliminary examination of 40 marks each Total = 80 marks

Internal Assessment to be calculated out of 10 marks.

Internal assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY **40 MARKS + I.A. 10 MARKS** * Emphasis should be given to the drugs related to Musculoskeletal /Neurological, Cardio-Vascular (excluding anti arrhythmic and shock)/ Respiratory conditions, analgesics & anti-inflammatory conditions [There shall be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q1 Answer any FOUR out of FIVE [4 x 5 = 20 marks]**	**20**
SECTION B	**Q2 Answer any FOUR out of FIVE [4 x 5 = 20 marks]**	**20**
TOTAL MARKS		**40**

PATHOLOGY & MICROBIOLOGY

[Theory 46 + 39 = Total 85 Hours]

(UNIVERSITY EXAMINATION)

PATHOLOGY (Theory 46 Hours)

COURSE DESCRIPTION

Students will develop an understanding of pathology underlying clinical disease states involving the major organ systems and epidemiological issues. Students will learn to recognize pathology signs and symptoms considered red flags for serious disease. Students will use problem-solving skills and information about pathology to decide when referrals to another health care provider or alternative interventions are indicated. Students will develop the ability to disseminate pertinent information and findings, and ascertain the appropriate steps to follow.

The course more deals with structural impairments as an important part in ICF Classification.

SR.NO	TOPIC	THEORY HOURS
1	**GENERAL PATHOLOGY**	4
	a. Cell injury-Causes, Mechanism & Toxic injuries with special reference to Physical including ionizing radiation, Chemical & Biological	
	b. Reversible injury (degeneration)- types morphology -cloudy swelling, hyaline, fatty changes	
	c. Intra-cellular Accumulation- Mucin, Protein	
	d. Irreversible cell injury-types of necrosis, Apoptosis – Calcification- Dystrophic & Metastatic, Gangrene	
	e. Extra-cellular accumulation-Amyloidosis.	
2	**INFLAMMATION & REPAIR**	6
	a. Acute inflammation – features, causes, vascular & cellular events	
	b. Morphologic variations-Ulcers	

	c. Inflammatory cells & Mediators	
	d. Chronic inflammation: Causes, Types, Non- specific & Granulomatous with examples	
	e. Wound healing by primary & secondary union, factors promoting & delaying healing process	
	f. Healing at various sites- bone, nerve & muscle, calcaneal spurs, periarthritis, PID	
	g. Regeneration & Repair	
3	**IMMUNO –PATHOLOGY**	**1**
	a. Basic concepts of autoimmune disease (emphasis on S.L.E. & R.A.)	
4	**CIRCULATORY DISTURBANCES**	**5**
	a. Oedema - pathogenesis - types - transudates / exudates	
	b. Chronic venous congestion- lung, liver	
	c. Thrombosis – formation – fate – effects	
	d. Embolism – types- clinical effects	
	e. Infarction – types – common sites	
	f. Shock – Pathogenesis, types	
5	**PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES**	**1**
6	**GROWTH DISTURBANCES**	**4**
	a. Atrophy, Hypertrophy, Hypoplasia, Metaplasia, Agenesis, Dysplasia	
	b. Neoplasia classification, Histogenesis, Biologic behaviors, differencebetween Benign & Malignant tumour	
	c. Malignant neoplasms- grades-stages-local & distal spread	
	d. Carcinogenesis: Physical, Chemical, Occupational,Heredity, Viral, e. Nutritional	
	f. Precancerous lesions & Carcinoma in situ	
	g. Tumour & host interactions–local and systemic effects-metastatic(special reference to bones and C.N.S.)	

7	**MEDICAL GENETICS** Classification with examples of genetic disorders	**1**
8	**SPECIFIC PATHOLOGY**	
	a. Cardiovascular System (CVS)	
	i. Atherosclerosis - Ischemic Heart Diseases – Myocardial Infarction– ii. Pathogenesis /Pathology	
	iii. Hypertension	**13**
	iv. C.C.F	
	v. Rheumatic Heart Diseases	
	vi. Peripheral Vascular Diseases	
	b. Respiratory System	
	i. C.O.P.D	
	ii. Pneumonia (lobar, bronchial, viral), Lung Abscess	
	iii. T. B.: Primary, Secondary – morphologic types	
	iv. Pleuritis & its complications	
	v. Lung collapse – Atelectasis	
	vi. Occupational Lung diseases vii. (with special emphasis on Silicosis, Asbestosis, Anthracosis)	
	viii. A.R.D.S.	
	c. Neuropathology:	
	i. Reaction of nervous tissue to injury, infection & ischemia	
	ii. Meningitis: Pyogenic, T.B.M., Viral	
	iii. Cerebro-vascular diseases – Atherosclerosis – Thrombosis, iv. Embolism, Aneurysm, Hypoxia Infarction & Hemorrhage, Hydrocephalous, Increased Intracranial Pressure	
	v. Leprosy	
	vi. Parkinsonism	
9	**MUSCULAR DISORDERS**	
	a. Classification of Muscular disorders with emphasis on Muscular Dystrophies	**1**

10	**NEURO-MUSCULAR JUNCTION**	**1**
	a. Myasthenia gravis	
	b. Myasthenic syndrome	
11	**BONE & JOINTS**	**4**
	a. Osteomyelitis – Rickets – Osteomalacia –Osteoporosis	
	b. Arthritis- degenerative (Osteoarthritis, Spondylosis) inflammatory (R.A., Ankylosing Spondylitis, Gout)	
	c. Infective-T.B.	
12	**ENDOCRINE**	**2**
	a. Hypo and Hyperthyroidism	
	b. Diabetes	
13	**HEPATIC DISEASES**	**1**
	a. Cirrhosis – emphasis to systemic effects of portal hypertension	
14	**G.I. SYSTEM**	**1**
	a. Gastric / Duodenal ulcer, Enteric fever, T.B., Enteritis, Gastritis(related to consumption of NSAID)	
15	**CLINICAL PATHOLOGY**	**2**
	a. Anemia – (deficiency) – T.C./D.C./ Eosinophilia Anaemia	
	b. Muscle / Skin / Nerve biopsy	
	c. Microscopic appearance of muscle necrosis – fatty infiltration	
	d. Anaemia- Iron Deficiency, Megaloblastic , Sickle cell, Thalassemia, Haemophilia, Haemarthrosis	

RECOMMENDED TEXT BOOKS

1. Harsh Mohan; Text Book Of Pathology; (Jaypee Brothers Medical)

RECOMMENDED REFERENCE BOOKS

1. Cotran, Kumar; Robbins; Pathologic Basis Of Disease - (Elsevier India)
2. Robbins; Basic Pathology;(Elsevier India)

MICROBIOLOGY (39 Hours)

[Theory 35 Hours + Demonstration 4 Hours]

COURSE DESCRIPTION

Students will develop an understanding of pathology underlying clinical disease states and involving the major organ systems and epidemiological issues. Epidemiological issues will be presented and discussed. Students will learn to recognize pathology signs and symptoms considered red flags for serious disease. Students will use problem-solving skills and information about pathology to decide when referral to another health care provider or alternative intervention is indicated. Students will develop the ability to disseminate pertinent information and findings, and ascertain the appropriate steps to follow

SR.NO	TOPICS	THEORY HOURS	DEMONSTRATION HOURS
1	**GENREAL MICROBIOLOGY**	4	1
	a. Introduction & scope		
	b. Classification of Micro-organisms and Bacterial Anatomy (cell wall, capsule, spore, flagella and types as per their shape and arrangement)		
	c. Sterilization		
	d. Disinfection		
	e. Demonstration for General Microbiology		
2	**LABORATORY DIAGNOSIS OF INFECTION**	2	1
	a. Culture media and identification of bacteria		
	b. Sample collection for smear examination and cultures		
	c. Demonstration of Gram staining, ZN staining and culture media		
3	**IMMUNOLOGY**	9	
	a. Innate immunity & acquired immunity		
	b. Immune system: organization-cells- antibodies regulation of immune responses Structure and		

	function of immune system and Immune response – normal / abnormal		
	c. Hyper-sensitivity (types and examples including graft rejection) d. Secondary Immuno-deficiency including H.I.V.		
	e. Define Antigen, Antibody and Antigen antibody f. reaction & application for diagnosis		
	g. Hypersensitivity		
	h. Auto-immunity		
4	**SYSTEMIC BACTERIOLOGY**	**7**	
	a. Infection caused by gram +ve cocci Staphylococcus, Streptococcus and Pneumococcus		
	b. Infection caused by gram –ve cocci Gonococci and Meningococci		
	c. Clostridium		
	d. Enterobacteriaceae (E.Coli,		
	e. Klebsiella) and Pseudomonas		
	f. Salmonella and Vibrio		
	g. Mycobacterial infection: i. Tuberculosis-Leprosy ii. Atypical Mycobacterium		
	h. Syphilis and Leptospirosis- Morphology & pathogenesis		
5	**MYCOLOGY**	**2**	**1**
	a. Introduction and Superficial mycosis		
	b. Mycetoma and opportunistic fungal infection		
	c. Mycology and Virology demonstration		
6	**VIROLOGY**	**5**	
	a. Introduction & general properties,		
	b. DNA virus		

	c. Measles, Mumps, Rubella, polio and congenital viral infections		
	d. Hepatitis and Rabies		
	e. H.I.V.		
7	**PARASITOLOGY**	**3**	**1**
	a. Introduction- Entamoeba histolytica		
	b. Malaria, Filaria		
	c. Toxoplasma – Cystisarcosis & Echinococcus		
8	**APPLIED MICROBIOLOGY**	**3**	
	a. Hospital acquired infections, Universal safety precautions and Waste disposal		
	b. Diseases involving Bones, Joints- Nerves- Muscles- Skin-Brain- Cardiopulmonary system, Burn and woundinfections		

RECOMMENDED TEXT BOOKS

1. Ananthnarayan; Concise Textbook of Microbiology – (The Orient Blackswan)
2. C.P.Baweja; Concise Textbook of Microbiology- (APC)
3. Nagoba; Textbook of Microbiology- (Wolters Kluwer India)

RECOMMENDED REFERENCE BOOK

1. R. Ananthnarayan & C.K. Jayram Panikar Text book of Microbiology – (The Orient Blackswan)

INTERNAL ASSESSMENT

Two exams – Terminal and preliminary examination of 80 marks each Total - 160 marks

Internal Assessment to be calculated out of 20 marks

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY **Pathology-40 marks + Microbiology-40 marks 80marks + I.A.:20 marks** *Emphasis to be given to topics related to Musculoskeletal / Neurological / Cardiovascular / Respiratory conditions & Wound / Ulcers. [There shall be no LAQ in this paper]		**MARKS** **100**
SECTION A	Questions based on **PATHOLOGY** **Q 1 Answer any FOUR out of FIVE [4 x 5 = 20 marks]** **Q 2 Answer any FOUR out of FIVE [4 x 5 = 20 marks]**	**40**
SECTION B	Questions based on **MICROBIOLOGY** **Q 3 Answer any FOUR out of FIVE [4 x 5 = 20 marks]** **Q 4 Answer any FOUR out of FIVE [4 x 5 = 20 marks]**	**40**
TOTAL MARKS		**80**

PSYCHOLOGY

[Total 30 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

The course design increases awareness of psychosocial issues faced by individuals. Their significance at various points on the continuum of health and disability should be emphasized. The course discusses personal and professional attitudes and values as they relate to developing therapeutic relationships. It emphasizes on communication skills for effective interaction with patients, health-care professionals and others. It expects students to identify common psychiatric conditions.

SR.NO	TOPICS	THEORY HOURS
1	Psychology: Definition, understanding, Nature & its fields and subfields	**1**
2	Developmental psychology (childhood, adolescence, adulthood and oldage) and its theories in brief	**2**
3	Learning – Role of learning in human life – Conditioning	**2**
4	Memory – types – Forgetting causes	**2**
5	Attention & perception Nature of attention ,Nature of perception Principles of Grouping	**1**
6	Conflict & Frustration – Types –Common Defense mechanism stress-common reactions, frustrations	**2**
7	Clinical Psychology i. Introduction ii. Difference between normal & abnormal psychology iii. Anxiety disorders – Phobias, Obsessive –compulsive, Hystericalconvulsion disorder iv. Affective disorders – Depression, mania, Bipolar disorders v. Psychotic disorders – Types of Schizophrenia	**20**

RECOMMENDED TEXT 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 Co.
3. Clinical Psychology – Akolkar,(Asia Publishing House)
4. Developmental Psychology-Elizabeth B. Hurlock (Tata McGraw Hill)

RECOMMENDED REFERENCE BOOKS

1. Ahuja ; A Short Book of Psychiatry - (Jaypee Bros – Medical Publishers)
2. M.S. Bhatia: Short Textbook of Psychiatry- (New Age International PVT Limited)
3. Shah L.P.; Handbook of Psychiatry (Vora Medical Publication)

INTERNAL ASSESMENT

Two exams – Terminal and preliminary examination (Theory only) of 40 marks each

Total = 80 marks

Internal Assessment to be calculated out of 10 marks (Theory only)

Internal assessment as per University pattern**.**

SCHEME OF UNIVERSITY EXAMINATION

THEORY **40 MARKS + I.A. – 10 MARKS** * The question paper will give appropriate weightage to all the topics in the Syllabus. [There shall be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q 1 Answer any FOUR out of FIVE** **[4 x 5 =20 marks]**	**20**
SECTION B	**Q 2 Answer any FOUR out of FIVE** **[4 x 5 = 20 marks]**	**20**
TOTAL MARKS		**40**

KINESIOLOGY

[Total 100 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course is based on anatomical, physiological & related kinesiological principles for normal human movement. Students have the opportunity to develop and acquire understanding of kinesiological responses for the efficacy in various kinesiotherapeutic applications

SR. NO	TOPICS	THEORY HOURS
1	**INTRODUCTION TO BIOMECHANICS**	**20**
	a. Muscle Biomechanics	**10**
	i. Elements of muscle structure – fiber, size, motor unit, length ii. tension, arrangement & number relationship	
	iii. Classification of muscles	
	iv. Mobility and Stability of muscles	
	v. Types of muscle contraction and factors affecting muscle vi. function	
	b. Joint Biomechanics	**10**
	i. Basic principles of joint design	
	ii. Classification of joints	
	iii. Osteokinematics & Arthrokinematics	
	iv. Concave Convex Rule	
	v. Joint function, kinetics & kinematics	
2	**REGIONAL KINESIOLOGY**	**60**
	a. Vertebral Column	15
	b. Thorax	5
	c. Shoulder Complex	6
	d. Elbow joint	3
	e. Wrist And Hand Complex	6

	f. Hip Joint	6
	g. Knee Complex	10
	h. Ankle – Foot complex	6
	i. Temporo-Mandibular Joint	3
3	**MOTOR CONTROL**	**10**
	a. Motor Control	
	b. Postural Alignment & Weight Distribution	
	c. Sensory Organization	
	d. C.N.S. Integration	
	e. Motor Strategies	
4	**KINETICS AND KINEMATICS OF VARIOUS ACTIVITIES OF DAILY LIVING**	**10**
	a. Supine to Sitting, Sitting to Standing, Squatting, Climbing up & down	
	b. Lifting, Pulling, Pushing, Overhead activities	
	c. Running, Jogging.	

RECOMMENDED TEXT BOOKS

1. Cynthia .C. Norkins; Joint Structure And Function – (F.A. Davis Company)
2. Brunnstrom; Clinical Kinesiology – (F.A. Davis Company)
3. Physiology Of The Joints – Kapandji Vol.- I,Ii,&Iii (Churchill Livingstone)

RECOMMENDED REFERENCE BOOKS

1. Steindler: Kinesiology Of The Human Body – (Charles Thomos Publisher)
2. Neumann & Donald ;Kinesiology Of The Musculoskeletal System – (Mosby)
3. Oatis & Carol ;Kinesiology – The Mechanics And Pathomechanics Of Human Motion (Lippincot Williams And Wilkins)
4. Joseph And Hamill ;Biomechanical Basis Of Human Motion – (Lippincot Williams And Wilkins)

INTERNAL ASSESSMENT

Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each Total - 160 marks.

Internal Assessment to be calculated out of 20 marks.

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus.		**MARKS** **100**
SECTION A	**Q 1 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 marks]** (Muscle Mechanics, Regional Kinesiology Topic 2- a,b,c,d) **Q 2 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 marks]** (Entire syllabus topics to be covered)	**40**
SECTION B	**Q 3 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 marks]** (Joint Mechanics, Regional Kinesiology Topic 2- e,f,g,h,i) **Q 4 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 marks]** (Entire syllabus topics to be covered)	**40**
TOTAL MARKS		**80**

KINESIOTHERAPY

[Theory-83 Hours + Practical/ Laboratory- 162 Hours = Total 245 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course is based on anatomical and physiological & related kinesiology principles for normal human movement and for the efficacy in the assessment methods for mobility, muscle strength. Students have the opportunity to develop and acquire understanding of physiological responses to various typesof training and develop skills of exercise programs (on models). Exercise components of muscle strength,flexibility, balance, breathing and gait are examined. Evidence of appropriate, safe and effective exercise design and proper exercise biomechanics and prescription parameters are addressed with all interventions.

SR.NO	TOPICS	THEORY HOURS	PRACTICAL HOURS
1	**BIOPHYSICS**	**40**	**111**
	A. Biophysical Principles	2	
	i. Structures & Properties of connective and non-connective tissues		
	B. Stretching	3	12
	i. Definition		
	ii. Types		
	iii. Assessment of muscle length and fascia around the joint		
	iv. Principles of stretching		
	v. Techniques for all joints Individual muscle stretching		
	C. Joint Mobility	10	17
	i. Definition		
	ii. Causes of limitation		
	iii. Indication and contra indications		
	iv. Principles		

	v. Techniques		
	vi. Assessment methods		
	vii. Individual joints mobility Exercises– Upper Limb, Lower Limb & Spine (Using active, assisted, passive movements)		
	D. Manual Muscle Testing and assessment (subjective & objective)	6	35
	i. Principle		
	ii. Trick movements		
	iii. Group Muscle Testing		
	iv. Individual Muscle testing – Upper & Lower Limbs, Trunk & Face		
	E. Muscle Strengthening	10	45
	i. Concepts -Strength, Power, Endurance		
	ii. Factors influencing the Strength of normal muscle/ hypertrophy, recruitment of motor units,change after the training, training with isometric,isotonic & Isokinetic muscle contraction		
	iii. Principles: Overload, Intensity, Motivation, Learning, Duration, Frequency, Reversibility, Specificity, Determinants		
	iv. Methods : Subjective & Objective		
	v. Individual joint Strengthening Exercises Upper Limb, Lower Limb & Spine		
	vi. Concepts- 1 RM, 10 RM & Dynamometry		
	vii. Progressive Resisted Exercise - Delorme's, Zinoveiff (Oxford), Mc Queen, protocols		
	viii. Use of gymnasium equipment		
	F. Hydrotherapy	4	
	i. Physiological effects		

	ii. Indication and Contraindications		
	iii. Techniques		
	G. Traction (Cervical & Lumbar):	3	2
	i. Introduction		
	ii. Types(Mechanical / Electrical		
	iii. Continuous/Intermittent)		
	iv. Indications and Contra indications		
	v. Techniques v. Effects and uses		
	H. Home Program	2	
	i. Principles		
	ii. Ergonomic advice for ADLs		
	iii. Home based exercise program		
2	**POSTURE**	**5**	**5**
	i. Definition ii. Human posture –Changes from quadruped to biped		
	iii. Correct and faulty posture		
	iv. Postural patterns and Postural Mechanism		
	v. Factors affecting posture		
	vi. Physiological deviations		
	vii. Analysis of all views		
3	**FUNCTIONAL REEDUCATION**	**5**	**5**
	i. Principles & Indications		
	ii. Mat exercises- mobility, strength and balance training		
	iii. Progression to sitting, standing and walking		
	iv. Transfers		
4	**NEUROMUSCULAR CO-ORDINATION AND BALANCE**	**5**	**5**
	i. Definition		

	ii. Physiology related to coordination & Balance		
	iii. Frenkels exercise (Principles & Techniques)		
	iv. Balancing Exercise		
5	**GAIT**	**10**	**10**
	i. Definition		
	ii. Subjective & Objective evaluation		
	iii. Gait cycle and measurable Parameters (Step Length, Step Width, Stride Length, Foot Angle, Cadence		
	iv. Kinetics and kinematics of gait		
	v. Determinants of gait		
6	**WALKING AIDS**	**6**	**5**
	i. Types		
	ii. Indications		
	iii. Selection / Prescription		
	iv. Pre Crutch training		
	v. Measurements		
	vi. Gait with walking aids		
7	**BRONCHIAL HYGIENE**	**12**	**21**
	a. Humidification & Nebulization	3	1
	i. Definition		
	ii. Types		
	iii. Method of delivery		
	iv. Indications and contraindications		
	b. Breathing Exercise	5	10
	i. Types – Inspiratory , Expiratory (including forced expiratory technique)		
	ii. Goals & Uses		
	iii. Techniques		
	iv. ACBT		
	v. Autogenic drainage		

	c. Postural Drainage:	4	10
	i. Definition		
	ii. Indications & Contraindications		
	iii. Assessment & Principles		
	iv. Techniques		

RECOMMENDED TEXT BOOKS

1. Margaret Hollis; Progressive Resisted Exercises – (Wiley)
2. Carolyn Kisner; Therapeutic Exercise Foundation And Techniques - (FA Davis)
3. Daniel Kendall; Muscle Testing - (Lippincot Williams And Wilkins)
4. Dena Gardiner; Principles Of Exercise Therapy – (CBS)
5. Cash's Textbook For Physiotherapists In Chest, Heart & Vascular Diseases (Mosby)

RECOMMENDED REFERENCE BOOKS

1. Basmajian & Wolf.; Therapeutic Exercise - Lippincot Williams And Wilkins)
2. David Magee ; Orthopedic Physical Assessment – (Elsevier India)
3. O'Sullivan ; Physical Rehabilitation- (Jaypee Brothers Medical)
4. Prior & Prasad; Physiotherapy for Respiratory and Cardiac Problems, Adults & Pediatrics,Elsevier India.

INTERNAL ASSESSMENT

Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each Total =160 marks.

Internal Assessment to be calculated out of 20 marks.

Internal assessment as per University pattern

SCHEME OF UNIVERSITY THOERY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		MARKS 100
SECTION A	**Q 1 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 marks]** (Joint Mobility, Strengthening, Stretching) **Q 2 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 marks]** (Entire syllabus topics to be covered)	**40**
SECTION B	**Q 3 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 marks]** (Posture, Gait, Neuromuscular Co-ordination, Postural Drainage) **Q 4 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 marks]** (Entire syllabus topics to be covered)	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL 80 MARKS + I.A. – 20 MARKS		MARKS 100
LONG CASE	Muscle Strengthening / Mobility /Bronchial hygiene(On models)	**30**
SHORT CASE	**TWO SHORT CASES:** **SHORT CASE ONE:** M.M.T./Coordination/Posture/Gait (Measurable parametersOnly) **[1x20=20 marks]** **SHORT CASE TWO:** Walking aids/ Functional Reeducation / Breathing Exercises **[1x20=20 marks]**	**40**
COMMUNICATION SKILL		**5**
JOURNAL	Documentation- Principles & applications for various Kinesiotherapeutic techniques.	**5**
TOTAL MARKS		**80**

ELECTROTHERAPY

[Theory 100 Hours+ Practical / Laboratory 100 = Total 200 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course tends to explore fundamental skills in application of electrotherapeutic modalities and knowledge of indications, contraindications and physiological principles needed for appropriate patient care. It includes topics such as Electrical stimulation, T.E.N.S., Iontophoresis, Ultrasound / Phonophoresis, Diathermy and Electro diagnostic testing etc.

SR.NO	TOPICS	THEORY HOURS	PRACTICAL HOURS
1	**PAIN**	**3**	
	i. Introduction to Pain		
	ii. Physiological response to pain		
	iii. Pain pathways		
	iv. Pain Gate mechanism		
2	**LOW FREQUENCY CURRENTS**	**37**	**44**
	a. Faradic Currents	12	12
	i. Faradic currents: Physiological & Therapeutic effects indications, contraindications		
	ii. Faradic type		
	iii. Strong Surged Faradic		
	iv. Sinusoidal currents		
	v. Application of Faradic current a. Faradism Under pressure b. Indications, Principle of application, c. Technique of application		
	vi. Faradic re-education: Indications, Principle of application, Technique of application		
	vii. Short/Long pulse currents Motor Points: Definition, Identification		

	b. Galvanic Currents	12	10
	i. Galvanic / Direct currents (Continuous DC& Interrupted DC) :Physiological & Therapeutic effects, Indications, Contraindications		
	ii. Definition: Galvanic & Interrupted Galvanic Currents		
	iii. Property of Accommodation		
	iv. Technique & Methods of Application of Galvanic currents		
	v. Types – Anodal & Cathodal, Therapeutic		
	vi. Ionization /Iontophoresis: Theory of Medical Ionisation, Effects & Uses of various Ions, Indicationsand contraindications, Dangers and precautions		
	c. TENS	5	12
	i. Introduction to Pain relieving Modalities, Definition TENS, Types of TENS		
	ii. To Know Physiological & Therapeutic effects of TENS		
	iii. To Know Techniques and Methods of Applications of TENS		
	iv. To know Indications & contraindications of TENS		
	d. High Voltage Currents	1	1
	e. Micro Currents- Didynamic Currents	1	1
	f. S-D Curve	6	8
	i. Principle of S-D curves		
	ii. Technique of plotting		
	iii. Interpretation of normalcurves.		
	iv. Chronaxie and Rheobase		
3	**MEDIUM FREQUENCY CURRENTS**	**10**	**12**

	i. To know interferential current, Definition IFT, and its principle		
	To Know Physiological &Therapeutic effects of **a. IFT**		
	i. To know Indications &contraindications of IFT		
	ii. To know Technique & Methods of Application of IFT		
	iii. To know Russian current, Definition, Indication,contraindication & its Parameters		
4	**BIOFEEDBACK**	**5**	
	i. Different types of feedback		
	ii. Principles of using biofeedback		
	iii. Uses of Biofeedback EMG		
5	**HIGH FREQUENCY CURRENTS**	**20**	**20**
	a. Short Wave Diathermy	10	10
	i. Definition of electromagnetic fields		
	ii. Introduction to short wave diathermy		
	iii. Physiological effects of SWD		
	iv. Therapeutic effects of SWD		
	v. Principles of application		
	b. Ultrasound	10	10
	i. Definition of ultrasound, infrasonics and hearing band.		
	ii. Physiological effects		
	iii. Therapeutic effects		
	iv. Inference of sound waves		
	v. Phonophoresis		
	vi. Indication and contraindications of ultrasound		
	vii. Dangers of ultrasound		
	viii. Precautions of ultrasound		

	ix. Technique of application		
	x. Methods of application		
6	**ACTINOTHERAPY**	**17**	**21**
	a. Infra-Red Radiations	5	11
	i. Introduction to infrared radiations, physiological and therapeutic effects		
	ii. Technique and method of application		
	iii. Effects and uses		
	iv. Indications and contraindications		
	v. Precautions and potential dangers		
	b. Ultraviolet Radiations	8	10
	i. Types : a, b, c		
	ii. Physiological & Therapeutic effects		
	iii. Technique & Method of application		
	iv. Effects & uses		
	v. Indications & contraindications		
	vi. Dangers & Precautions		
	c. LASER	4	
	i. Physiological & Therapeutic effects		
	ii. Technique & Methods of Application		
	iii. Effects & Uses		
	iv. Indications & Contraindications		
	v. Dangers & Precautions		
	vi. Dosage		
7	**ADVANCED ELECTROTHERAPEUTICS**	5	
8	**WOUND CARE**	3	3
	i. Types of wound		
	ii. Application of Therapeutic currents, Ultrasound, U.V.R. & LASER		

RECOMMENDED TEXT BOOK

1. Clayton's Electrotherapy (CBS)
2. Low & Reed; Electro Therapy Explained – (Elsevier India)
3. Principle and Practice Of Electro Therapy – (Churchill Livingstone)
4. Kahn; Therapeutic Electricity – Sydney Litch (Waverly Press)
5. Sheila Kitchen; Electrotherapy Evidence Based Practice – (Churchill Livingstone)
6. Basics of Electrotherapy – Subhash M. Khatri (Jaypee)

RECOMMENDED REFERENCE BOOK

1. Clinical Electro Therapy – Nelson & Currier (Pearson)

INTERNALASSESSMENT

Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each

Total = 160 marks.

Internal Assessment to be calculated out of 20 marks

Internal assessment as per University pattern.

SCHEME OF THEORY UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus.		**MARKS** **100**
SECTION A	**Q1 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 marks]** (Low Frequency- Faradic/IFT, Medium Frequency, High Frequency-SWD) **Q2 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 marks]** (Entire syllabus topics to be covered)	**40**
SECTION B	**Q3 Answer any TWO out of THREE (LAQ) [2 x 10 = 20 marks]** (Low Frequency- Galvanic/TENS, Medium Frequency, High Frequency- U.S) **Q4 Answer any FOUR out of FIVE (SAQ) [4 x 5 = 20 marks]** (Entire syllabus topics to be covered)	**40**
TOTAL MARKS		**80**

SCHEME OF PRACTICAL UNIVERSITY EXAMINATION

PRACTICAL **80 MARKS + I.A. – 20 MARKS**		**MARKS** **100**
LONG CASE	Motor points /Strength Duration Curve / Faradism underpressure (On models)	**30**
SHORT CASES	Based on Low or Medium Frequency modalities /High Frequency modalities Actinotherapy (I.R./U.V.R./LASER) **[2 x 20 = 40 marks]** (Skill of application on models & rationale for selection of modality)	**40**
COMMUNICATION SKILL		**5**
JOURNAL	Documentation- Principles & applications for various Electrotherapy Modalities.	**5**
TOTAL MARKS		**80**

COMPUTER APPLICATION

[Total 40 Hours]

(COLLEGE EXAMINATION)

COURSE DESCRIPTION

This Course describes –Basic Operation of Computer, Various Input and Output devices, Secondary Storage Devices, Detailed study of Components of CPU and Introduction to MS Word, MS Power point, MS Excel

SR.NO	TOPICS	THEORY HOURS
1	**BASICS OF COMPUTER** i. Input devices ii. Output devices iii. Secondary storage device iv. Components of CPU v. Working of Word pad	5
2	**HARDWARE AND SOFTWARE** i. Working of hardware and software ii. Working of MS power point	5
3	**MULTIMEDIA** Basics of utility of multi- media	5
4	**OPERATING SYSTEM** Develop basic knowledge of Linux, Unix, DOS, Windows OS	5
5	**NETWORK** i. Intranet, Extranet and Internet ii. Skills of web surfing for literature, research relevanceto the field of medicine	5
6	**MICROSOFT** i. Working and preparing of MS –Excel, Word	5

	ii. Skill of spread sheet software.	
7	**POWER POINT PRESENTATION**	**5**
8	**SCIENTIFIC POSTER DESIGNING** Scientific Posters using Microsoft office publisher	**5**

RECOMMENDED TEXT BOOK

1. Priti Sinha; Computer Fundamentals : Concept System And Application By (BPB)
2. Soumya Behera ;Computer Application, (B.K.Publicatios Private Limited)
3. Renu Kapoor; Introduction to Computer-. Lotus Publishers

SCHEME OF PRACTICAL COLLEGE EXAMINATION

COMPUTER APPLICATION **Marks- 30**	
COMPUTER APPLICATION BASED CASE 1	**10**
COMPUTER APPLICATION BASED CASE 2	**10**
COMPUTER APPLICATION BASED CASE 3	**10**
TOTAL 30	
Passing in the exam is Mandatory: **Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C= Fail, less than 50%.**	

ENVIRONMENTAL STUDIES

Ability Enhancement Compulsory Course; UGC

[Theory 30 Hours]

(UNIVERITY EXAMINATION)

COURSE DESCRIPTION

The course is designed to develop the basic knowledge about the biodiversity and Ecosystem with respect to natural resources. It also helps to describe the social issues and environment.

SR. NO.	TOPICS	THEORY HOURS
1	**INTRODUCTION TO ENVIRONMENTAL STUDIES**	2
	a. Multidisciplinary nature of environmental studies	
	b. Scope and importance; Concept of sustainability and sustainable development.	
2	**ECOSYSTEMS**	4
	What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	
3	**NATURAL RESOURCES: RENEWABLE AND NON-RENEWABLE RESOURCES**	5

	a. Land resources and land use change; Land degradation, soil erosion and desertification. b. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. c. Water: Use and over-¬-exploitation of surface and ground water, floods, droughts, conflicts over water (international &inter-¬-state). d. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs,case studies.	
4	**BIODIVERSITY AND CONSERVATION**	**4**
	a. Levels of biological diversity: genetic, species and ecosystemdiversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots. b. India as a mega biodiversity nation; Endangered and endemic species of India c. Threats to biodiversity: Habitat loss, poaching of wildlife, man wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. d. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	
5	**ENVIRONMENTAL POLLUTION**	**4**
	a. Environmental pollution : types, causes, effects and controls;Air, water, soil and noise pollution b. Nuclear hazards and human health risks c. Solid waste management: Control measures of urban and industrial waste. d. Pollution case studies.	
6	**ENVIRONMENTAL POLICIES & PRACTICES**	**4**

	a. Climate change, global warming, ozone layer depletion, acidrain and impacts on human communities and agriculture b. Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention andcontrol of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). c. Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.	
7	**HUMAN COMMUNITIES AND THE ENVIRONMENT**	**4**
	a. Human population growth: Impacts on environment, human health and welfare. b. Resettlement and rehabilitation of project affected persons; case studies. c. Disaster management: floods, earthquake, cyclones and landslides. d. Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. e. Environmental ethics: Role of Indian and other religions andcultures in environmental conservation. f. Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	
8	**FIELD WORK**	**3**
	a. Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc. b. Visit to a local polluted site-Urban/ Rural/ Industrial/ Agricultural. c. Study of common plants, insects, birds and basic principles of identification. d. Study of simple ecosystems-pond, river, Delhi Ridge, etc.	

SUGGESTED READINGS

1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. ofCalifornia Press.
3. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
4. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment& Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles ofConservation Biology. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science 339: 36-37.
7. McCully, P. 1996. Rivers no more: the environmental effects of dams (pp. 29-64). Zed Books.
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SCHEME OF UNIVERSITY EXAMINATION

THEORY **ENVIRONMENTAL STUDIES**		**MARKS** **50**
SECTION A	**Q1** Answer any Eight out of Fifteen **[8x 5= 40 marks]**	**40**
SECTION B	**Q2** Match the following **[10 Marks]**	**10**
TOTAL MARKS		**50**

THIRD BPTH SYLLABUS

TRANSCRIPT HOURS 1400

SR. NO.	COURSE NAME	TOPIC	DIDACTIC HOURS
1	PROFESSIONAL PRACTICE & ETHICS	1. Collecting data on psychosocial factorsin Medicine / Surgery / Reproductive Health / Paediatrics	10
		2. Inter professional communication.	
		3. Ethics in clinical practice, Referred Practice ethic	
2	SURGERY	1. General Surgery	50
		2. Cardiovascular and Thoracic surgery	
		3. Reconstructive surgery	
3	ORTHOPEDICS	1. Fractures /Dislocations & Subluxations	50
		2. Soft tissue and Traumatic injuries	
		3. Deformities and Anomalies	
		4. Degenerative and Inflammatory Conditions	
		5. Management of Metabolic Disorders	
		6. General Orthopaedic disorders	
		7. Tumours	
		8. Deformities in Neuromuscular conditions	
4	MEDICINE	1. Cardio-Vascular & Respiratory Medicine	50
		2. General Medicine & Rheumatology	
5	NEUROLOGY	1. Introduction to Nervous System	50
		2. Brain and Spinal Cord Disorders	
		3. Movement Disorders	

		4. Cerebellar and Coordination Disorders	
		5. Muscle Disorders	
		6. Peripheral Nerve Injuries and Disorders	
		7. Infection of the Nervous System	
		8. Vestibular Disorders: Central & Peripheral	
		9. Alzheimer's Disease & Dementia	
		10. Epilepsy	
		11. Lower Cranial Nerve Lesions	
		12. Toxic, Metabolic and Environmental Disorders	
		13. Disorders of Autonomic Nervous System	
6	**PEDIATRICS**	1. Introduction to Normal development & Neural development	**50**
		2. Abnormal Development	
		3. Conditions	
7	**COMMUNITY HEALTH & SOCIOLOGY**	1. General Concepts Determinants Of Health & Diseases	**80**
		2. National Public Health Administration	
		3. Health Care Delivery System	
		4. Primary Health Care	
		5. Epidemiology Of Socio-Economic & Cultural Issues	
		6. Vaccine & Immunization Schedule & Family Planning	
		7. Communicable Diseases & Non-Communicable Diseases	
		8. Nutritional Health, Mental Health, Occupational Health, Geriatric Health And Related National Health Programs	
		9. Hospital Waste Management	
		SOCIOLOGY	
		1. Introduction	

		2. Socialization and Social Groups	
		3. Social Security & Social Legislation	
		4. Role of a Medical Social Worker	
		5. Introduction to Research Methodology	
		6. Overview of the connection between the environment and health	
		7. Introduction to Health Economics	
		8. The sociology of Health in Developing countries	
8	**OBSTETRICS & GYNECOLOGY**	1. Introduction	**50**
		2. Physiology of Pregnancy	
		3. Physiology of Labour	
		4. Postnatal Period	
		5. Infertility	
		6. Urogenital Dysfunction	
		7. Miscellaneous	
		8. Pelvic Inflammatory Diseases	
9	**PSYCHIATRY**	1. Classification and Diagnosis of psychiatric conditions	**40**
		2. Definition, Aetio-pathogenesis, manifestations, and management of psychiatric illnesses	
		3. Management	
10	**DERMATOLOGY**	1. Introduction	**30**
		2. Skin Infections	
		3. Connective tissue Lesions	
		4. Leprosy and Deformity	
		5. Miscellaneous	
		6. Importance of Physiotherapy	
11	**FUNCTIONAL DIAGNOSIS & PHYSIOTHERAPEUTIC SKILLS**	1. International Classification of Function, Disability & Health (ICF)	**460**
		2. Musculoskeletal Evaluation &Manipulative Skills	

		3. Cardiovascular Respiratory Evaluation & Related Skills	
		4. Neurotherapeutic Evaluation & Electro Diagnosis	
		5. Community Based Evaluation And Related Skills	
12	**SEMINAR**	Functional Diagnosis using International Classification of Function,Disability & Health (I.C.F.) in Musculoskeletal Evaluation And Manipulative Skills, Cardiovascular Respiratory Evaluation & Related Skills, Neurotherapeutic Evaluation & Electro Diagnosis, Community Based Rehabilitation	**30**
13	**SUPERVISED CLINICAL PRACTICE**	To practice clinical skills under the supervision of the O.P.D./ I.P.D. set up) Clinical Evaluation,& Case presentationwith Functional diagnosis- (Total 12 cases)	**450**

PROFESSIONAL PRACTICE AND ETHICS

[Total 10 Hours]

(COLLEGE EXAMINATION IN FINAL YEAR)

COURSE DESCRIPTION

This course(s) will be taught in Continuum from first year to final year. An exam will be conducted only in final year. Professional and ethical practices curriculum content addresses the Knowledge, Skills and behaviors required of the physiotherapist in a rangeof practice relationships and roles. The course will discuss the role, responsibility, ethicsadministration issues and accountability of the physical therapists. The course will be also cover the history and change in the profession, responsibilities of the professional tothe profession, the public and to the health care team. This includes the application of professional and ethical reasoning decisions making strategies and professional communication.

SR.NO.	TOPICS	DIDACTIC HOURS	VISITS/ SUPERVISION HOURS	TOTAL HOURS
1	Collecting data on psychosocial factors in Medicine/Surgery/ Reproductive Health / Paediatrics Pedagogy of clinical practice	2	4	10
2	Inter professional communication.	2		
3	Ethics in clinical practice, ReferredPractice ethics	2		
TOTAL		**6**	**4**	**10**

SURGERY

[Didactic-40 Hours+ Clinical-10 Hours =Total 50 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course intends to familiarize students with principles of General surgery including various specialties like cardiovascular, thoracic, neurology and plastic surgery. It also familiarizes the students with terminology and abbreviations for efficient and effective chart reviewing and documentation. It explores various conditions needing attention,focusing on epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical and medical management. The purpose of this course is to make physiotherapy students aware of various surgical conditions general surgery and specialty surgeries so these can be physically manage defectively both pre as well as postoperatively

SR.NO.	TOPICS	DIDACTIC HOURS
1	**GENERAL SURGERY**	**20**
	A. General- Definition, classification, types, symptoms, indications, contraindication, complications, management- medical/surgical (procedures), further precautions	
	i. Anesthesia	
	ii. Hemorrhage and Shock,	
	iii. Water &Electrolyte imbalance	
	iv. Inflammation	
	v. Common abdominal surgical (including burst abdomen and fecal fistula)	
	vi. Mastectomy and onco-surgery	
	vii. Amputation – (Amputation UL and Lower Limb) Approches, General Stump Preparation (Ideal Stump)	
	viii. Varicose veins and Peripheral Vascular Disease	
	ix. Hernias-surgery, precautions and complications	
	x. Transplantation approach, risk problems Related to donor and	

	recipient, precautions.	
	B. Neurosurgery- Introduction, Indications and Complications of	
	i. Craniotomy, Burr-hole, Shunting, Cranioplasty	
	ii. Laminectomy, Deep brain stimulation Intracranial Aneurysm and AV malformation tracheostomy–indications, surgical approach & management	
2	**CARDIO VASCULAR AND THORACICSURGERY** Introduction, Basic techniques in cardiac surgery approach, incisions, Types of operation, Complications following surgery	**12**
	i. Cardiopulmonary bypass	
	ii. Surgeries of thorax	
	iii. Surgeries of the lung	
	iv. Surgeries of pleura and pericardium	
	v. Surgery for coronary artery disease	
	vi. Valvular surgeries	
	vii. Surgery for Congenital Heart Disease	
	viii. Peripheral arterial disorder, Burger's disease, Reynaud's disease and Aneurysm	
	ix. Gangrene, Amputation, DVT	
3	**RECONSTRUCTIVE SURGERY** Types, symptoms, indications, contraindication, complications, management- Surgical (procedures), further precautions	**8**
	i. Skin grafts & flaps	
	ii. Wounds & Ulcers, Cellulitis (Keloid & Hypertrophied car management)	
	iii. Tendon transfers, with special emphasis to hand, foot & facial paralysis, & repair of Flexor & Extensor Tendon	

CLINICAL (10 Hours)

1. Clinical Case presentation, History, General Examination with subjective and Objective Assessment of Underlying Orthopaedic condition and recording one case each in:

a) Burns

b) Wound Ulcer

c) Head Injury

d) Peripheral Vascular Condition

e) Post radical mastectomy

f) Post Thoracic Surgery

g) Post abdominal surgery

h) Tendon transfer, Tendon repair

i) Amputation

2. Investigations, Reading & Interpretation of the Auscultation, X-rays, MRI etc.

3. Provisional Diagnosis

RECOMMENDED TEXTBOOKS

1. A Concise Textbook of Surgery– S. Das, Das Publishers
2. Handbook of Surgery by S C Atri Publishers

RECOMMENDED REFERENCE TEXTBOOKS

1. Short Practice Of surgery--Bailey and Love, CRC Publishers
2. Manipal Manual of Surgery- K Rajgopal Shenoy, Anitha Shenoy, CBS Publishers

INTERNAL ASSESSMENT

Two examination of Total 40 marks **(**Theory only**)**

Internal Assessment to Be Calculated Out Of 10 Marks

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **40 MARKS I.A.– 10 MARKS** *The Question paper will give appropriate weightage to the topics in syllabus. [There shall be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q1-Answer any FOUR out of FIVE [4 x5 marks = 20]** *Based on topics- Cardiovascular thoracic surgery	**20**
SECTION B	**Q2-Answer Any FOUR out of FIVE [4 x5 marks = 20]** *Based on topics- General surgery plastic surgery	**20**
TOTAL MARKS		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	**MARKS**
Examination And Viva Examination- Based on Case presentation conducted at the end of Clinical Posting	**20**

***Note: Clinical Posting and Clinical Case Presentation is Mandatory to appear for University Exam.**

ORTHOPEDICS

[Didactic 40 Hours+ Clinical 10 Hours =Total 50 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course intends to familiarize students with principles of orthopaedic surgery along with familiarization with terminology and abbreviations for efficient and effective each art reviewing and documentation. It also explores various orthopaedic conditions needing attention, focusing one epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical and medical management. The purpose of this course is to make physiotherapy students aware of various orthopaedic surgical conditions so these can bephysically managed effectively both pre as well as post operatively.

SR.NO	TOPICS	THEORY HOURS	CLINICAL HOURS
1	**FRACTURES /DISLOCATIONS & SUBLUXATIONS**	8	2
	a. Definition, Classification, Causes, Clinical features, healing of fractures / Dislocation / Subluxation & its Complications.		
	b. Principles of general management of		
	i. Fracture / Dislocation of the Upper Extremity		
	ii. Fracture/ Dislocation of the Lower Extremity		
	iii. Fracture of the vertebral column, thorax and pelvis		
	iv. Emergency care and first aid.		
2	**SOFT TISSUE AND TRAUMATIC INJURIES**	4	1
	a. Introduction- Anatomy& physiology, general description, grade of injury and management of injuries of i. Ligaments, Bursae,Fascia,		

	ii. Muscles &Tendons		
	b. Cervical-lumbar injuries, Whiplash of the cervical spine		
	c. Crush injuries of hand &foot		
3	**DEFORMITIES AND ANOMALIES**	**9**	**2**
	a. Definition, Causes, Classification, Congenital and acquired deformities. Physical and clinical and radiological features, Complications		
	b. Principles of medical and surgical management of the deformities		
	c. General description of following deformities:		
	i. Deformities of the spine		
	a. Scoliosis		
	b. Kyphosis		
	c. Lordosis		
	d. Flat back		
	e. Torticollis		
	f. Hemivertebra, . Sacralisation, Lumbarisation		
	ii. Deformities of the lower limb		
	a. Congenital Dislocation of Hip (CDH), Coxa vara , Coxavalga, Anteversion, Retroversion		
	b. Genu valgum, Genu varum, Genu recurvatum,		
	c. Talipes calcaneous equinus, varus & valgus		
	d. Pescavus, Pesplanus		
	e. Hallux valgus & varus, Hallux rigidus and hammer toe		
	iii. Deformities of Shoulder & Upper limb		
	a. Sprengel's shoulder, Cubitus varus,Cubitus valgus		
	b. Dupuytren's contracture		
4	**DEGENERATIVE AND INFLAMMATORY CONDITIONS**	**5**	**2**

	a. Osteo-arthritis		
	b. Spondylosis , Spondylolysis & Spondylolisthesis		
	c. Pyogenic arthritis		
	d. Rheumatoid arthritis		
	e. Juvenile arthritis		
	f. Tubercular arthritis		
	g. Gouty arthritis		
	h. Hemophilic arthritis		
	i. Neuropathic arthritis (Charcot Joint)		
	j. Ankylosing spondylitis		
	k. Psoriatic arthritis		
5	**MANAGEMENT OF METABOLIC DISORDERS**	**2**	**-**
	a. Osteoporosis		
	b. Osteomalacia & Rickets		
6	**GENERAL ORTHOPAEDIC DISORDERS**	**6**	**1**
	a. Carpel tunnel syndrome/Entrapment nerve injuries		
	b. Compartment syndrome, Ischemic contracture		
	c. Avascular necrosis of bone in adult and children		
	d. Adhesive Capsulitis /Bursitis/ Tennis & Golfer's Elbow/ Trigger Finger/ Dequervains Disease		
	e. Neckpain/ Backache / Prolapsed Intervertebral Disc		
7	**TUMOURS**	**2**	**-**
	i. Classification, Principles of general management		
	ii. General description of benign and malignant tumors of musculoskeletal system		
8	**DEFORMITIES IN NEUROMUSCULAR CONDITIONS**	**4**	**2**
	a. Cerebral palsy. b. Poliomyelitis. c. Spinal Dwarfism. d. Leprosy.		

CLINICAL (10 Hours)

1. Independent clinical Orthopaedic evaluation presentation & recording of:
2. One acute soft tissue lesion(including nerve injury)
3. Two cases of degenerative arthritis of extremity joint (One each inUpper Extremity and One Lower Extremity)
4. Two cases of spine (one P.I.D, one traumatic)
5. One post-operative case of fractures of extremities with fixation/replacement knee/hip
6. One paraplegia/quadriplegia

RECOMMENDED TEXT BOOKS

1. Essentials of Orthopaedics, Maheshwari, Mhaskar,Jaypee Brothers Medical Publishers
2. Nataraja's Textbook of Orthopaedics & Traumatology, M.V Natarajan, Wolters Kluwer

RECOMMENDED REFERENCE BOOKS

1. Adams's Outline of Fractures: Including Joint Injuries, David L. Hamblen , A.Hamish Simpson DM**,** Churchill Livingstone
2. Adams's Outline of Orthopaedics: Including Joint Injuries, David L. Hamblen , A. Hamish .Simpson DM**,** Churchill Livingstone
3. Apley's System Of orthopaedics and fractures, Louis Solomon & David Warwick & Selvadurai Nayagam, CRC Press

INTERNAL ASSESSMENT

Two examination of Total 40 marks (Theory only)

Internal Assessment to Be Calculated Out Of 10 Marks

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY 40 MARKS I.A.– 10 MARKS *The Question paper will give appropriate weightage to the topics in syllabus. [There shall be no LAQ in this paper]		MARKS 50
SECTION A	**Q1 Answer any FOUR out of FIVE [4 x5 = 20 marks]** Based on topics- No. 1,3,4,7	**20**
SECTION B	**Q2 Answer Any FOUR out of FIVE [4 x5 = 20 marks]** Based on topics- No. 2,5,6,8	**20**
TOTAL MARKS		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	MARKS
Examination And Viva Examination- Based on One Case presentation by each student conducted at the end of Clinical Posting	**20**

*** Note: Clinical Posting and Clinical Case Presentation is Mandatory to appear for University Exam.**

MEDICINE

[Didactic 40 Hours + Clinical 10 Hours = Total 50 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course intends to familiarize students with medical terminology & abbreviations for efficient & effective chart reviewing & documentation. It also explores selected systemic diseases, focusing one epidemiology, pathology, histology, etiology as well as primary & secondary clinical characteristics & their management. Discusses & integrates subsequent medical management of General, Rheumatology, Gerontology, Cardio-vascular & Respiratory systems to formulate appropriate intervention, indications, precautions &contraindications

SR.NO.	TOPICS	DIDACTIC HOURS	CLINICAL HOURS
1	**CARDIO-VASCULAR & RESPIRATORY MEDICINE**	**28**	**5**
	A. Cardio-Vascular Diseases	**11**	**2**
	i. Hypertension –systemic	1	
	ii. Cardiac Conditions		
	a. Ischemic Heart Disease (Angina, Myocardial infarction)	4	
	b. Rheumatic Heard Disease (R.H.D.)		
	c. Infective Endocarditis		
	d. Cardiomyopathy		
	e. Heart Failure		
	iii. Valvular Heart Disease	1	
	a. Congenital		
	b. Acquired		
	iv. Congenital Heart Disease	2	
	v. Investigations	3	
	a. Basics of E.C.G. [Normal & Abnormal Ischemia, Infarction & Arrhythmias]		
	b. Observation of conduction of stress test on		

	patient		
	a. 2 D Echo (Ejection Fraction & Wall motion Abnormality)		
	B. Diseases of the Respiratory System	**17**	**3**
	i. Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, and Bronchiectasis. Covid-19, etc.	3	
	ii. Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydro pneumothorax and Empyema.	2	
	iii. ILD & Occupational lung diseases like Silicosis, Asbestosis, Pneumoconiosis,Brucellosis, Farmer's lung	2	
	iv. Obstructive Airway Diseases (C.O.P.D. withCor Pulmonale, Pulmonary Hypertension, Bronchial Asthma & Cystic Fibrosis)	3	
	v. Intensive Care Unit		
	a. Infrastructure		
	b. Instrumentation.		
	c. Mechanical Ventilation(settings & monitoring)		
	d. Assessment, monitoring & management of patient in I.C.U.	3	
	vi. Basic Life Support: Introduction & Demonstration	2	
	vii. Investigation :Normal &Abnormal		
	a. Chest X-ray	2	
	b. Blood Gas Analysis		
	c. PFT (Observation of conduction on patient)		
2	**GENERAL MEDICINE & RHEUMATOLOGY**	**12**	**5**
	A. General Medicine		

	i. Disorders of Endocrine system (Diabetes) Introduction, pathophysiology, types, role of physical activity, complications of diabetes (autonomic neuropathy, myopathy, weakness) & medications.	7	2
	ii. Thyroid, Pituitary & Adrenal conditions, Cushing's syndrome		
	iii. Obesity		
	iv. Nutrition Deficiency Disease (Rickets, Vit.E, Vit.D, Vit.B, micronutrients, (Zn,Se)		
	v. Intoxication (Drug abuse; Alcohol, smoking, cocaine dependence)		
	B. Rheumatological Conditions	5	3
	i. Rheumatoid Arthritis		
	ii. Systemic Lupus Erythematosus (SLE)		
	iii. Gout		
	iv. Polymyositis		
	v. Fibromyalgia		
	vi. Ankylosing spondylitis		

CLINICAL (10 Hours)

1. History Taking, Evaluation– General Examination Systemic examination (Inspection, Palpation, Percussion, Auscultation)
2. Case Presentation of following cases :

   a. Muscular Disorders

   b. Respiratory Conditions

   c. Cardio Vascular Conditions

   d. Degenerative/ Rheumatologic Condition

   e. Obesity

   f. Nutritional Disorders

   g. Diabetes Mellitus Metabolic bone disorders.

RECOMMENDED TEXTBOOKS

1. API - Textbook of Medicine, Sandhya A Kamath , Siddharth N Shah, Yash Pal Munjal, Milind Y Nadkar, Jaypee Brothers Publishers; 12th Edition
2. Manual of Practical Medicine, R Alagappan, Jaypee Brothers Medical Publishers; 7th Edition
3. P.J.Mehta's Practical Medicine, Nihar P Mehta, SP Mehta, SR Joshi, The National Book Depot; 20th Edition
4. Davidson's Principles & Practice of Medicine, Ian Penman, Stuart Ralston, Mark Strachan, Richard Hobson, Elsevier Publishers; 24th Edition

RECOMMENDED REFERENCE BOOKS

1. Golwalla's Medicine for Students, Milind Y Nadkar, Aspi F Golwalla, Sharukh A Golwalla Jaypee Publishers; 25th Edition
2. Hutchison's Clinical Methods: An Integrated Approach to Clinical Practice, Glynn, Elsevier Publishers; 24th Edition
3. Harrison's Principles of Internal Medicine, McGraw Hill / Medical; 21st Edition

INTERNAL ASSESSMENT

Two examination of Total 40 marks **(**Theory only**)**

Internal Assessment to Be Calculated out Of 10 Marks

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **40 MARKS I.A.– 10 MARKS** *The Question paper will give appropriate weightage to the topics insyllabus. [There shall be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q1 Answer any FOUR out of FIVE [4 x 5 = 20 marks]** *Based on topics **GENERAL MEDICINE, RHEUMATOLOGY**	**20**
SECTION B	**Q2 Answer Any FOUR out of FIVE [4 x 5 = 20 marks]** *Based on topics **CARDIOVASCULAR & RESPIRATORY MEDICINE**	**20**
TOTAL MARKS		**40**

Clinical Case Presentation (COLLEGE EXAMINATION) Examination And Viva Examination- Based on One Case presentation by each student conducted at theend of Clinical Posting.	**MARKS** **20**

*** Note: Clinical Posting and Clinical Case Presentation is Mandatory to appear for University Exam.**

NEUROLOGY

[Didactic 40 Hours + Clinical 10 Hours = Total 50 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course intends to familiarize students with medical terminology & abbreviations for efficient & effective chart reviewing & documentation. It also explores select systemic diseases, focusing one epidemiology, etiology, pathology, histology as well as primary & secondary clinical characteristics &their management. It discusses & integrates subsequent medical management of Neurological conditions to formulate appropriate intervention, indications, precautions & contraindications.

SR.NO.	TOPICS	DIDACTIC HOURS	CLINICAL HOURS
	NEUROLOGY	**40**	**10**
The following points has to be covered for various neurological conditions: Definition, etiology, Classification, Pathophysiology, Clinical Manifestations, , Complications, Investigations, Differential diagnosis, Medical treatment & Surgical treatment			
1	**INTRODUCTION TO NERVOUS SYSTEM** a. Applied Anatomy & Applied Physiology	**1**	
2	**BRAIN AND SPINAL CORD DISORDERS** i. Cerebrovascular Accident, ii. Head Injury iii. Brain Tumors, iv. Perceptual disorders v. Motor Neuron Disease vi. Multiple sclerosis vii. Spinal cord injury viii. Transverse Myelitis ix. Spinal tumors x. Spinal Muscular atrophy (SMA) xi. Syringomyelia,	**10**	**3**

	xii. IVD Prolapse xiii. Spinal Epidural Abscess xiv. Myasthenia Gravis, Eaton-Lambert Syndrome		
3	**MOVEMENT DISORDERS** i. Parkinsonism ii. Athetosis iii. Chorea iv. Dystonia v. Myoclonus vi. Tics vii. Hemiballismus viii. Wilson Disease	**3**	**1**
4	**CEREBELLAR AND COORDINATION DISORDERS** i. Congenital ataxia ii. Friedreich's ataxia iii. Ataxia telangiectasia iv. Metabolic ataxia v. Hereditary cerebellar ataxia vi. Tabes Dorsalis and Syphilis.	**3**	**1**
5	**MUSCLE DISORDERS** i. Muscular Dystrophy ii. Myotonic Dystrophy iii. Myopathy iv. Non-Dystrophic Myotonia	**3**	**1**
6	**PERIPHERAL NERVE INJURIES AND DISORDERS** i. Hereditary motor sensory neuropathy, ii. Guillain-Barre syndrome iii. Peroneal Muscular Atrophy iv. Thoracic outlet syndrome v. Brachial plexus palsy vi. Lumbosacral plexus lesions	**7**	**2**

	vii. Metabolic Neuropathy viii. Nerve Palsies: All Nerve palsies seen in Upper limb and Lower limb		
7	**INFECTION OF THE NERVOUS SYSTEM** i. Encephalitis ii. Neurosyphilis iii. H.I.V. iv. Herpes Zoster v. Meningitis vi. Tabes Dorsalis vii. Tetanus viii. Poliomyelitis &Post-Polio Syndrome ix. Septic encephalopathy, x. AIDS xi. Rheumatic fever xii. Brucellosis, Tetanus, and Pertussis	**5**	**1**
8	**VESTIBULAR DISORDERS: CENTRAL & PERIPHERAL**	**1**	
9	**ALZHEIMER'S DISEASE & DEMENTIA**	**1**	
10	**EPILEPSY**	**1**	
11	**LOWER CRANIAL NERVE LESIONS** i. Trigeminal Neuralgia ii. Facial palsy iii. Bell's palsy iv. Hemi facial spasm v. Glossopharyngeal neuralgia vi. Lesions of Vagus nerve, spinal accessory nerve & hypoglossal nerve	**2**	**1**
12	**TOXIC, METABOLIC AND ENVIRONMENTAL DISORDERS** i. Encephalopathy ii. Alcohol toxicity iii. Recreational drug abuse	**2**	

	iv. Toxic gases & Asphyxia v. Therapeutic & diagnostic agent toxicity vi. Metal toxicity vii. Pesticide poisoning viii. Environmental & physical insults ix. Fungal poisoning x. Plant & Animal poisons xi. Complications of organ transplantation		
13	**DISORDERS OF AUTONOMIC NERVOUS SYSTEM** – Horner's syndrome, Hypo/Hypertension, Autonomic Dysreflexias	**1**	

CLINICAL (10 Hours)

1. History taking and General examination
2. Examination of the Nervous System
3. Examination of Normal and Abnormal Reflexes
4. Examination of Respiratory System
5. Examination of Cardiovascular System
6. Examination of Musculoskeletal System
7. Clinical Case Presentation of following cases:
    a. Stroke
    b. Traumatic Brain Injury
    c. Parkinson's Disease
    d. Peripheral Nerve Injury
    e. Guillain Barre Syndrome
    f. Cerebellar Ataxia
    g. Multiple Sclerosis
    h. Spinal Cord Injury

RECOMMENDED TEXT BOOKS

1. Neurology and Neurosurgery Illustrated, By Kenneth W. Lindsay, Ian Bone, Geraint Fuller, Churchill Livingstone
2. Bickerstaff's Neurological Examination In Clinical Practice, Kameshwar Prasad, Ravi Yadav, John Spillane ,Wiley Publisher

RECOMMENDED REFERENCE BOOKS

1. Neurological Differential Diagnosis, John Patten, Springer
2. Harrison's Neurology in Clinical Medicine, Stephen Hauser, S. Andrew Josephson, McGraw-Hill Education / Medical

INTERNAL ASSESSMENT

Two examination of Total 40 marks (Theory only)

Internal Assessment to Be Calculated Out Of 10 Marks

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **40 MARKS I.A.– 10 MARKS** *The Question paper will give appropriate weightage to the topics insyllabus. [There shall be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q1 Answer any FOUR out of FIVE [4 x5=20 marks]** *Based on topics–2,3,4,8,9 &10	**20**
SECTION B	**Q2 Answer Any FOUR out of FIVE [4 x5 =20 marks]** *Based on topics–5,6,7,11 &12,13	**20**
TOTAL MARKS		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	**Marks**
Examination And Viva Examination- Based on One Case presentation conducted by each student at theend of Clinical Posting	**20**

***Note: Posting and Clinical Case Presentation is Mandatory to appear for University Exam.**

PAEDIATRICS

[Didactic 40 Hours + Clinical 10 Hours=Total 50 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course intends to familiarize students with medical terminology & abbreviations for efficient & effective chart reviewing & documentation, it also explores select systemic diseases, focusing on epidemiology, etiology, pathology, histology as well as primary & secondary clinical characteristics & their management. It discusses& integrates subsequent medical management of Pediatric conditions to formulate appropriate intervention, indications, precautions & contraindications.

SR. NO.	TOPICS	DIDACTIC HOURS
1.	**Introduction to Normal development & Neural development**	
	a. **Embryological development and applied embryology:** Special reference to Central Nervous System, Neuromuscular System, Cardiovascular Respiratory System and other systems.	**2**
	b. **Normal Newborn**: Vitals, APGAR score, delivery room care, care of newborn, neonatal reflexes, kangaroo mother care, breastfeeding, vaccination.	**1**
	c. **Newborn Illness:** Birth Asphyxia, neonatal hyperbilirubinemia, sepsis, birth injuries, prematurity.	**1**
	d. **Normal growth & Development:** Theories of Development, Typical and Atypical development (gross motor, fine motor, social-emotional, cognitive, speech & language etc.), Sensory system and Reflex maturation and reaction	**1**
2.	**Abnormal Development:** Sign and symptoms of Developmental delay, Approach to developmental Delay, tools for assessing developmental delay	**1**
3.	**Developmental Pediatric Conditions**	
	a. Cerebral Palsy- Definition and Overview, Historical	3

	Background, Epidemiology, Types of Cerebral Palsy and Clinical presentation. Medical Management including early intervention.	
	b. Spinal cord Disorders: Neural tube defect, Spinal Muscular Atrophy**,** sub-acute combine degeneration of cord, hereditary spastic paraplegia.	2
	c. Cerebral malformations: Hydrocephalus management and treatment, Arnold-Chiari malformation, Dandy walker syndrome, Basilar impression	1
	d. Infections of the nervous system: Bacterial Meningitis, Encephalitis, TB Meningitis, tuberculosis.	1
	e. Disorders of cerebellar function: -Congenital ataxia, Ataxia telangiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Nystagmus, Speech	1
	f. Movement disorder of basal ganglia: Tremor, Chorea, Hemiballismus, Athetosis, And Dystonia	1
	g. Epilepsy: Definition, causes, types, ethology, pathophysiology, management, prognosis.	1
	h. Peripheral Nerve Injuries & Disorders: Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Guillain-Barre syndrome, hereditary sensory motor Disorder (Charcot-Marie-Tooth Disease), Friedreich's ataxia, Polyneuropathy Hereditary sensory motor neuropathy.	2
	i. Myopathies: Duchenne muscular dystrophy (DMD), Becker's muscular dystrophy (BMD)	2
	j. Genetic Disorders: Turner's syndrome, Achondroplasia, cystic fibrosis, Thalassemia and Sickle cell anemia.	2
	k. Mental retardation and Downs syndrome	2
	l. Lower cranial nerve paralysis & its Disorder: Etiology, clinical features, investigations, and management of following disorders: i. Lesions in trigeminal nerve, ii. Lesions in facial nerve- facial palsy, bell's palsy, hemi facial spasm. Glossopharyngeal neuralgia,	2

	iii. Lesions of Vagus nerve, iv. Lesions of spinal accessory nerve, v. Lesions of hypoglossal nerve- Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.	
	m. Common Congenital Anomalies: Spina Bifida, Arthrogryposis Multiplex Congenita, CTEV, Hip dysplasia, Congenital deformities of limbs, Congenital laryngomalacia, Congenital pectus excavatum, Craniofacial Abnormalities,	2
	n. Rheumatic Disorder: Juvenile rheumatoid arthritis & other Rheumatologic conditions of Musculoskeletal system	2
	o. Respiratory conditions of childhood: Common diseases of the Respiratory system: Asthma, Bronchitis, T.B., Pneumonia, Lung collapse, Pleural effusion, C O P D , Respiratory distress in neonate	2
	p. Congenital Heart diseases: Difference between Fetal and Adult circulation i. **Cyanotic Heart Disease**: Transposition of the great arteries (TGA), tetralogy of Fallot, truncus arteriosus (“truncus”), total anomalous pulmonary venous connection (TAPVC), and tricuspid valve abnormalities (TVA). ii. **Acynotic Heart Disease:** Aortic wall stenosis, Atrial septal defect (ASD), Atrioventricular canal defect, Patent ductus arteriosus (PDA), Ventricular septal defect (VSD), pulmonary wall stenosis (PWS)	2
	q. Malnutrition and Vitamin deficiency conditions: Marasmus and Kwashiorkor, Rickets, Protein Energy Malnutrition, Scurvy, Rickets, Beriberi, Hypocalcemia, Osteomalacia, Vitamin K Deficiency, Pellagra, Xerophthalmia, and Iron Deficiency, Iodine and Vitamin B12 deficiency	2
	r. Common childhood infection: Typhoid, Rubella, Mumps, Measles, Diphtheria, Chicken gunnie, Malaria.	1

	s. Learning and behavioral problems: Hyperactivity, Autism Spectrum disorder, ADHD, Dyslexia, Challenging behaviors.	2
	t. Educational delay- The Clumsy Child.	1

CLINICAL (10 Hours)

1. History taking and general examination in neonate and child
2. Examination of reflexes, motor level of neonates and child
3. Examination of The Nervous System
4. Examination of Respiratory System
5. Examination Of Cardiovascular System
6. Examination Of Musculoskeletal System
7. Ventilatory Care In Neonate And Child

RECOMMENDED TEXT BOOKS

1. Meharban Singh. PEDIATRIC Clinical Methods. 6Ed. India: CBS; 2020.
2. Lakshmanaswamy Aruchamy. Textbook of Pediatrics.1st Ed. India: Elsevier; 2021

RECOMMENDED REFERENCE BOOKS

1. O.P. Ghai. Essentials Pediatrics. 6th Ed. India: CBS; 2007
2. Illingworth. The Development of the Infant and Young Child: Normal and Abnormal. 11th Ed: India: Elsevier; 2021.
3. Robert M. Kliegman. Nelson Textbook of Pediatrics 21st Ed. India: Elsevier;
4. Indian Academic of Pediatric Guidelines as per the faculty advice.

INTERNAL ASSESSMENT

Two examinations (Terminal & Preliminary) of Total 40 marks (Theory only)

Internal Assessment to Be Calculated Out Of 10 Marks

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **40 MARKS I.A.– 10 MARKS** *The Question paper will give appropriate weightage to the topics in syllabus. [There shall be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q1 Answer any FOUR out of FIVE [4x5 = 20 marks]** *Based on topics– A (1 to 3), B, C (1 to 9)	**20**
SECTION B	**Q2-Answer Any FOUR out of FIVE [4x5 = 20 marks]** *Based on topics– C (10 to 20)	**20**
TOTAL MARKS		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	**MARKS**
Examination And Viva Examination- Based on Case presentation conducted at the end of Clinical Posting	**20**

***Note: Posting and Clinical Case Presentation is Mandatory to appear for University Exam.**

COMMUNITY HEALTH & SOCIOLOGY

[Community Health 40 Hours +Sociology 40 Hours = Total 80 Hours]

(UNIVERSITY EXAMINATION)

COMMUNITY HEALTH

[Didactic 31 Hours + Visit 09 Hours =Total 40 Hours]

COURSE DESCRIPTION

The course is designed to introduce the concept of healthcare and address management challenges in health services. It aims to prepare students to take on leadership roles within their profession, guiding others and assuming greater responsibilities across all levels of health services. This course will enhance their performance by deepening their understanding of health services at every level within the community.

SR.NO.	TOPICS	DIDACTIC HOURS
	Concept Of Health And Disease	
1	**GENERAL CONCEPTS DETERMINANTS OF HEALTH & DISEASES**	**4**
	a. Concept of health and disease b. National & International Definition of Health, Role of Socio Economic & Cultural Environment in Health Disease.	
	c. Epidemiology– Definition & scope, uses with relevance Physiotherapy	
	d. Environmental Hygiene including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation,Bacteriology of Water, Milk & Food Hygiene.	
2	**NATIONAL PUBLIC HEALTH ADMINISTRATION**	**1**
3	**HEALTH CARE DELIVERY SYSTEM**	**2**
	a. Healthcare Delivery System of India (Definition, Principles, Elements & Its Application)	

	b. National Health Programmes	
	c. Role of WHO	
	d. Sustainable Development Goal	
4	**PRIMARY HEALTH CARE**	1
	a. Definition	
	b. Principles	
	c. Elements and its application	
5	**EPIDEMIOLOGY OF SOCIO-ECONOMIC & CULTURAL ISSUES**	**6**
	Related to morbidity in relation to the following vulnerable groups.	
	a. Women	
	i. Pregnant and Lactating Women, maternal health (ANC,PNC,INC)	
	ii. Peri menopausal women's health: physical & psychological	
	b. Infants: (Low Birth Weight, Breastfeeding, Complementary feeding, IYCN, IMNCI Vaccine Preventable Diseases, Immunization programmes, Infant and Childhood Mortality)	
	c. Children: Child health, Growth monitoring under five clinic, Rashtriya Bal Swasthya Karyakram (RBSK)	
	d. School aged population health: Early detection and prevention of disabilities, behavioral problems	
6	**VACCINE & IMMUNIZATION- Schedule & family planning, RCH including demography and objectives of national family welfare programmes and national population policy**	**2**
7	**COMMUNICABLE DISEASES & NON-COMMUNICABLE DISEASES- Introduction to Infectious Disease Epidemiology**	**5**
	Communicable Diseases: National Health Programs with respect to	
	An overview [including prevention & control] T.B., H.I.V., Leprosy, Vector borne diseases- Malaria/ Filariasis/ Dengue/ Chikungunya/ Japanese encephalitis, COVID 19, Monkey pox	

	Non-Communicable Diseases National Health Programs with respect to	
	Diabetes Mellitus, Hypertension, Coronary Heart Disease/ Obesity/	
	Blindness/ Accidents/ Stroke/ Cancer.	
8	**HEALTH AND RELATED PROGRAMS- Nutritional health, mental health, occupational health, geriatric health and related national health programs**	**8**
	Nutritional Health: Malnutrition, Nutritional disorders and National nutrition programs, Osteomalacia, Rickets, Neuropathy Important nutritional problems in India due toVitamin- deficiency, Skeletal Deformities, Anemia, ICDS	
	Mental Health: Socio-economic & cultural aspects and Substance Abuse and Addiction– tobacco, alcohol and others	
	Occupational Health: Occupational diseases & hazards- definition, scope, prevention & legislations, Occupational lung diseases & Physical injuries/ pains	
	Geriatric Health: Care and welfare of elderly	
	a. Introduction to Gerontology and Senescence b. Aging and health c. Problems of the old d. Prevention of health problem of elderly	
9	**HOSPITAL WASTE MANAGEMENT**	**1**
	a. Sources of hospital waste, Health hazards, Waste management. Universal Safety Precautions, Immunization of health care providers including their vaccination.	
	b. Introduction to Disaster Management	1

COMMUNITY VISITS

Community health centers: Urban & Rural – 09 Hours

RECOMMENDED TEXT BOOKS

1. Park's Textbook of Preventive Social Medicine, K.Park, Bhanot Publishers

2. Mahajan & Gupta Textbook of Preventive and Social Medicine, BK Mahajan, RabindraNath Roy, Indranil Saha, MC Gupta, Jaypee Publishers
3. TextBook of Community Medicine, Kulkarni, Baride, Vora Medical Publications

RECOMMENDED REFERENCE BOOKS

1. Textbook Of Community Medicine Preventive And Social Medicine, Sunder Lal, CBSPublication
2. Golden Notes for Preventive and Social Medicine , Patel Parimal, JP Medical Ltd

SOCIOLOGY

[Didactic 30 Hours + Visit 10 Hours =Total 40 Hours]

COURSE DESCRIPTION

This course provides foundational knowledge and concepts in sociology, aiming to help participants understand how group dynamics, culture, and environment influence patient behavior and health. It emphasizes the significance of the relationship between physical therapists and their patients, as well as the surrounding environment.

SR.NO	TOPICS	DIDACTIC HOURS
1	**INTRODUCTION**	**2**
	Definition & Relevance with Physiotherapy Factors affecting Health Status, Decision Making Taking Treatment.	
2	**SOCIALISATION AND SOCIAL GROUPS**	**11**
	Definition, Influence of Social Factors, on Personality, Socialization in the Hospital Rehabilitation of the patients.	
	Concepts, Influence of formal & informal groups of Health & Diseases, Role of Primary & Secondary Groups in Hospitals Rehabilitation Setting.	
	Family: Influence on human personality, Role Of Family In Health And Disease	
	Community Role: Rural & Urban communities in Public Health, Role of community determining Beliefs, Practices Home Remediesin Treatment.	
	Culture: Component's impact on human behaviour, Role of community in determining beliefs, practices and health seeking behaviour and home remedies	
	Social Change Factors: Human Adaptation, Stress, Deviance, Health Programme Role of Social Planning in the improvement of Health & in Rehabilitation	

	Social Control: Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human	
	Behaviour, Social Deviance & Disease	
	Population Group:	
	a. Children: Street children, Child labour, Juvenile Delinquency	
	b. Women's: Victims of domestic violence and addiction, C.S.W., physically and /or mentally challenged	
	c. Role of NGOs, Social Support Systems	
3	Social Security & Social Legislation in relation to the Disabled, vulnerable groups.	**3**
4	Role of a Medical Social Worker, Sociology of Brain Death and/ or Organ donation, Social Problems: Population explosion, Poverty, Dowry, Illiteracy- Causes, prevention & Control measures	**5**
5	Introduction to Research Methodology with respect to Social Sciences (Qualitative)	**3**
6	Overview of the connection between the environment and health including hereditary factors.	**2**
7	Introduction to Health Economics	**2**
8	The sociology of Health in Developing countries	**2**

VISITS: 10 Hours

RECOMMENDED TEXTBOOKS

1. An introduction to sociology, Vidya Bhushan & D.R.Sachdeva, Kitab Mahal DistributorsNew Delhi
2. Psychology and Sociology Applied to Medicine: An Illustrated Colour Text, by BethAlder, Michael Porter BA
3. Social Change In India, B. Kuppuswamy B.V. Kumar, Konark Publishers Pvt Ltd

RECOMMENDED REFERENCE BOOKS

1. The Principles of Sociology, Giddings Franklin Henry, MJP Publishers
2. Social Problems in India, Ahuja Ram, Rawat Publications

INTERNAL ASSESSMENT

Two exams–Terminal and preliminary examination of 80 marks each Total=160 Hours

Internal Assessment to Be Calculated out of 20 marks**.**

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS +I.A.–20 MARKS** *The question paper will Give appropriate weightage to the topics in the syllabus. [There will be no LAQ in this paper]		**MARKS** **100**
SECTION A	Questions based on **COMMUNITY HEALTH** **Q1 Answer any FOUR out of FIVE** **[4 x5 = 20 marks]** **Q2 Answer any FOUR out of FIVE** **[4 x5 = 20 marks]**	**40**
SECTION B	Questions based on **SOCIOLOGY** **Q3 Answer any FOUR out of FIVE** **[4 x5 = 20 marks]** **Q4 Answer any FOUR out of FIVE** **[4 x5 = 20 marks]**	**40**
TOTAL MARKS		**80**

OBSTETRICS & GYNAECOLOGY

[Didactic 40 Hours + Clinical 10 Hours = Total 50 Hours]

(UNVERSITY EXAMINATION)

COURSE DESCRIPTION

This course intends to provide an introduction to women's health which includes problems related to pregnancy, osteoporosis, and other disorders specific to women. Topics Will Focus Medical Terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area. It also emphasizes on evaluation medical treatment of pelvic floor dysfunctions

SR. NO.	TOPIC	DIDACTIC HOURS	CLINICAL HOURS
1	**INTRODUCTION**	**4**	
	i. Anatomy and physiology of the female reproductive organs. Puberty dynamics	1	
	ii. Physiology of Puberty & Menstruation, Abnormalities & common problems of Menstruation	2	
	iii. Hormonal disorders of females-obesity and female hormones	1	
2	**PHYSIOLOGY OF PREGNANCY**	**4**	
	i. Fertilization, Development of the foetus, Normal gestations, Abnormal / Multiple gestations		
	ii. Common Complications during pregnancy like PIH, Eclampsia Diabetes, Hepatitis, German Measels, TORCH infection.(Complications during labour & management)		
3	**PHYSIOLOGY OF LABOUR**	**6**	
	i. Physiological changes during pregnancy		
	ii. Normal – Events of Ist IInd & IIIrd Stages of labour		
	iii. Episiotomy, Caesarian section- elective/ emergency & post-operative care		**1**
	iv. Complications during labour & management		
	v. Musculoskeletal disorders during pregnancy		

	vi. Importance of antenatal care exercises		
4	**POSTNATAL PERIOD**	**8**	**2**
	i. Puerperium, lactation		
	ii. complications of repeated child bearing with small gaps		
	iii. Methods of Contraception & family planning		
	iv. Child birth complications		
	v. Importance of post-natal care exercises		
5	**INFERTILITY**	**2**	**2**
	Management with emphasis on PCOS/PCOD	1	
	Sterility- Pathophysiology, Investigations, Management, Malnutrition and deficiencies in females	1	
6	**URO-GENITAL DYSFUNCTION**	**5**	**3**
	i. Uterine prolapse – classification & management (Conservative / Surgical)		
	ii. Cystocoele, Rectocoele, Enterocoele		
	iii. Incontinence- Types, Causes, Assessment & Management		
7	**MISCELLANEOUS**	**8**	**2**
	i. Common Gynaecological Surgeries		
	ii. Pre, Peri & Post Menopause- Physiology, Complications & management		
	iii. Menopause- Its effect on emotions and musculoskeletal system		
	iv. Principle of common gynacological operations- hysterectomy, D&C, D&E, Pap smear		
	v. Surgical procedures involving child birth- Definition, Indications and management of the following surgical procedure- pelvic repair, nephrectomy, Hystrosalphyngrophy, Laproscopy, Colposopy.		
	vi. Carcinoma of female reproductive organs- surgical management in brief Mastectomy- Simple, Radical & Hysterectomy		

8	**PELVIC INFLAMMATORY DISEASES**	**3**	
	i. Pelvic Inflammatory Diseases with special emphasis to backache due to Gynaecologic /Obstetric conditions		
	ii. infection of female genital tract including sexually transmitted diseases		

CLINICAL (10 Hours)

Evaluation & presentation of cases in:

1. Uro-genital Dysfunction
2. Antenatal care
3. Postnatal Care
4. Following Normal Labour
5. Following Caesarean SECTION
6. Pelvic Inflammatory Diseases

Observation–One Normal & One Caesarean delivery & One Hysterectomy/ Repair ofthe Uro-genital Prolapse

RECOMMENDED TEXTBOOKS

1. Textbook of Gynaecology, D. C. Dutta, New Central Book Agency
2. Textbook of Obstetrics, D C Dutta, New Central Book Agency

RECOMMENDED REFERENCE BOOKS

1. Obstetrics and Gynaecology: Preparatory Manual for undergraduates, Muralidhar Pai, Shripad Hebbar,Elsevier India
2. Undergraduate Manual of Clinical Cases in Obstetrics & Gynaecology, by N. HephzibahKirubamani, Elsevier India

INTERNAL ASSESSMENT

Two examination of Total 40 marks **(**Theory only**)**

Internal Assessment to Be Calculated Out Of 10 Marks

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY 40 MARKS I.A.– 10 MARKS *The Question paper will give appropriate weightage to the topics insyllabus. [There shall be no LAQ in this paper]		MARKS 50
SECTION A	**Q1 Answer any FOUR out of FIVE [4 x5 = 20 marks]** *Based on topics–	**20**
SECTION B	**Q2 Answer Any FOUR out of FIVE [4 x5 = 20 marks]** *Based on topics–	**20**
TOTAL MARKS		**40**

PSYCHIATRY

[Didactic 30 + Clinical 10 Hours = Total 40 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

The course design increases awareness of psychosocial issues faced by individuals. Their significance at various points on the continuum of health and disability should be emphasized. The course discusses personal and professional attitudes and values as they relate to developing therapeutic relationships. It emphasizes communication skills for effective interaction with patients, health-care professionals and others. It expects students to identify common psychiatric conditions.

SR. NO	TOPICS	DIDACTIC HOURS
1	**Classification and Diagnosis of psychiatric conditions, Psychiatric illness and physiotherapy.**	1
	Psychiatric History & Mental Status Examination	2
2	**Brief description of- Definition, Aetio-pathogenesis, manifestations, and management of psychiatric illnesses**	
	a. Organic brain disorders (Delirium, Dementia, Amnestic syndromes, Organic personality disorder)	1
	b. Substance related disorders (Alcohol), Drug dependence and alcoholism	1
	c. Schizophrenia and its types	1
	d. Other Psychotic disorders: Postpartum psychosis, delusional disorders, Acute Psychotic disorders)	1
	e. Mood disorder (Anxiety neurosis, Depression, Bipolar, Mania)	2
	f. Anxiety disorders (Phobia, Obsessive Compulsive Disorder, GAD, Panic disorder)	2
	g. Stress and Health	1
	h. Stress related psychiatric disorders (Acute stress	1

	reaction, PTSD, Adjustment disorder)	
	i. Somatoform disorders (Hypochondriasis, Dissociative & Conversion disorder, & Pain disorder) and Somatization	2
	j. Psychosomatic disorder	2
	k. Personality disorder	2
	l. Child Psychology Part I (Mental Retardation, Enuresis, Specific developmental disorder, speech disorder)	1
	m. Child Psychology Part II (ADHD, Conduct disorder, Pervasive developmental disorder)	1
	n. Eating disorder	1
	o. Geriatric Psychology	2
	p. Emergency psychiatry (Suicide and violent patient)	2
3	**Management**	
	a. Management : Pharmacotherapy	1
	b. Management : ECT and group therapy	1
	c. Management : Psychotherapy	1
	d. Management : Cognitive Behavioral Therapy and Rational Emotive Therapy	1

CLINICAL HOURS (10 Hours)

1. History, Mental Status Examination and evaluation of:
   a. Schizophrenia
   b. Anxiety disorders
   c. Personality disorder and somatoform disorder
   d. Childhood disorder (MR, ADHD)
   e. Organic brain disorder
2. Seminar/ Workshop on communication skills

RECOMMENDED TEXT BOOKS

1. A Short Textbook Of Psychiatry by Ahuja, Jaypee Publisher

2. Short Textbook of Psychiatry, M.S. Bhatia, CBS
3. Short Textbook Of Psychiatry, By Lalit Batra, PeePee Publishers and Distributors Pvt

REFERENCE TEXT BOOKS

1. Shorter Oxford Textbook Of Psychiatry, by Paul Harrison, Philip Cowen, Tom Burns, Mina Fazel, OUP Oxford.
2. IPS Textbook of Undergraduate Psychiatry, by, P K Singh, Jaypee Brothers MedicalPublishers.

INTERNAL ASSESSMENT

Two examination of Total 40 marks **(**Theory only**)**

Internal Assessment to Be Calculated Out Of 10 Marks

Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY **40 MARKS I.A. – 10 MARKS** *The Question paper will give appropriate weightage to the topics in syllabus. [There will be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q 1 Answer any FOUR out of FIVE [4 x 5= 20 marks]**	**20**
SECTION B	**Q 2 Answer Any FOUR out of FIVE [4 x 5= 20 marks]**	**20**
TOTAL MARKS		**40**

DERMATOLOGY

[Didactic 18 Hours + Clinical 12 Hours = Total 30 Hours]

(COLLEGE EXAMINATION)

COURSE DESCRIPTION

At the end of the course, the student will be able to describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions like Leprosy, Psoriasis, Bacterial & Fungal Infections of the skin, connective tissue disorder, hand eczema, drug reaction, cutaneous manifestation of HIV, &Sexually Transmitted Diseases

SR.NO.	TOPICS	DIDACTIC HOURS	CLINICAL HOURS
1	**Introduction to Dermatology**- basicskin lesions and History taking	2	1
2	**Skin infections**	2	2
	a. Scabies/ Pediculosis/ Bacterial infections		
	b. Viral/ Fungal/ Cutaneous T.B.		
3	**Connective tissue lesions**	4	2
	a. Scleroderma, Systemic Lupus Erythematosus, Dermatomyositis, Morphia		
	b. Hand eczema		
	c. Psoriasis, Psoriaticarthritis, Reiter's Syndrome		
	d. Cutaneous hyperplasia-Keloid, Hypertrophic scar, Corn,Callosity		
4	**Leprosy and Deformity**	3	3
5	**Miscellaneous**	4	2
	a. Cutaneous Manifestation of HIV		
	b. Hyperhidrosis		
	c. Drug reaction		
	d. Urticaria		
	e. Genodermatosis- Epidermolysis Bullosa		
	f. Sexually Transmitted skin lesions, PUVA Treatment		

5	**Importance of Physiotherapy in Dermatology**	**3**	**2**

RECOMMENDED TEXTBOOK:

1. Handbook of Dermatological Drug Therapy, K. C. Nischal and Akansha Chadha UdayKhopkar, Sushil Pande, Clever Pen Publishing LLP
2. Review of Dermatology, Saurabh Jindal, Jaypee Brothers Medical Publishers

RECOMMENDED REFERENCE BOOK:

1. Handbook of Dermatology, G. Ilangovan, Jaypee Brothers Medical Publishers PrivateLimited
2. Essentials in Dermatology, Venereology, Leprology Cosmetology, Bansal Ramesh, Jaypee Brothers Medical Publishers

SCHEME OF COLLEGE EXAMINATION (THEORY ONLY)

THEORY **30 MARKS** *The Question paper will give appropriate weightage to the topics in syllabus. [There will be no LAQ in this paper]		**MARKS** **30**
SECTION A	**Q 1 Answer any THREE out of FOUR [3 x 5 = 15 marks]** **Short Answer Questions only**	**15**
SECTION B	**Q 2 Answer Any FIVE out of SIX [5 x 3 = 15 marks]** **Short Answer Questions only**	**15**
TOTAL MARKS		**30**
Passing in the examination is Mandatory **(Grades: A+= 75% and above, A= 66 to 74.5%, B+ = 55 to 65.5%, B = 50 to 54.5%, C= less than 50%)**		

FUNCTIONAL DIAGNOSIS & PHYSIOTHERAPEUTIC SKILLS

[Didactic 135 Hours + Clinical 325 Hours =Total 460 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

Functional Diagnosis & Physiotherapeutic Skills is a stepping stone to introduce students' actual concepts of PT assessment and later to the treatment concepts

Functional Diagnosis focuses on the assessment of the body systems. Musculoskeletal, Neurological and Cardiovascular-Respiratory in order to study the various impairments and their impact on activity and participation of the individual taking into consideration the contextual factors as well. It also emphasizes on the clinical reasoning of the underlying components of a universal evaluation tool (ICF) for a better understanding ofthe patient in a holistic manner. The student is also subjected to learn basics of manipulative, cardiovascular-respiratory and neuro-therapeutic skills on models so that he/she will be able to apply these principles eventually on patients.

The student will also gain a sound knowledge of electro-diagnosis, which is an integral part of Functional Diagnosis

SR. NO.	TOPIC	DIDACTIC HOURS	CLINICAL HOURS
1	**SECTION I**	**5**	
	Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) (Applicable for all the Sections mentioned below)		
2	**SECTION II**	**40**	**110**
	MUSCULOSKELETAL EVALUATION AND MANIPULATIVE SKILLS		
	A. Assessment of Musculoskeletal System:	**3**	**2**
	i. Soft Tissue Flexibility		
	ii. Joint Mobility		
	iii. Muscle Strength & Endurance		
	iv. Trick Movements		

	v. Sensations		
	vi. Limb Length		
	vii. Abnormal Posture		
	viii. Gait Deviations due to Musculoskeletal Dysfunction		
	B. Assessment of Joints with special tests	**10**	**8**
	i. **Shoulder**: Yergason's, Speed's, Drop-Arm, Supraspinatus, Impingement, Instability, Allen, Adson test for TOS		
	ii. **Elbow**: Cozen's, Miller's,Moudley's, Instability Tinel's Sign		
	iii. **Forearm, Wrist & Hand**: Phalen's, Bunnel-Littler, Froment's sign, Finkelstein		
	iv. **Cervical Spine:** Spurling's Compression & Distraction test, vertebral artery, and Dizziness tests.		
	v. **Lumbar Spine**: Schober's, SLR, Prone, Knee Bending, Slump.		
	vi. **Sacro Iliacjoint**: Faber's, Gaenslen's , Gillet		
	vii. **Hip:** Nelaton's Line, Bryant's Triangle, Thomas, Ober's, Tripod sign, Trendelenburg Sign,		
	viii. **Knee:** Tests For Collateral Cruciate, Ligaments (valgus, varus, Lachman, Sag, Drawer's, McMurray's, Fluctuation, Patellar tap, Q-angle, Clarke)		
	ix. **Ankle & Foot**:Anterior , Drawer, Talar Tilt, Homan's Moses,(for D.V.T.)		
	C. Response of soft tissues to trauma:	**2**	
	i. Trigger points		
	ii. Spasm		
	iii. Ligament Sprains		
	iv. Muscle Strains		

	D. Basics in Manual Therapy and Applications with Clinical Reasoning:	**5**	**5**
	i. Assessment of Articular and extra- articular soft tissue status		
	a. Contractile Tissues		
	b. Non Contractile Tissues		
	ii. Examination of Joint Integrity		
	a. Accessory Movement		
	b. End Feel		
	E. Examination of musculoskeletal Dysfunction	**6**	**10**
	i. Course(s)ive examination		
	ii. Objective examination		
	iii. Special tests		
	iv. Functional Diagnosis using ICF		
	v. Orthopaedic Scales:		
	a. Neck Disability Index		
	b. Shoulder Pain and Disability Index		
	c. Patient Specific Functional Scale		
	d. Disability of the Arm, Shoulder and Hand Questionnaire		
	e. The Michigan hand Questionnaire		
	f. Modified Oswestry Disability Questionnaire		
	g. The Western Ontario and McMaster Universities Osteoarthritis Index		
	h. The Knee Injury and Osteoarthritis Outcome Score		
	i. Lower Extremity Functional Scale		
	j. Fear-Avoidance Beliefs Questionnaire		
	F. Assessment of Pain	**4**	**5**
	i. Types of Pain: Somatic, Referred, Neurogenic, Visceral		
	ii. Course(s)ive Assessment:		

	a. Location, duration, progression, distribution, quality, diurnal variations, modifying factors.		
	b. Severity, nature of pain, tissue irritability		
	iii. Objective Measurement & Documentation-		
	a. Visual Analogue Scale (V.A.S).		
	b. Numerical Rating Scale (N.R.S.)		
	c. McGill's modified questionnaire (including Body charts)		
	G. Basic principles, indications, contraindications of mobilization skills for joints And Soft Tissues	**10**	**80**
	i. Maitland	Practice of Manual Therapy in Kaltenborn, Maitland's, M.E.T.& Neural Mobilisation on extremities on Models only	
	ii. Mulligan		
	iii. Kaltenborn		
	iv. Mckenzie		
	v. Cyriax		
	vi. Myofascial Release Technique		
	vii. Muscle Energy Technique		
	viii. Neural Tissue Mobilization (Neuro- Dynamic Testing)		
3	**SECTION III**		
	CARDIOVASCULAR & RESPIRATORY EVALUATION & RELATED SKILLS	**40**	**55**
	A. Assessment of Cardiovascular & Pulmonary System	**25**	**25**
	i. Vital parameters	i. Identification of abnormal breath sounds	
	ii. Chest Expansion	ii. Measurement of chest expansion	
	iii. Symmetry of chest movement	iii. Pattern of Breathing	
	iv. Breath Holding Test	iv. Vital parameters	
	v. Breath Sounds	v. Grades of Dyspnea	
	vi. Rate of Perceived Exertion(R.P.E.)	vi. Rate of Perceived Exertion	
	vii. Energy Systems & Exercise Physiology a. Physiological response to immobility and activity.	vii. Exercise Tolerance Testing (6 Minute Walk	

	b. Aerobic & Anaerobic metabolisms c. Evaluation of Functional Capacity using submaximal tests (Exercise Tolerance –SixMinute Walk test) d. Theoretical bases of different protocols for e. maximal exercise testing (e.g.: Bruce Protocol, Modified Bruce Protocol, Balke, Naughton Protocol	Test) viii. Ankle Brachial Index	
	viii. Interpretation of reports– A.B.G., P.F.T., P.E.F.R., E.C.G.- (Normal & Variations due to Ischemia & Infarction), X-ray Chest, Biochemical Reports		
	ix. Ankle Brachial Index		
	x. Tests for Peripheral Arterial & Venous Circulation.		
	B. Examination of Cardiovascular Respiratory Dysfunction, Burns, Ulcers, Abdominal Surgeries, Oncological Surgeries	**5**	**5**
	i. Subjective examination		
	ii. Objective examination		
	iii. Functional Diagnosis using I.C.F.		
	iv. Scales – mMRC, ATS, NYHA, CAT, GOLDS, PAR-Q, Quality of Life (Disease Specific), ST.GEORGE Respiratory Questionnaire		
4	**SECTION IV:** **NEUROTHERAPEUTICS VALUATION & ELECTRODIAGNOSIS**	**50**	**105**
	A. General Principles of Human development & maturation	**7**	**5**
	i. Aspects		
	a. Physical		
	b. Motor		
	c. Sensory		
	d. Cognitive & Perceptive		
	e. Emotional		
	f. Social		
	ii. Factors influencing human development & growth		

	a. Biological		
	b. Environmental inherited		
	iii. Principles of maturation in general &anatomical directional pattern –		
	a. Cephelo – caudal		
	b. Proximo – distal		
	c. Centero – lateral		
	d. Mass to specific pattern		
	e. Gross to fine motor development		
	f. Reflex maturation tests		
	iv. Development in specific fields – Oromotor development, sensory development,neurodevelopment of hand function		
	B. Basics in Neuro Therapeutics Skills & Applications with Clinical reasoning.	**20**	**40**
	i. Principles, Technique & Indications for Application of	Therapeutic Skills of Bobath/N.D.T ,P.N.F, Rood's Technique & Brunnstrom, M.R.P, (on models only)	
	a. Bobath/Neuro Developmental Technique (N.D.T)		
	b. Rood's Technique		
	c. Proprioceptive Neuromuscular Facilitation (P.N.F)		
	d. Brunnstrom Technique		
	C. Assessment of Movement Dysfunction for Adult and Pediatrics	**10**	**25**
	i. Higher Functions		
	ii. Cranial Nerves		
	iii. Sensation, sensory organisation and body image		
	iv. Joint Mobility		
	v. Tone		
	vi. Reflexes-Superficial & Deep		
	vii. Voluntary Control		
	viii. Muscle strength		
	ix. Co-ordination		
	x. Balance		
	xi. Endurance		

	xii. Trick movements		
	xiii. Limb length		
	xiv. Postural deviations		
	xv. Gait deviations due to neurological dysfunction		
	xvi. Functional Diagnosis using I.C.F.		
	xvii. Interpretation of Electro diagnostic, Findings, routine Biochemical Investigations		
	D. Electro diagnosis	**10**	**20**
	Therapeutic current as a Tool for electro diagnosis: on patients	Test for S.D.C. & Faradic / Galvanic Test	
	a. EMG and NCV Studies:		
	Electro-Myography Instrumentation with types of Electrodes		
	Normal & Abnormal E.M.G. pattern		
	i. At rest		
	ii. On minimal contraction		
	iii. On maximal contraction		
	Nerve Conduction Studies		
	i. Principles & Technique		
	ii. F wave		
	iii. H reflex		
	b. Strength Duration Curve tests		
	c. Faradic Galvanic Test,		
	d. Test for sensory, Pain threshold and pain Tolerance.		
	E. SCALES	**3**	**15**
	a. Berg Balance Scale (BBS)		
	b. Modified Ashworth scale (MAS)		
	c. Glasgow Coma Scale (GCS)		
	d. Dynamic Gait Index(DGI)		
	e. Mini Mental State Examination (MMSE),		
	f. Stroke Rehabilitation Assessment Movement		
	g. (S T R E A M)		

	h. American Spinal Cord Injury Association (ASIA) Impairment Scale		
	i. Rancho Los Amigos Level of Cognitive Functioning Scale (RLA)		
	j. Unified Parkinson's Disease Rating Scale (UPDRS)		
	k. Hoehn & Yahr Scale		
	l. Functional Independence Scale (FIM), Barthel Index		
	m. GMFM, GMFCS level		
	n. Selective Motor Control		
5	**SECTION V** **COMMUNITY BASED EVALUATION AND RELATED SKILLS**		
	a. Introduction to Community Physiotherapy, its branches and scope. b. Introduction to Disability Models; Medical, social model and ICIDH and ICF. c. Training in community for people with disabilities. d. Ice berg phenomenon, levels of prevention ,Top down and bottom up approaches e. Preventive Measures in all the groups of community with their related complications of physiological changes, growth, degenerative changes and lifestyle diseases.	**5**	
	A. Health Promotion	**10**	
	a. Screening for risk factors in early intervention.	2	
	b. Body Composition-B.M.I., use of skinfold calipers, Girth measurement	2	
	c. Physical Fitness: Flexibility, Strength, Endurance, Agility	1	
	d. Physical Activity Readiness Questionnaire	1	
	e. Screening for health and fitness in childhood, adulthood and geriatric group, effect in growing age,	3	

	effect in obesity		
	f. Principles, parameters & components of exercise prescription for healthy	1	
	B. Assessment in Women's Health	**10**	
	a. Evaluation & assessment of diastasis recti, review of pelvic floor muscles and subjective assessment of pelvic floor muscles.	4	
	b. Assessment of abdominal muscles in common surgeries related to women's health.	2	
	c. Assessment of ANC, PNC , adolescent and menopause, physical fitness in women-pregnancy, menopause and osteoporosis	4	
	C. Geriatric Health	**10**	
	a. Definition and classification of Geriatrics. Theories of aging. Screening for health and fitness in geriatric group	4	
	b. Evaluation of ambulatory and assistive devices in geriatric. (design of splints)	2	
	Scales i. Prevention Fall, ii. Quality of Life (SF-36) iii. Depression Score iv. Mini Mental Scale v. Mini cog.	4	
	D. Industrial Health	**10**	
	a. Introduction to Industrial Physiotherapy.	1	
	b. Assessment principles, Guidelines and procedures according to OSHA & NIOSH guidelines.	2	
	c. Industrial Ergonomics (Kinesphere)	4	
	d. Scales related to Industrial Physiotherapy; RULA, REBA, Quick Screen, NIOSH lifting equation,	3	

	ROSA, Questionnaire on Musculoskeletal disorders and ergonomic evaluation for industrial workers (QMEEI)		

DOCUMENTATION

1	**Documentation & Interpretation of following investigations:**
	A. Electrodiagnosis: 2 each
	a. S.D.C.
	b. Faradic Galvanic Test
	c. E.M.G .& N.C.V Studies
	B. Cardiovascular & Pulmonary:
	(1 each) A.B.G.,P.F.T.,E.C.G.,X-ray Chest, Exercise Tolerance Test (ETT)
	C. Neurological Scales (1 each)
	Modified Ashworth Scale, Berg Balance, Dynamic Gait Index, Glasgow Coma Scale, Barthel Index, Functional Independence Scale, STREAM, Hoehn and Yahr Scale, UPDRS,MMSE,ASIA Impairment scale, GMFM, GMFCS, Selective Motor Control
2	**Case presentation with Functional Diagnosis:**
	Total 12 cases: Three cases each in
	a. Musculoskeletal
	b. Neurological
	c. Cardiovascular & Respiratory (Including General Medical & Surgical Cases)
	d. General & Community Health (Including Fitness & Health, Women & Child Health, Occupation Health)
	e. To maintain the Record/Journal of the term work & to get each assignmentduly signed by respective Head of the Dept.

RECOMMENDED TEXT BOOKS

1. Orthopaedic Physical Assessment, David J. Magee. Elsevier India
2. Clinical Electro Therapy, Nelson & Currier, Appleton & Lange Publisher
3. Clinical Neurophysiology: Nerve Conduction, Electromyography, Evoked Potentials, U.K.Misra, Elsevier India
4. Therapeutic Exercise: Foundations and Techniques, Lynn Allen Colby, Carolyn Kisner,John Borstad, F A Davis Co.

5. Physical Rehabilitation: Assessment and Treatment, Susan B. O'Sullivan, Thomas J.Schmitz, F A Davis Co.
6. Cardiovascular and Pulmonary Physical Therapy Evidence to Practice; Donna Frownfelter, Elizabeth Dean; Fifth Edition; Elsevier
7. Physiotherapy for Respiratory and Cardiac Problems: Adults and Pediatrics; Jennifer APryor, S Ammani Prasad.
8. ACSM's Guidelines for Exercise Testing and Prescription, 11th Edition; Wolters Kluwer
9. Exercise Physiology: Nutrition, Energy and Human Performance; Eighth Edition; WilliamD McArdle, Frank I. Katch, Victor L. Katch

RECOMMENDED REFERENCE BOOKS

1. Maitland's book on Manual Therapy, Maitland's Vertebral Manipulation: Management of Neuromusculoskeletal Disorders - 2 Vols Set. Elly Hengeveld, Kevin Banks BA MCSP SRP, Churchill Livingstone
2. Mobilisation of Extremities – Kaltenborn Manual Mobilization of the Joints: Joint Examination and Basic Treatment: The Extremities:Volume 1& 2, Freddy M. Kaltenborn, Olaf Evjenth, Traudi Baldauf Kaltenborn, Orthopedic Physical Therapy
3. Manual Therapy: Nags, Snags, Mwms, Etc.,by Brian R Mulligan (Author), Bateson Publishing Ltd
4. Cyriax's Illustrated Manual of Orthopaedic Medicine- James H. Cyriax, Butterworth-Heinemann Ltd
5. The Myofascial Release Manual , Carol J. Manheim, SLACK Incorporated
6. Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice by , Oxford University press
7. Orthopaedic Physical Therapy, Robert A. Donatelli Churchill Livingstone publisher.
8. Exercise and the Heart, Nanette Kass Wenger , F.A. Davis Company
9. Exercise Physiology: Energy, Nutrition, and Human Performance (Exercise Physiology, William D. McArdle, Frank I. Katch , Victor L. Katch, Lippincott Williams & Wilkins
10. Facilitation Techniques Based on NDT Principles, Lois Bly, Allison Whiteside,Psychological Corp

11. Movement Therapy in Hemiplegia: A Neurophysiologic Approach, Signe Brunnstrom, Kathryn A. Sawner, Jeanne M. Lavigne, Lippincott Williams and Wilkins
12. Occupational Therapy for Physical Dysfunction, Catherine Anne Trombly, Mary ViningRadomski, Lippincott Williams and Wilkins
13. Infant Motor Development, Jan Piek, Human Kinetics Publishers
14. Neurology And Neurosurgery Illustrated, Kenneth W. Lindsay, Ian Bone, Geraint Fuller,Churchill Livingstone Publisher
15. Neuro-developmental Treatment Approach: Theoretical Foundations & Principles, Janet M.Howle, Osseum Entertainment
16. Fundamentals of Neurology: An Illustrated Guide, Thieme Publishers
17. Early Detection and Management of Cerebral Palsy ,by Sophie Levitt
18. Therapy for the Motor Disorders by Sophie Levitt
19. Illingworth's The Development of the Infant and Young Child Normal and Abnormal
20. Manual Therapy: NAGS, SNAGS, MWMS, etc.- Brian R Mulligan, Bateson Publishing Ltd

INTERNAL ASSESSMENT

Two exams Terminal and preliminary examination (Theory & Practical) of 80 marks each Total = 160 marks

Internal Assessment to Be Calculated out of 20 marks

In Practicals of Terminal & Preliminary examinations Spots will be 15 marks (3 X 5 marks), No marks will be allotted for the journal in Terminal & Preliminary examinations.

Internal assessment as per University Pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A.– 20 MARKS** *The question paper will give appropriate weight age to all the topics in the Syllabus.		**MARK** **100**
SECTION A	**Q 1 Long Answer Question** **[2x 10 =20 Marks]** Answer Any TWO out of THREE LAQ will be Based on Simulated case on ICF pattern,breakup of 10 marks should be given **Q 2 Short Answer Question** **[4 x 5 = 20 Marks]** Answer Any FOUR out of FIVE	**40**
SECTION B	**Q 3 Long Answer Question** **[2x 10 Marks =20]** Answer Any TWO out of THREE LAQ will be Based on Simulated case on ICF pattern,breakup of 10 marks should be given **Q 4 Short Answer Question** **[4 x 5 Marks = 20]** Answer Any FOUR out of FIVE	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITYPRACTICAL EXAMINATION

PRACTICAL **80 MARKS + I.A.– 20 MARKS**		**Marks** **100**
LONG CASE	**[Time maximum 30 minutes for students for evaluation]** **Psychomotor & affective:** a. Skill of History taking **[05 marks]** b. Skills of clinical examination **[15 marks]** **c.** Skill of objective diagnostic procedure **[10 marks]** **Cognitive:** Ability to justify bases for functional diagnosis by I.C.F. **[15marks]** [To be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORT CASE	**Two Short cases on** **a.** Mobilisation Technique: Kaltenborn, Maitland, M.E.T. or	**20**

	Neural Mobilization (On Models) **[10marks]** **OR** **b.** Neuro Therapeutic Skills: N.D.T. / P.N.F. / Rood's/ Brunnstrom (On Models) **[10marks]** **c.** Electro Diagnosis: S.D.Curve/ Faradic Galvanic Test (On Patients) **[10 marks]** **OR** **d.** Exercise Tolerance Test: Six Minute Walk Test (On Model) **[10marks]**	
SPOTS	**5 spots- 3 minutes for each spot [5 x 2 =10 Marks]** a. X-ray (on SECTION 2/3/4) b. Pulmonary Function Test c. Blood Gas Analysis d. E.C.G. e. E.M.G./ N.C. studies	**10**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis with I.C.F.	**5**
TOTAL MARKS		**80**

FOURTH BPTH SYLLABUS

TRANSCRIPT HOURS 1480

SN	COURSE NAME	TOPICS	DIDACTIC HOURS
1	PROFESSIONAL PRACTICE & ETHICS	1. Roles of Physiotherapist as patient manager, Consultant, Critical inquirer, Educator, Administrator	10
		2. Laws and regulations	
		3. Professional development, competence and expertise	
		4. Professional bodies	
		5. Ethics in Research	
		6. Ethics in Teaching	
		7. Role of W.C.P.T. & Council	
2	ADMINISTRATION, MANAGEMENT & MARKETING	1. Management, Administration, Budget, Methods, Performance Analysis, Time Management, etc.	30
		2. Administration-principles-based on the Goal & functions	
		3. Quality Assurance and Improvement	
		4. Methods of maintaining records	
		5. Budget-planning	
		6. Performance analysis	
		7. Setting up rehab centers	
		8. Time management.	
		9. Overview of Clinical Establishments (Registration and Regulation) Act	
		10. Third-Party Payers/Insurance	
		11. Crisis Management in Healthcare	
		12. Branding in Healthcare	
		13. Digital Marketing and Tele-rehabilitation in Healthcare	

		14. Sustainability in Physiotherapy and rehabilitation	
		15. Sustainability in Physiotherapy and rehabilitation	
3	**MUSCULOSKELETAL PHYSIOTHERAPY**	1. Bones – fractures & fracture-dislocations:	**210**
		2. Soft tissue injuries	
		3. Degenerative and inflammatory conditions	
		4. Infective conditions	
		5. Congenital & Acquired Deformities of extremities & spine Deformities	
		6. Amputations	
		7. Spinal conditions	
		8. Effects of spinal traction:	
		9. Osteoporosis	
		10. Orthopaedic surgeries:	
		11. Introduction to Bio-Engineering	
		12. Peripheral Nerve Injuries & Plexus Injuries complications& management	
		13. Sports Physiotherapy: Physical fitness.	
		14. Applied Yoga in orthopaedic conditions.	
4	**NEURO - PHYSIOTHERAPY**	1. Features of ICF model	**210**
		2. Theoretical basis of motor control and learning	
		3. Plasticity of the intact brain	
		4. Basics in Neuro Therapeutics Skills & Applications	
		PHYSIOTHERAPY MANAGEMENT ADULT	

		1. Brain and Spinal Cord Disorders	
		2. Movement Disorders	
		3. Cerebellar and Coordination Disorders	
		4. Muscle Disorders	
		5. Peripheral Nerve Injuries and Disorders	
		6. Infection of the Nervous System	
		7. Vestibular Disorders	
		8. Alzheimer's Disease & Dementia	
		9. Lower Cranial Nerve Lesions	
		10. Toxic, Metabolic, and Environmental Disorders	
		11. Disorders of Autonomic Nervous System	
		PAEDIATRICS	
		1. Cerebral palsy	
		2. Down's syndrome	
		3. Neural tube defects	
		4. Brachial plexus injuries	
		5. Infectious disorders of nervous system	
		6. Post Poliomyelitis Residual Paralysis.	
		7. Myopathies	
		8. Spinal Disorder	
		9. Paediatric extra pyramidal disorders	
		10. Epilepsy in childhood	
5	**CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY**	1. Basic Applied Anatomy & Physiology	
		2. Investigation and Exercise Testing	
		3. Exercise Physiology	
		4. Physiotherapy Skills	

		5. Physiotherapy Management	
		6. ICU Evaluation and Management	
		7. Pulmonary Rehabilitation	
		8. Cardiac Rehabilitation	
		9. Drug therapy	
		10. Application of ICF Model	
		11. Introduction to Functional Scales	
6	**COMMUNITY PHYSIOTHERAPY**	1. Health promotion	**210**
		2. Women's health	
		3. Geriatrics	
		4. Concepts of rehabilitation	
		5. Industrial Health	
7	**PRINCIPLES OF BIO-ENGINEERING**	1. Introduction to bioengineering	**30**
		2. Biomechanical principles in designing of appliances & assessment; Procedures for static & dynamic alignment of the	
		3. Practical's & Project	
8	**RESEARCH METHODOLOGY & BIOSTATISTICS**	1. Research In Physiotherapy	**30**
		2. Research Fundamentals	
		3. Writing A Research Proposal	
		4. Research Ethics	
		5. Overview Of Study Designs	
		6. Sampling	
		7. Basic Probability Distributions And Sampling Distributions	
		8. Tests Of Significance	
		9. Correlations And Regression	
		10. Statistical Data	
		11. Research Reports	

		12. Computer Applications	
9	**DIAGNOSTIC IMAGING FOR PHYSIOTHERAPY**	1. Image Interpretation	**30**
		2. Radiography	
		3. Fluoroscopy	
		4. Computed Tomography (CT)	
		5. Magnetic Resonance Imaging (MRI)	
		6. Ultrasound	
		7. Mammography	
		8. 2D Echography	
		9. Angiography	
		10. Endoscopy	
		11. Nuclear Medicine	
10	**SEMINAR**	(Including I.C.F.) : Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) to plan Short term and Long term goals in physiotherapy management of health condition of in Musculoskeletal Evaluation And Manipulative Skills, Cardio Vascular Respiratory Evaluation & Related Skills, Neurotherapeutic Evaluation & Electro Diagnosis, Community Based Rehabilitation	**40**
11	**SUPERVISED CLINICAL PRACTICE**	During each clinical assignment, the student shall evaluate, functionally diagnose, plan & practice clinical skills on patients in consultation with the qualified physiotherapist staff	**450**
12	**PROJECT WORK**		**20**
	TOTAL		**1480**

PROFESSIONAL PRACTICE AND ETHICS

[Didactic: 10 Hours]

(COLLEGE EXAMINATION)

COURSE DESCRIPTION

This course(s) will be taught in Continuum from first year to final year. An exam will be conducted only in final year. Professional and ethical practices curriculum content addresses the Knowledge, Skills and behaviors required of the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, ethicsadministration issues and accountability of the physical therapists. The course will be also cover the history and change in the profession, responsibilities of the professional tothe profession, the public and to the health care team. This includes the application of professional and ethical reasoning decisions making strategies and professional communication.

SR. NO.	TOPICS	DIDACTIC HOURS
a.	Roles of Physiotherapist as patient manager, Consultant, Critical inquirer, Educator, Administrator	2
b.	Laws and regulations	1
c.	Professional development, competence and expertise	2
d.	Professional bodies	2
e.	Ethics in Research	1
f.	Ethics in Teaching	1
g.	Role of W.C.P.T. & Council	1

RECOMMENDED TEXT BOOKS

1. Association of Physiotherapists
2. W.C.P.T. ethics (from their website)
3. Gazette of Maharashtra Council for Occupational therapists & Physiotherapists

RECOMMENDED REFERENCE BOOKS

1. Rules & Regulation of Indian

SCHEME OF EXAMINATION

THEORY ONLY **(College Exam)** *The question paper will give appropriate weightage to all the topics in the syllabus. [There shall be no LAQ in this paper]		**MARKS** **30**
SECTION A	**Q1. Answer any THREE out of FOUR [3 x 5 marks]**	**15**
SECTION B	**Q2. Answer any FIVE out of SIX [5 x 3marks]**	**15**
TOTAL MARKS		**30**

Passing in the examination is Mandatory

Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than 50%

ADMINISTRATION, MANAGEMENT & MARKETING

[Didactic 30 Hours]

(COLLEGE EXAMINATION)

COURSE DESCRIPTION

This curriculum content focuses on the essential Knowledge, Skills, and Behaviours required for physiotherapists across various practice settings and roles. The course will examine the roles, responsibilities, and administrative challenges faced by physiotherapists. It will also address the professional's duties to the profession, the public, and the healthcare team. Topics will include the application of ethical and professional reasoning, decision-making strategies, and effective communication within the profession, reflective practice techniques, and personal management issues such as stress and work-life balance. The course will also explore factors affecting individual practice, such as the availability and accessibility of local healthcare resources, as well as the ethical, legal, and regulatory requirements for practicing physiotherapy in specific jurisdictions.

SR.NO.	TOPICS	DIDACTIC HOURS
1.	**ADMINISTRATION**	
	a. **Administration-principles**: Based on the goal & functions at large hospital setups, domiciliary services, private clinics, and academics.	3
	b. **Quality Assurance and Improvement**: Ensuring standards in healthcare delivery.	3
	c. **Methods of maintaining records**.	2
	d. **Budget-planning**: Insights into financial planning, budgeting, and financial analysis in healthcare.	3
	e. **Time management**.	2
	f. **Overview of Clinical Establishments (Registration and Regulation) Act**.	1

	g. **Third-Party Payers/Insurance Mechanisms**: Including indemnity insurance protection for clinicians and patients.	2
	h. **Crisis Management in Healthcare**: Preparing for and responding to emergencies and disasters.	1
2.	**MANAGEMENT**	
	a. **Sustainability in Physiotherapy and Rehabilitation**.	2
	b. **Management studies related to local healthcare organizations**: Management structure, planning delivery with quality assurance, and funding of service delivery.	3
	c. **Performance analysis**: Physical structure, reporting system (manpower, status, functions), quantity & quality of services, turnover, cost-benefit, and revenue contribution.	2
	d. **Setting up Therapeutic Gymnasiums, Fitness Clinics, Cardiac and Pulmonary Rehab Centers**.	2
3.	**MARKETING**	
	a. **Branding in Healthcare:** Developing and maintaining a strong brand identity.	2
	b. **Digital Marketing and Tele-rehabilitation in Healthcare:** Utilizing social media and online platforms for outreach.	2

RECOMMENDED TEXT BOOK

1. Administration for Physiotherapists-Pai
2. Principles of Hospital Administration and Planning-Sakharkar

RECOMMENDED REFERNCES BOOKS

1. Introduction to the Financial Management of Healthcare Organizations 9th Ed- Michael Nowicki
2. Marketing Management 16th Ed- Philip Kotler and Kevin Lane Keller

SCHEME OF EXAMINATION

THEORY ONLY **(College Exam)** *The question paper will give appropriate weightage to all the topics in the syllabus. [There shall be no LAQ in this paper]		**MARKS** **30**
SECTION A	**Q1. Answer any THREE out of FOUR [3 x 5 marks]**	**15**
SECTION B	**Q2. Answer any FIVE out of SIX [5 x 3marks]**	**15**
TOTAL MARKS		**30**

Passing in the examination is Mandatory

Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65.5 %, B = 50 to 54.5%, C = less than 50%

MUSCULOSKELETAL PHYSIOTHERAPY

[Didactic – 85 hours + Practical-125 hours =Total 210 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

Musculoskeletal Physiotherapy is a specialized area of Physiotherapy treating injuries and conditions which affect the bones, joints, and soft tissues. Students will be able to develop advanced evaluative and problem-solving skills for the examination, assessment and treatment of patients with different musculoskeletal dysfunction using advanced manual therapy techniques, therapeutic exercises, taping and electrotherapy.

SR. NO.	TOPICS	DIDACTIC HOURS	PRACTICAL HOURS
1	Use of ICF model (Bio, Psycho and Social) to plan Short term and Long term goals in physiotherapy management of health condition of musculoskeletal system a. Identification of short term and long term goals based on- i. Capacity and Performance related to activities and participation to enhance functioning ii. Personal and Environment factors -facilitators and barriers that affect disablement and functioning	1	
2	Introduction to functional scales and evidence based practice– Generic and Disease specific. Evidence based practice in musculoskeletal health conditions	2	
3	Biomechanical / Physiological basis of the following physiotherapy interventions implemented during all three stages of tissue healing – (Principles, Indications / Contraindication, Types of tapes and terminologies used, Techniques) i. Electrotherapeutic modalities ii. Therapeutic exercise	4	

	iii. Taping techniques		
4	Physiotherapy interventions with goal setting for dysfunctions due to impairments of Pain, Mobility, Muscle performance(Strength), Endurance, Motor Control, Muscle length, Posture and Movement Balance and Gait for common health conditions secondary to conservative or surgical management of the following regions, with appropriate consideration of red flags.		
5	**BONES – FRACTURES & FRACTURE-DISLOCATIONS**	**15**	**20**
	Fractures - Types, classification, signs and symptoms, complications. Fracture healing - factors affecting fracture healing. Principles of fracture management - reduction - open and closed, immobilization - sling, cast, brace, slab, traction - manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing. PT management in complications - early and late - shock, compartment syndrome, Volkmann's Ischemic Contracture (VIC), fat embolism, delayed and mal union, Complex regional hand syndrome (RSD), myositis ossificans, Avascular necrosis (AVN), pressure sores etc. PT assessment and management a. Upper limb fractures and dislocations. b. Lower limb fractures and dislocations including pelvis. c. Spinal fractures		
	Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases - short and long-term goals. Principles and Guidelines of PT management in fractures during and after immobilization period.		
6	**SOFT TISSUE INJURIES**	**2**	**8**
	Contused lacerated wounds (CLWs), Crush injuries and its conservative and post-surgical management.		
7	**DEGENERATIVE AND INFLAMMATORY CONDITIONS**	**10**	**20**

	Definition, signs and symptoms, clinical features, Patho-physiology, radiological features, deformities, medical and surgical management. Describe the PT assessment, management and home program for the following conditions – Osteoarthritis - knee, hip shoulder and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthe's disease		
8	**INFECTIVE CONDITIONS**	**3**	**5**
	Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, pyogenic arthritis, TB spine, knee and hip joint.		
9	**CONGENITAL & ACQUIRED DEFORMITIES OF EXTREMITIES & SPINE**	**10**	**14**
	Review in detail the extremities and postural abnormalities of spinal column the causes, signs and symptoms, radiological features, medical and surgical management. Describe the PT. assessment and management of the following conditions		
	Congenital: Congenital Talipes Equino Varus (CTEV), Congenital Dislocation of Hip (CDH), Torticollis, Pes Planus, Pes Cavus and other common deformities .		
	Acquired: Scoliosis, Kyphosis, Coxa Vara and Valga, Genu Varum and Valgus & Recurvatum.		
	i. **Cerebral palsy**: Deformities, medical and surgical management and home program with special emphasis on carrying techniques. PT management after surgical corrections.		
	ii. **Poliomyelitis**: Deformities, medical and surgical management. PT assessment& management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program.		

	iii. **Leprosy**: Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively.		
10	**TRAUMATIC AMPUTATIONS**	**4**	**10**
	Definition, levels, indications, types, PT assessment, aims, post-operative management. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.		
11	**SPINAL CONDITIONS**	**6**	**12**
	Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, Lumbar Spondylosis, Spondylolysis, Spondylolisthesis, Spinal canal stenosis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina Bifida Occulta.		
12	**SPINAL TRACTION**	**1**	**2**
	Types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction.		
13	**OSTEOPOROSIS**	**2**	**1**
	Causes, predisposing factors, investigations and treatment.		
14	**ORTHOPAEDIC SURGERIES**	**15**	**18**
	Pre and post-operative PT assessment, goals, precautions and PT management of following surgeries such as: Arthrodesis, Osteotomy, Arthroplasty-partial and total - Excision arthroplasty. Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening. Arthroscopy, Spinal stabilization, Replantation surgeries,		

	Synovectomy.		
	A. Shoulder joint: i. Shoulder instabilities, Thoracic Outlet Syndrome (TOS), ii. Impingement syndrome - conservative and post-operative PT management. iii. Total shoulder replacement and Hemi replacement. - Post operative PT management. iv. AC joint injuries - rehabilitation. v. Rotator cuff tears-conservative and surgical repair. Subacromial decompression - Postoperative PT management.		
	B. Elbow and forearm i. Excision of radial head - Postoperative PT management. ii. Total elbow arthroplasty- Postoperative PT management.		
	C. Wrist and Hand: i. Total wrist arthroplasty. ii. Repair of ruptured extensor tendons. Carpal tunnel syndrome. iii. Flexor and extensor tendon lacerations Post-operative PT management.		
	D. Hip: i. Joint surgeries - hemi and total hip replacement ii. Post-operative PT Management Tendonitis and bursitis. - Management.		
	E. Knee: i. Lateral retinacular release, chondroplasty- Post operative management. i i . Realignment of extensor mechanism. ACL and PCL reconstruction surgeries - Postoperative rehabilitation. iii. Meniscectomy and meniscal repair		

	Postoperative management. Plica syndrome, patellar dysfunctionand Hoffa's syndrome- conservative management. iv. TKR- rehabilitation protocol. Patellar tendon ruptures and Patellectomy- rehabilitation.		
	F. Ankle and foot: i . Ankle instability. ii. Ligamentous tears- Post operative Management.		
15	**SPORTS PHYSIOTHERAPY: PHYSICAL FITNESS**	**8**	**15**
	A. Definition of Sports- Types of Sports		
	i. Physical fitness Assessment & Evaluation:		
	a. Methods of evaluation: Interview, Clinical Examination,		
	b. Field Tests and Laboratory tests		
	c. Evaluation of motor skills (fundamental and sports specific skills)		
	ii. Principles of Training and exercise conditioning		
	iii. Anti-doping: a. (NADA,WADA)		
	iv. Sports Injuries, Prevention, Management And Rehabilitation		
	B. Principles of Prevention of Sports Injuries:		
	a. Protective devices		
	b. Technique		
	c. Play area and play surface		
	d. Shoes		
	C. Sports emergency and first aid management.		
	D. Common sports injuries, mechanisms (causation), prevention and management:		
	a. Soft tissue: i. Ligament ii. Muscle iii. Tendon		

	b. Hard tissue: i. Bone ii. Articular cartilage		
	c. Stages of soft tissue healing- Treatment guidelines for soft tissue Injuries- Acute, Sub acute and chronic stages.		
	d. Repair of soft tissues- rupture of muscle, tendon and Ligamentous tears. Soft tissue injuries- prevention and rehabilitation of, Lateral ligament sprain of ankle. Rotator cuff injuries. Collateral and Cruciate injuries of knee. Meniscal injuries of knee. Supraspinatus and Bicipital tendonitis. Pre patellar and Sub-acromial bursitis. Tennis and Golfer's elbow. Hamstring strains, Quadriceps contusion, TA rupture. Dequervain's tenosynovitis. Trigger and Mallet finger. Plantar fasciitis. Wrist sprains.		
16	Applied Yoga in orthopaedic conditions**.**	**2**	

PRACTICAL

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

SUPERVISED CLINICAL PRACTICE (125 Hours)

During this supervised clinical practice, student should be able to successfully execute the competencies in assessment, Functional diagnosis on ICF basis, plan of care and therapeutic interventions relating to musculo-skeletal dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, paediatric and geriatric). Student should learn to perform these skills objectively under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

DOCUMENTATION

Presentation & Documentation of 8 Cases (4 trauma, 4 cold) for patient management using ICF model as following: (Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

a. Soft tissue lesion
b. Fractures of upper Limb (Including Hand Injury),
c. Fractures of lower limb,
d. Fractures of spine with/without Neurological condition
e. Degenerative/ Inflammatory arthritis of peripheral skeletal joint
f. Degenerative /inflammatory arthritis of Spine
g. Musculoskeletal condition of Hand & Foot
h. Amputation

RECOMMENDED TEXT BOOKS

1. Therapeutic Exercise – O'Sullivan
2. Orthopaedic Physical Therapy - Donatelli
3. Cash's Textbook of Orthopedics & Rheumatology for Physiotherapists
4. Tidy's Physical Therapy
5. Manual Mobilization of Extremity Joints - Kaltenborn
6. Therapeutic Exercise: Foundations and Techniques - Kolby & Carolyn Kisner
7. Physical Rehabilitation - Susan O'Sullivan

RECOMMENDED REFERENCE BOOKS

1. Manual Therapy: Nags, Snags, MWMs, etc - 6th Edition Brian R Mulligan
2. Maitland's Peripheral Manipulation Elly Hengeveld
3. Neural tissue mobilization – Butler
4. Brukner & Khan's Clinical Sports Medicine - Peter Brukner, Karim Khan (Mcgraw Medical)
5. TherapeuticExercise: Moving Toward Function - Carrie M. Hall, Lori Thein Brody

6. Manual Mobilization of Extremity Joints -KaltenbornNeural Tissue Mobilization – Butler
7. Taping Techniques –Rose Mac Donald
8. Clinical Orthopaedic rehabilitation-Broadsman

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus		**MARKS** **100**
SECTION A	* Based on topics- structured question based on ICF model with emphasis to goal setting and treatment intervention (Based on Trauma) **Q 1. Answer any TWO out of THREE (LAQ)** **[2 x 10 = 20 marks]** **Q 2. Answer any FOUR out of FIVE (SAQ)** **[4 x 5 = 20 marks]**	**40**
SECTION B	* Based on topics- structured question based on ICF model with emphasis to goal setting and treatment intervention. (Based on Cold) **Q 3. Answer any TWO out of THREE (LAQ)** **[2 x 10 = 20 marks]** **Q 4. Answer any FOUR out of FIVE (SAQ)** **[4 x 5 = 20 marks]**	**40**
TOTAL MARKS		**80**

PRACTICAL 80 MARKS + I.A. – 20 MARKS		MARKS 100
LONG CASE	**a.** Subjective and Physical Examination - **10 marks** b. Evaluation and Physical therapy diagnosis (ICF) – **10 marks** **c.** Plan of care - Goal setting – **10 marks** **d.** Demonstration of any one important test and treatment intervention on patient – **15 marks** [Student will be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORT CASE	Two Short cases each including the following: Demonstrations of two physiotherapy intervention skills for effective patient management Application/Interpretation of X– ray of extremities and spine, Orthoses, Prostheses, Metal Implants **[2 x 15 marks]**	**30**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	**05**
TOTAL MARKS		**80**

NEURO PHYSIOTHERAPY

[Neurophysiotherapy: Didactic 56 hours + Clinical 95 hours &

Pediatric: Didactic 20 hours + Clinical 39 hours): **Total 210 Hours]**

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

This course was designed to develop skills in identifying and analyzing the patient's condition and being able to decide functional goals and planning appropriate neuro-physiotherapeutic intervention based on evidence to enhance activity and participation of the patient in routine life and in the community and workplace as well. This course(s) includes topics such as the use of the ICF model, application of functional scales, disease-specific topics Stroke, Acquired brain injury, Spinal cord disorders, Peripheral neuropathies, Vestibular disorders, Lower cranial nerve paralysis, Demyelinating diseases, Cerebellar diseases, and coordination disorders, Extrapyramidal diseases, Anterior Horn Cell diseases, Myopathies, Disorders of A.N.S. Infectious disorder of the brain, Motor neuron diseases, etc are addressed with all interventions.

SR.NO.	TOPICS	DIDACTIC HOURS	PRACTICAL HOURS
1	**Features of ICF model:** To plan realistic, measurable, and functional short-term and long-term goals to enhance functioning in a patient with a health condition of the nervous system. a. Clinical utility of bi-directional relationships among the ICF model's domain b. Environment and Personal factors Facilitators and Barriers that affect disablement and functioning c. Capacity and Performance related Activities and Participation to enhance Functioning d. Set patient-specific goals and expected outcomes with Clinical reasoning e. Documentation of disability and functioning Red recognizing signs and symptoms	**2**	
2	Theoretical basis of motor control and learning to	**2**	

	Understand various Neuro-Physiotherapeutic approaches		
3	a. Plasticity of the intact brain i. Motor learning ii. Training iii. Plasticity • Plasticity following brain lesion • Nature of spontaneous recovery • Effect of environment behavior and recovery. • Adaptation of motor performance • Muscle adaptation b. Strength training and physical conditioning in Neuro-rehabilitation to optimize functional performance c. Skill acquisition in restoration of functional performance • Information, instruction, demonstration. • Feedback • Practice	**4**	
4	Basics in Neuro Therapeutics Skills & Applications with Clinical Reasoning: i. Motor Relearning Program ii. Sensory Integration Approach iii. Constraint Induced Movement Therapy (CIMT) iv. Muscle Re-education Approach	**8**	**14**
5	**PHYSIOTHERAPY MANAGEMENT –ADULT** Planning of short term and long term goals in accordance with ICF for all the conditions in neurosciences by an detail assessment and appropriate outcome measures and planning evidence based treatment program for key indicator conditions		
	A. Brain and Spinal Cord Disorders i. Cerebro vascular Accident, ii. Head Injury iii. Brain Tumors,	**15**	**40**

	iv. Perceptual disorders v. Motor Neuron Disease vi. Multiple sclerosis vii. Spinal cord injury viii. Transverse Myelitis ix. Spinal tumors x. Spinal Muscular atrophy (SMA) xi. Syringomyelia, xii. IVD Prolapse xiii. Spinal Epidural Abscess xiv. Myasthenia Gravis, Eaton-Lambert Syndrome		
	B. Movement Disorders i. Parkinsonism ii. Athetosis iii. Chorea iv. Dystonia v. Myoclonus vi. Tics vii. Hemi Ballismus viii. Wilson Disease	**2**	**5**
	C. Cerebellar and Coordination Disorders i. Congenital ataxia ii. Friedreich's ataxia iii. Ataxia talengiectasia iv. Metabolic ataxia v. Hereditary cerebellar ataxia vi. Tabes Dorsalis and Syphilis.	**2**	**5**
	D. Muscle Disorders i. Muscular Dystrophy ii. Myotonic Dystrophy iii. Myopathy iv. Non-Dystrophic Myotonia	**2**	**5**

	E. Peripheral Nerve Injuries and Disorders i. Hereditary motor sensory neuropathy, ii. Guillain-Barre syndrome iii. Peroneal Muscular Atrophy iv. Thoracic outlet syndrome v. Brachial plexus palsy vi. Lumbo sacral plexus lesions vii. Metabolic Neuropathy viii. Nerve Palsies: Phrenic & intercostal Nerve, Upper Limb & lower limb Nerves	**8**	**10**
	F. Infection of the Nervous System Encephalitis i. Neurosyphilis ii. H.I.V. iii. Herpes Zoster iv. Meningitis v. Tabes Dorsalis vi. Tetanus vii. Poliomyelitis &Post-Polio Syndrome viii. Septic encephalopathy ix. AIDS x. Rheumatic fever xi. Brucellosis, Tetanus, and Pertussis	**2**	**2**
	G. Vestibular Disorders: Central & Peripheral	**2**	**4**
	H. Alzheimer's Disease & Dementia	**1**	**1**
	I. Lower Cranial Nerve Lesions i. Trigeminal Neuralgia ii. Facial palsy iii. Bell's palsy iv. Hemi facial spasm v. Glossopharyngeal neuralgia vi. Lesions of Vagus nerve, spinal accessory nerve & hypoglossal nerve	**3**	**4**

	J. Toxic, Metabolic, and Environmental Disorders i. Encephalopathy ii. Alcohol toxicity iii. Recreational drug abuse iv. Toxic gases & Asphyxia v. Therapeutic & diagnostic agent toxicity vi. Metal toxicity vii. Pesticide poisoning viii. Environmental & physical insults ix. Fungal poisoning x. Plant & Animal poisons xi. Complications of organ transplantation	**2**	**2**
	K. Disorders of Autonomic Nervous System (ANS) i. Horner's Syndrome ii. Hypo/Hypertension iii. Autonomic Dysreflexia	**1**	**3**
6	**PHYSIOTHERAPY MANAGEMENT –PAEDIATRIC** i. Understanding relevance to history, system impairment and overview of Sensory- motor assessment in accordance with ICF model for all the Paediatric conditions. ii. Planning of short-term and long-term functional goals (SMART- Goals) iii. Condition specific outcome measures. iv. Planning of evidence-based treatment program.		
SR.NO	**TOPICS**	**DIDACTIC HOURS**	**PRACTICAL HOURS**
1	**Cerebral palsy**	5	10
2	**Down's syndrome**	2	5
3	**Neural tube defects:** Spina Bifida and Hydrocephalus	3	10
4	**Brachial plexus injuries:** Erbs palsy, Klumpkie's palsy, Horner syndrome, total plexus involvement.	2	2
5	**Infectious disorders of nervous system:**	1	1

	Encephalitis & Meningitis		
6	Post Poliomyelitis Residual Paralysis.	1	1
7	**Myopathies:** Duchenne muscular dystrophy (DMD), Becker's muscular dystrophy, Other dystrophies	2	5
8	**Spinal Disorder:** S.M.A. / H.S.M.N.	1	1
9	Paediatric **extra pyramidal disorders**	1	4
10	**Epilepsy** in childhood	2	--

The treatment Programme includes:

1. Application of appropriate electro-therapeutic modes for relief of pain and functional re-education with clinical reasoning.
2. Application of skills as Neuro-therapeutic approaches co-ordination and balancing exercise by using techniques based on Neuro-physiological principles.
3. Tools and adaptive equipment used for Neuro-rehabilitation like Vestibular balls Tilt boards, Bolsters, Wedges, Graded Benches, Therapeutic mats, etc.
4. Application of transfer and functional re-education exercise, postural exercise, and gait training.
5. Bladder and bowel training
6. Developing a philosophy for caring
7. Prescription for appropriate orthotic devices and fabrication of temporary splints
8. Lifting techniques, wheelchair modifications, adaptive devices
9. Ergonomic advice for prevention/rehabilitation for the patients as well as for parents/caregivers education about handling of patients.
10. Introduction to virtual reality training, functional electrical stimulation, and sensory integration training.

CLINICAL SUPERVISED PRACTICE (134 Hours)

During the supervised clinical practice, students should be able to successfully execute the competencies in assessment, physical diagnosis on an ICF basis, plan of care, and therapeutic interventions relating to neuromuscular dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as in all types of conditions. Students should learn to objectively perform these skills under the supervision of

trained physical therapists. A student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

DOCUMENTATION

Presentation & documentation of 8 cases for patient management using ICF model as following:

(Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

a. U.M.N. lesion – 4 cases: Stroke / S.C.I. / Traumatic brain injury / Degenerative disorders/ Demyelinating disorders etc...
b. L.M.N. lesion – 2 cases: Peripheral nerve injuries / Brachial plexus injury / G.B.S. etc.
c. Pediatric neuro-2 cases: C.P. / Myopathies / Meningoceole etc.

CLINICAL SKILLS

Learning of facilitatory and inhibitory Neuro-therapeutic techniques related to adult and pediatric neurological conditions

a. Sensory testing–Sensory Re-education
b. MMT/ voluntary control– muscle re-education
c. Use of appropriate electrical modalities for muscle re-education/ pain relief
d. Management of tone, Postural assessment & postural correction
e. Transfer training
f. Functional re-education
g. Gait assessment-gait training
h. Co-ordination testing & training
i. Strategies for balance training
j. Fitness training for patients having neurological problems.
k. Use of outcome measures & quality of life questionnaire.

RECOMMENDED TEXTBOOKS

1. Downie PA. Cash’s Textbook of Neurology for Physiotherapists. 1990.

2. Kabat H, Macleod M, Holt C. The Practical Application of Proprioceptive Neuromuscular Facilitation. 1959
3. Hollis M, Phyl Fletcher-Cook, Kitchen S. Practical exercise therapy. Malden, Mass: Blackwell Science; 1999.
4. O'Sullivan SB, Schmitz TJ, Fulk GD. Physical rehabilitation. 7th ed. Philadelphia, Pa: F.A. Davis Company; 2019
5. Davies PM. Right in the Middle. Springer Science & Business Media; 2012
6. Margaret Johnstone (FCSP. Restoration of Normal Movement after Stroke. W.B. Saunders Company; 1995
7. Roberta Shepherd. Physiotherapy in Pediatrics**.** 3rd Ed.
8. Robert J. Palisano, Margo Orlin. Campbell's. Physical Therapy for Children. 5th ed; 2016
9. Jan. S. Tecklin. Pediatric physical therapy. 5th ed; 2015
10. Illingworth's. The Development of the Infant and Young Child Normal and Abnormal. 11th ed.; 2021.

RECOMMENDED REFERENCE BOOKS

1. Darcy Ann Umphred, Al E. Umphred's Neurological Rehabilitation. St. Louis, Mo.: Elsevier/Mosby; 2013
2. Walter Russell Brain, John Nicholas Walton. Brain's Diseases of the Nervous System. 1969
3. Lindsay KW, Bone I, Fuller G, Callander R. Neurology and neurosurgery illustrated. Edinburgh: Churchill Livingstone/Elsevier; 2010.
4. Anne Shumway Cook**.** Motor control: Translating research into clinical practice. 4th ed; 2011.
5. Janet Howle. Catherine M. Hazzard. Neuro-Developmental treatment: A Guide to NDT clinical practice. 1st ed; 2016.
6. Sophie Levit, Anne Addison. Treatment of Cerebral palsy and motor delay. 6th ed.; 2018

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS+I.A.– 20 MARKS** *The question paper will give appropriate weightage to all the topics in the Syllabus.		**MARKS** **100**
SECTION A	**Q 1 Answer any TWO out of THREE (LAQ) [2x10= 20 marks]** (U.M.N. condition (adult/pediatric)) **Q 2 Answer any FOUR out of FIVE (SAQ) [4 x5=20 marks]**	**40**
SECTION B	**Q 3 Answer any TWO out of THREE (LAQ) [2x10= 20 marks]** (L.M.N. condition (adult /pediatric) **Q 4 Answer any FOUR out of FIVE (SAQ) [4 x5=20 marks]**	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL **80 MARKS + I.A. – 20 MARKS**		**MARKS** **100**
LONG CASE	a. Subjective and Physical Examination - **10 marks** b. Evaluation and Physical therapy diagnosis (ICF) – **10 marks** c. Plan of care - Goal setting – **10 marks** d. Demonstration of any one important test and treatment intervention on patient – **15 marks** [Student will be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORT CASE	Two Short cases each including the following: Demonstrations of two physiotherapy intervention skills for effective patient management Application/Interpretation E.M.G./N.C.V Studies, Orthosis/ Prosthesis Neurological assessment, Scales **[2 x 15 marks]**	**30**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	**05**

TOTAL MARKS	**80**

CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY

(INCLUDING CRITICAL CARE)

[Didactic–64 Hours + Clinical 146 Hours = Total 210 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

The course will equip students with specialized knowledge and skills to manage patients with cardiovascular and respiratory conditions. It will cover assessment, treatment techniques, and rehabilitation strategies for a range of conditions, including chronic heart and lung diseases, post-surgical care, and critical care scenarios. The course will emphasize physiotherapy interventions such as airway clearance, breathing exercises, and mobilization techniques. Students will learn to work in multidisciplinary teams, focusing on patient-centered care to improve respiratory function, enhance cardiovascular health, and promote recovery in critical care settings.

SR.NO	TOPICS	DIDATIC HOURS	PRACTICAL HOURS
1	**BASIC APPLIED ANATOMY & PHYSIOLOGY**	**3**	
	a. Anatomical and Physiological differences between Heart & Lung i. In Adult ii. In Paediatrics b. Cardiac & Pulmonary Anatomy & Physiology c. Cardiac and Respiratory Pharmacology d. Biomechanics of Thorax		
2	**INVESTIGATION AND EXERCISE TESTING**	**4**	**10**
	a. Investigation & Clinical Implication - Vitals Assessment, postural hypotension, auscultation, Hematological and Biochemical Tests,Biochemical markers, X-ray, PFT, ABG, ECG, Tests for Arterial and Venous Insufficiency, pulse. b. Stress testing (Maximal and Submaximal) i. 6 Minute Walk test & Harward Step test (Skill & Interpretation)		

	ii. Shuttle Walk Test (Interpretation only) iii. Modified Bruce Protocol (Interpretation only)		
3	**EXERCISE PHYSIOLOGY**	**5**	**10**
	i. Nutrition (Bioenergetics) ii. Total energy expenditure (MET) sources iii. Acute and chronic adaptation to exercise iv. Complication of bed rest/ Immobilization & prevention v. Aerobic & Anaerobic Training vi. Principles of Exercise Prescription		
4	**PHYSIOTHERAPY SKILLS**	**13**	**40**
	a. Physiotherapy Techniques To Increase Lung Volume: i. Controlled mobilization ii. Positioning iii. Breathing exercises iv. Proprioceptive Neuromuscular Facilitation of Respiration v. Mechanical aids (CPAP, IPPB, BiPAP) vi. Incentive Spirometry vii. Lung Expansion Therapy viii. Modes of Mechanical Ventilation- Definition, mode and weaning		
	b. Physiotherapy techniques to decrease the work of breathing: i. Measures to optimize the balance between energy supply &demand ii. Positioning to improve ventilation & perfusion matching iii. Breathing re-education & Breathing control techniques iv. Respiratory Muscle Strengthening including IMT		

	v. Therapeutic positioning to alleviate dyspnoea		
	c. Physiotherapy techniques to clear secretions: i. Hydration, Humidification & Nebulisation ii. Postural Drainage, Manual techniques – Percussion, Vibration,Shaking, Rib Springing iii. ACBT iv. Autogenic Drainage v. Mechanical Aids (PEP, Flutter, IPPB, Suctioning) vi. Facilitation of Cough and Huff		
	d. Therapeutic exercise program to alleviate pain, to achieve mobility,to correct posture and improve peripheral circulation.		
	e. Deliver Ergonomic advice, energy conservation advice, Home exercise Program, & modifications of contextual factors.		
	f. Applied Yoga in Cardio-respiratory conditions		
	g. Electrotherapeutic modalities for pain, swelling & wound healing		
	h. Home program and education of family members in patient care		
5	**PHYSIOTHERAPY MANAGEMENT**	**22**	**55**
	a. Obstructive and Restrictive lung conditions	2	9
	i. Chronic Obstructive Pulmonary Disease ii. Bronchiectasis iii. Bronchial Asthma iv. Cystic Fibrosis v. Occupational lung diseases vi. Interstitial Lung Diseases		
	b. Physiotherapy in General Respiratory Infection	2	9

	i. Tuberculosis ii. Pneumonia iii. Lung Abscess iv. COVID 19 v. Pneumothorax vi. Hydro pneumothorax vii. Atelectasis viii. Pleuriti s ix. Pleural Effusion x. Empyema & other Pleural Disorders		
	c. Physiotherapy in Pulmonary Surgeries	1	4
	Traumatic and surgical conditions of chest, lung, pleura & mediastinum		
	d. Physiotherapy rehabilitation in medical and surgical conditions	6	9
	i. Hypertension ii. Ischemic Heart Disease iii. Myocardial Infarction iv. Valvular Heart Disease v. Congenital v. Acquired vi. Thrombosis, Phlebitis and Phlebothrombosis vii. Varicose Veins and ulcers viii. Other Arterial disorders ix. Diabetes, x. Renal Failure		
	e. Neonatal and Pediatric Physiotherapy	2	7
	Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the ARDS. i. Meconium aspiration ii. Pneumonitis iii. Pneumonia iv. Childhood Asthma		

	v. Cystic fibrosis and chronic lung disease Neonatal unit		
	f. Abdominal Surgeries	4	3
	Management of Pulmonary Restorative Dysfunction following surgicalprocedures on Abdomen and Thorax, Pre and Post- Operative care, Complication & Management.		
	g. Oncological Surgeries	1	2
	Physiotherapy management following Oncological Surgeries, Pre and Post-Operative care, Complication & Management		
	h. Musculoskeletal dysfunction	1	3
	i. Flail chest ii. Scoliosis iii. Kyphosis		
	i. Management of Amputations	2	4
	Following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes (Stump care management)		
	j. Management of Burns	1	5
	Acute care Management (Head Face neck & thoracic, inhalation burns)		
6	**ICU EVALUATION AND MANAGEMENT**	**6**	**12**
	i. Principles of ICU monitoring – Apparatus, Airways and Tubes used in the ICU ii. Physiotherapy in the ICU Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock i. Dealing with an Emergency Situation in the ICU		
7	**PULMONARY REHABILITATION**	**3**	**8**

	i. Definition ii. A.A.C.V .P.R. /A.T.S. Guidelines iii. Indications & Contraindications iv. Outcome Measures		
8	**CARDIAC REHABILITATION**	**3**	**7**
	i. Definition ii. Indications & Contraindications iii. Phase (I,II,III,& IV) A.H.A./A.C.S.M. GUIDELINES iv. Outcome Measures		
9	**DRUG THERAPY**	**1**	**2**
	i. Drugs to prevent and treat inflammation ii. Drugs to treat Bronchospasm iii. Drugs to treat Breathlessness iv. Drugs for Sputum clearance v. Drugs to inhibit coughing vi. Drugs to improve ventilation vii. Drugs to reduce pulmonary hypertension viii. Delivery doses, Inhalers and Nebulizers		
10	**APPLICATION OF ICF MODEL**	**2**	
	1. To plan effective Short term and long term goals to enhance functioning of Cardiovascular, Respiratory and General Medical and Surgical Conditions 2. Set patient specific goals and expected outcome within time frame with clinical reasoning Documentation		
11	**INTRODUCTION TO FUNCTIONAL SCALES**	**2**	**2**

CLINICAL SUPERVISED PRACTICE (145 Hours)

1. Positioning, breathing control strategies (e.g. Pursed Lip Breathing, Sustained Maximal Inspiration, deep breathing), ventilator muscle training. Relaxation training, positioning, early mobilization.

2. Airway clearance techniques, Suctioning, use of mechanical assistive devices (e.g. Positive Expiratory Pressure, Flutter, Vest, etc.), postural drainage and percussions, coughing manoeuvres, medication delivery e.g. Nebulization ,oxygen
3. Physical handling Techniques (e.g. positioning and donning, doffing, fitting and adjusting Stockings for vascular disorders, bandaging , dressing, taping, splints and orthotics pertaining to cardiovascular and pulmonary impairments)
4. PNF for breathing facilitation and inhibition.
5. Ability to use a variety of exercise/movement equipment (e.g. treadmill, heart rate monitor, Oximeter, pressure biofeedback unit, free weights, balance boards, theraballs, etc.)
6. Prescription and education: aerobic, endurance and interval exercise training, resistance (strength, Endurance and power) training, flexibility training. Formulating cardiac, pulmonary rehabilitation programme
7. Develop skills to monitor compliance of the client in executing rehabilitation program & identifying comorbid & contextual factors affecting it.
    a. Familiarity and skill of use of various monitoring and treatment equipment's in ICU.
    b. Use of physical and electrical agents for pain relief and wound care
8. Skill of administering basic life support.

DOCUMENTATION

Presentation & Documentation of 8 Cases of 8 cases for patient management using ICF Model as following:

(Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

1. Medical Respiratory condition
2. Paediatric respiratory condition
3. Thoracic Surgical condition
4. Cardiac Medical condition
5. Cardiac Surgical condition
6. Peripheral vascular disorders
7. Burns of Head, Neck & Face (Acute phase only)
8. Abdominal surgical condition

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

RECOMMENDED REFERENCE BOOKS

1. Exercise & the Heart – Wenger
2. ECG – P.J. Mehta
3. Cardiopulmonary Physical Therapy -- Irwin Scott
4. Fundamental of respiratory care – Egan's
5. Essential of cardio pulmonary physical therapy – Hillgass And Sodosky
6. Exercise physiology, energy, nutrition and human performance – M'Cardle
7. Exercise testing and prescription - Skinner
8. Exercise in health and disease-Pollock

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus.		**MARKS** **100**
SECTION A	**Q1 Answer any TWO out of THREE (LAQ)** **[2 x 10 =20 marks]** (Based on Cardiovascular System & General medicine) **Q2 Answer any FOUR out of FIVE (SAQ)** **[4 x 5 =20 marks]**	**40**
SECTION B	**Q3 Answer any TWO out of THREE (LAQ)** **[2 x 10 =20 marks]** (Based on Respiratory System General medicine) **Q4 Answer any FOUR out of FIVE (SAQ)** **[4 x 5 =20 marks]**	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL 80 MARKS + I.A. – 20 MARKS		MARKS 100
LONG CASE	a. Subjective and Physical Examination - **10 marks** b. Evaluation and Physical therapy diagnosis (ICF) **10 marks** c. Plan of care - Goal setting – **10 marks** d. Demonstration of any one important test and treatment intervention on patient – **15 marks** [Student will be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORT CASE	**Two Short case on:** Demonstrations of two physiotherapy intervention skills for effective patient management incorporating Application/Interpretation of Chest/Cardiac X-ray, ABG, PFT, ECG, Adjunct/devices **[2 x 15 marks]**	**30**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	**05**
TOTAL MARKS		**80**

COMMUNITY PHYSIOTHERAPY

[Didactic 95 hours + Clinical 115 hours= Total 210 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

The Community Physiotherapy course integrates theoretical knowledge from community medicine with practical physiotherapy applications in clinical settings. It prepares students to assess, plan, and implement rehabilitation strategies for all age groups, focusing on disease prevention, rehabilitation and restoring functions. Key areas of study include health promotion, women's health, geriatrics, community-based rehabilitation, industrial health, and the role of voluntary organizations. Students will gain insights into the role of physiotherapy in promoting health, managing chronic conditions, and supporting rehabilitation within community settings. Through lectures, case studies, and fieldwork, students will develop the skills needed to address diverse community health challenges, considering socio-cultural, ethical, and economic factors within community settings.

SR.NO.	TOPICS	DIDACTIC HOURS	PRACTICAL HOURS
1	**HEALTH PROMOTION**	**15**	**15**
	a. Understanding and applying the W.H.O. definitions of health and disease, and integrating the ICF framework to assess and manage health conditions.	1	
	b. Examine the three-tier health delivery system and its application in community Physiotherapy.	1	
	c. Defining physical fitness and assessing its impact across different demographics.	1	
	d. Assess how physical fitness impacts children and adolescents during growth.	2	
	e. Evaluate the role of physical fitness in managing and mitigating obesity-related issues.	2	

	f. Analyze physical fitness considerations for women, including pregnancy, menopause, and osteoporosis.	2	
	g. Explore physiological changes associated with aging and their impact on physical fitness.	3	
	h. Identify and apply preventive measures for health issues related to physiological changes, growth, and lifestyle diseases.	3	
2	**WOMEN'S HEALTH**	**20**	**25**
	a. Understanding the unique health challenges faced by women in India across various life stages and socio-economic conditions.	2	
	b. Exploring how social factors such as gender inequality, poverty, and cultural norms affect women's physical health and functionality.	2	
	c. Analyzing legal frameworks and health benefits that protect women's health rights, and their access to healthcare.	2	
	d. Studying the anatomical and physiological changes during pregnancy and menopause, and their impact on women's health.	7	
	e. Applying physiotherapy for antenatal and postnatal care, urogenital dysfunction, labor positions, and pain relief during childbirth and common gynecological conditions	7	
3	**GERIATRICS**	**20**	**25**
	a. Understanding the demographic trends, health challenges, and socio-economic conditions of elderly populations in India.	1	
	b. Explore the role of NGOs and the legal rights/benefits available for elderly healthcare.	1	
	c. Assess the role of physiotherapy in various elderly care settings (hospital-based care, halfway homes, etc.).	3	

	d. Understanding physiological changes in musculoskeletal, neurological, cardiopulmonary, metabolic, endocrine, cognitive, and immune systems and their impact on health and function.	7	
	e. Developing physiotherapy evaluation schemes for elderly care, including functional assessments and rehabilitation protocols and applying rehabilitation protocols in elderly care institutions to restore functional independence.	7	
	f. Addressing ethical considerations in physiotherapy care for the elderly, including autonomy, consent, and dignity.	1	
4	**A. Concepts of Rehabilitation**	**20**	**25**
	a. Define rehabilitation and Community-Based Rehabilitation (CBR), including their types and applications (institutional, outreach, and community-based). Explore the concept, goals, and scope of CBR.	2	
	b. Explore the definition of communities, community-based approaches, and strategies for community participation and mobilization in rehabilitation programs.	1	
	c. Analyze national policies, government programs, and legal aspects related to people with disabilities. Study the role of government in shaping rehabilitation laws and services	1	
	d. Principles of Team Work, Role of Physical Therapist (PT) in Team Work, Roles of Medical Personnel, PT, OT, Audiologist, Speech Therapist, P&O, Vocational Guide in CBR, Agencies Involved in Rehabilitation of Physically Handicapped, Legislation for Physically Handicapped, Concept of	1	

	Multipurpose Health Worker, Role of Family Members in Rehabilitation		
	e. Community-Based Rehabilitation (CBR):Role of Physiotherapy and Physiotherapist in CBR, Screening for Disabilities, Prescribing Exercise Programs, Prescribing and Devising Low-Cost Assistive Aids, Modifications for Physical and Architectural Barriers, Assess the strategies and effectiveness of disability prevention programs, Strategies to Improve Activities of Daily Living (ADL), Assess the effectiveness of rehabilitation programs; measure functional outcomes and patient progress	2	
	f. CBR Strategies in Different Areas: Evaluate the implementation and effectiveness of CBR strategies in urban settings (e.g., UHC, community centers, and schools), assess the impact of CBR strategies in rural settings using local resources (e.g., PHC, district hospitals).	1	
	B. Disability Evaluation & Management	**3**	
	a. Concept of disability- Indian & Global context b. Types and causes of disability. c. Early detection and developmental disorders in India		
	d. Introduction What, Why and How to evaluate disability. e. Principles & its guidelines for disability evaluation. f. Quantitative versus Qualitative data in disability.		
	g. Policies, rights and funds for disabled persons. h. Wheel Chair training, assisted devices training in disabled.		
	C. Extension Services and Mobile Units	**1**	

	a. Introduction, Need, Camp approach. Awareness Programs.		
	D. Vocational Training in CBR	**1**	
	a. Introduction, Need, Vocational evaluation, Vocational Rehabilitation services.		
	E. Screening And Rehabilitation of Pediatric Disorders in Community	**3**	
	a. Awareness in Immunization program's & Early detection of high risk babies, High risk pregnancies, anemic mothers, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, MR, Autistics, Delayed milestones, Down's Syndrome, Muscular Dystrophies etc., b. Prevention and rehabilitation of mental retardation and Behavioral disorders. c. Early intervention and rehabilitation in high risk Babies, Genetic counseling.		
	F. National District Level Rehabilitation Programme		
	a. Observe the working pattern & understand the role of physiotherapist by visiting Primary rehabilitation unit, regional training centre, District rehabilitation centre, Primary Health centre, Village Rehabilitation worker, Anganwadi worker.		
	G. Role Of Voluntary Organizations in CBR	**1**	
	a. Discuss the functions and impact of charitable organizations), b. Explore the roles played by both national and international NGO, c. Role of key international organizations such as WHO, UNICEF, UNDP, and others in supporting and enhancing CBR initiatives.		
	H. Role Of Social Work in CBR	**1**	

	a. Understanding and defining the scope and goals of social work in CBR. b. Historical development and evolution of social work practices c. Role of Social Worker in Rehabilitation		
	I. Planning And Management of CBR Programs	**2**	
	a. Strategies for effective planning and management of CBR programs, Ownership and Governance. b. Impact of decentralization on CBR programs. c. Management of CBR Program. d. Program Sustainability. e. Importance of communication and coordination in CBR implementation. f. Community Participation, Strategies for mobilizing resources and raising awareness for CBR. g. CBR Program Influence on Public Policies .		
5	**INDUSTRIAL HEALTH**	**20**	**25**
	a. Introduction to Industrial Health & Application of industrial therapy models (traditional medical vs. industrial), Intervention versus prevention in workplace health management. b. The role of Physiotherapist in the Industrial Therapy team.	2	
	A. Worker Care Spectrum: **a. Ability Management-** i. Assessment of workers for Job placement. ii. Injury prevention techniques to improve worker fitness and performance. (Specifically, back, neck & upper limb.). iii. Introduction and application of Employee Fitness Program.	7	

	iv. Ergonomics definition, evaluation, and ergonomics programming. **b. Disability Management-** i. Concept of Functional Capacity assessment ii. Acute care, work hardening program, work conditioning program iii. Ergonomic advice in people with disabilities at workplace.		
	B. Occupational Hazards in Industrial area to Analyze and make awareness regarding the hazards. i. Preventive measures in physical agents e.g. heat/ cold, light, noise, vibration, UV radiation, ionizing radiation. ii. Chemical agents- inhalation, local action and ingestion. iii. Mechanical hazards-overuse/fatigue injuries due to Ergonomic alternation.	4	
	C. Mechanical stresses: overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of workplace- Mechanical stresses per hierarchy. i. Sedentary table work-executives clerk, accountant, bank workers, IT workers, Office workers. ii. In appropriate seating arrangement- vehicle drivers and all seating workers. iii. Constant standing- watchman, defense forces, surgeons, traffic Police. iv. Over execution in laborers –stress management. v. Psychological hazards e.g. monotonicity and dissatisfaction in job, anxiety of work completion with quality, Depression. Role of PT. in industrial setup and stress	7	

	management, relaxation Modes. vi. Biological Hazards.		

CLINICAL SUPERVISED HOURS (115 Hours)

The course will encompass a variety of essential activities, including field visits to urban and rural Primary Health Centers (PHCs) to observe and understand local rehabilitation practices. Students will also visit regional rehabilitation training centers to gain insights into advanced techniques and available resources. Participation in health camps, disability surveys, and screenings will offer practical training in community-based evaluation. Students will engage in demonstrations of evaluation and physiotherapy techniques for managing conditions such as musculoskeletal, neuromuscular, cardiorespiratory, pediatric, gynecological, and geriatric issues, thereby enhancing their clinical and communication skills. Additionally, they will learn to evaluate and prescribe ambulatory and assistive devices, as well as fabricate low-cost assistive devices using locally available materials.

DOCUMENTATION

Presentation & Documentation of 5 Cases

a. One case each for Rehabilitation, Health Promotion, Industrial Health, Women's Health, and Geriatrics (total of 5 cases)
b. Documentation of at least one visit to either an industry, geriatric home, or for community assessment.

PROJECT

Students will choose a research study related to physiotherapy with guidance from a faculty member. After finalizing the topic, they will outline the study methodology and complete the research before the end of their final year. The study will be presented and defended during the University Practical Examination in Community Physiotherapy.

CLINICAL COMPONENT

1. Visits to Urban Health Centers (UHC), Primary Health Centers (PHC), industrial sites, and geriatric homes.

2. Adoption of local areas or vicinities for institutional involvement.
3. Conducting surveys in adopted localities covering antenatal care (ANC), disability, exercise, health promotion, and preventive measures related to smoking, alcohol, and drugs among youth.
4. Development of a case-dependent evaluation proforma or questionnaire.

RECOMMENDED TEXTBOOKS

1. Physiotherapy in Gynecological and Obstetrical Conditions – Mantle
2. Therapeutic Exercise – Kisner
3. Textbook of Community Health for Physiotherapists – Bhaskar Rao
4. Geriatrics Physiotherapy – Andrew Guccione
5. Industrial Therapy – Glenda Key
6. Text of Physiotherapy for Obstetrics and Gynecology – G.B. Madhuri & Pruthvish

RECOMMENDED REFERENCE BOOKS

1. Mural KF – Ergonomics: Man in His Working Environment
2. Exercise Physiology – McArdle
3. Musculoskeletal Disorders in the Workplace: Principles and Practice – Nordin& Anderson
4. Indian Social Problem Vol 2 – G.R. Madan
5. Status of Disabled in India 2000 – RCI Publication
6. Legal Rights of Disabled in India – Gautam Bannerjee
7. ICF – WHO Health Organisation 2001 Publication
8. Preventive and Social Medicine – Park
9. Training in the Community for People with Disabilities – Hallender & Padmini Mendes
10. Disabled Village Children – David Werner

11. Women & the Law Vol I & II – Chorin C & M Desai, C Gonsalves

12. Textbook of Work Physiology – Astrand PA &Rodahl K

13. Women's Health – Sapsford

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS+I.A.– 20 MARKS** *The question paper will allocate appropriate weight to all topics covered in the syllabus.		**MARKS** **100**
SECTION A	**Q 1 Answer any TWO out of THREE [10 x 2 = 20 marks]** * Long Questions Based on topics - Health Promotion /Industrial Health. **Q 2 Answer any FOUR out of FIVE [5 x 4 = 20 marks]**	**40**
SECTION B	**Q 3 Answer any TWO out of THREE [10 x 2 =20 marks]** *Long Questions Based on topics-Women's Health/Geriatrics. **Q 4 Answer any FOUR out of FIVE [5 x 4= 20 marks]**	**40**
TOTAL MARKS		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL 80 MARKS + I.A.– 20 MARKS		MARKS 100
LONG CASE	a. Subjective and Physical Examination **10 marks** b. Evaluation and Physical Therapy Diagnosis (using ICF) **10 marks** c. Plan of Care – Goal Setting **10 marks** d. Demonstration of an Important Test and Treatment Intervention on a Patient – **15 marks** *Students will be assessed on cognitive, psychomotor, and affective domains.*	**45**
SHORT CASES	a. **One short case** **15 marks** b. **Project:** The project synopsis and 50% of the data collection should be completed and presented during the terminal examination, while the full study will be presented at the preliminary examination. **15 marks**	**30**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	**05**
TOTAL MARKS		**80**

PRINCIPLES OF BIOENGINEERING

[Didactic 27 hours + Practical /Laboratory-03 hours= Total 30 Hours]

(COLLEGE EXAMINATION)

COURSE DESCRIPTION

Principles of Bioengineering explores the application of engineering principles to the human body. It covers the design and analysis of medical devices, rehabilitation technologies, and assistive devices. Students learn about biomechanics, biomaterials, and the integration of technology into physiotherapeutic practices. The course emphasizes the development of innovative solutions for improving patient mobility, enhancing treatment outcomes, and promoting recovery. Through theoretical knowledge and practical applications, students gain a comprehensive understanding of how bioengineering can advance physiotherapy practices, offering insights into cutting-edge technologies used for patient care, assessment, and rehabilitation.

SR.NO.	TOPICS	DIDACTIC HOURS
1	**Introduction to bioengineering**	**1**
	Classification of Aids & appliances (Splints/ Orthoses for spine, upper & lower limb; Prostheses for Lower limbs & Upper limbs)	
2	**Biomechanical principles in designing of appliances & assessment; Procedures for static & dynamic alignment of the Orthosis & Prostheses**	**26**
	a. Introduction to Orthotics, Solid Ankle foot Orthoses (AFO)	**1**
	b. Articulated AFO, Various Shoe modifications	**1**
	c. Knee Ankle Foot Orthoses (KAFO)	**1**
	d. Knee Orthoses (KO)	**1**
	e. Hip Knee Ankle Foot orthoses (HKAFO), Hip Orthoses (HO)	**1**
	f. Fracture Bracing and Flexible Lumbo-sacral Orthoses (LSO) and Thoraco-Lumbo-sacral Orthoses (TLSO)	**1**
	g. Rigid Thoraco-Lumbo-sacral Orthoses (TLSOs) and Cervical Orthosis (CO)	**1**

	h. Orthotic management of Scoliosis, Milwaukee and low profile scoliosis orthosis, Scheuermann's Kyphosis & Osteoporosis	**1**
	i. Orthosis for LBP, Introduction to Upper limb Orthotics and Shoulder orthosis (SO)	**1**
	j. Shoulder (SO),Elbow Orthosis (EO) & Wrist Hand Orthosis (WHO)	**2**
	k. Introduction to Gait in relation to the use of Orthosis / Prosthesis	**1**
	l. Prosthetic management of Forefoot amputees	**1**
	m. Prosthetic management of Syme's and hind foot Amputees	**1**
	n. Below Knee Prosthesis & Prosthetic foot pieces	**1**
	o. Alignment of Below Knee Prosthesis and gait deviations	**1**
	p. Prosthetic Knees and Knee Disarticulation mgmt.	**1**
	q. Above Knee Prosthesis, alignment, gait deviations	**1**
	r. AK Checkouts, Prosthetic mgmt. of Hip Disarticulation, hemipelvectomy, bilateral amputees and Congenital cases	**1**
	s. Introduction to Upper Limb Prosthetics, Prosthetic management of Partial Hand amputees	**2**
	t. Cosmetic Prostheses for all levels of Amputations	**1**
	u. Task Specific Prostheses, Prosthetic management of Wrist Disarticulation, Myoelectric below Elbow prosthesis	**1**
	v. Body Powered below Elbow Prostheses and it's components	**1**
	w. Harnessing in Below Elbow	**1**
	x. Prosthetic management of Elbow Disarticulation and Above Elbow Amputation.	**1**

SR.NO.	PROJECT	PRACTICAL HOURS
	Temporary splints: To fabricate ONE splint each [to use P.O.P, aluminum strips /sheets /wires rubber bands, Rexin, Orfit,etc]	**3**
	Splinting- Practical Demonstration of the following:	
a.	Cock up (dorsal/volar)	
b.	Outrigger	
c.	Opponence splint	
d.	Anterior and posterior guard splints for gait training	
e.	Foot drop splint	
f.	Facial splint	
g.	Mallet Finger Splint	
h.	C bar for 1st web space of hand.	

Temporary splints: To fabricate ONE splint each [to use P.O.P, aluminum strips /sheets /wires rubber bands, Rexin, Orfit, etc **(3).**

Splinting- Practical Demonstration of the following

a. Cock up (dorsal/volar)
b. Outrigger,
c. Opponence splint
d. Anterior and posterior guard splints for gait training,
e. Foot drop splint
f. Facial splint
g. Mallet Finger Splint
h. C bar for first web space of hand
i. Thumb Spica

RECOMMENDED REFERENCE BOOKS

1. Nawoczenski DA, Epler ME. Orthotics in functional rehabilitation of the lower limb.

2. Churchill Livingstone. Orthotics: clinical practice and rehabilitation technology.
3. American Academy of Orthopaedic Surgeons. Atlas of orthotics: biomechanical principles

and application. The C.V. Mosby Company.

SCHEME OF EXAMINATION

THEORY ONLY (COLLEGE EXAM) *The question paper will give appropriate weightage to all the topics in the syllabus. [There shall be no LAQ in this paper]		MARKS 30
SECTION A	**Q1. Answer any THREE out of FOUR [3 x 5 marks]**	**15**
SECTION-B	**Q2. Answer any FIVE out of SIX [5 x 3marks]**	**15**
TOTAL MARKS		**30**
Passing the examination is Mandatory **Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65.5 %, B = 50 to 54.5%, C = less than 50%**		

RESEARCH METHODOLOGY AND BIOSTATISTICS

[Didactic 27 Hours + Practical 3 Hours= Total 30 Hours]

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION

Research Methodology and Biostatistics offers an in-depth understanding of research principles, design, and statistical analysis in the context of physical therapy. The course covers topics such as hypothesis development, study design, data collection, and ethical considerations in research. Students explore various statistical techniques, including descriptive and inferential statistics, tailored to physiotherapy research. Emphasis is placed on evidence-based practice, enabling students to critically analyze research literature and apply appropriate methods in their studies. Practical sessions on statistical software enhance their data analysis skills, preparing them to conduct and interpret research for improving patient care and outcomes in physiotherapy.

SR.NO	TOPICS	DIDACTIC HOURS	PRACTICAL HOURS	TOTAL HOURS
1	**RESEARCH IN PHYSIOTHERAPY**	3		3
	a. Introduction			
	b. Research for Physiotherapist: Why? How? When?			
	c. Research – Definition, concept, purpose, approaches			
	d. Internet sites for Physiotherapists.			
2	**RESEARCH FUNDAMENTALS**	3		3
	a. Define measurement			
	b. Measurement framework			
	c. Scales of measurement			
	d. Pilot Study			
	e. Types of variables			
	f. Reliability & Validity			
	g. Drawing Tables, Graphs, Master chart			
3	**WRITING A RESEARCH PROPOSAL**	3		3

	a. Defining a problem			
	b. Review of Literature			
	c. Formulating a question, Operational Definition			
	d. Inclusion & Exclusion criteria			
	e. Methodology- Forming groups Data collection & method for analysis			
	f. Informed Consent Steps of documentation – Title to Scope of study			
4	**RESEARCH ETHICS**	**2**		**2**
	a. Importance of Ethics in Research			
	b. Main ethical issues in human subjects research			
	c. Main ethical principles that govern research with human subjects			
	d. Components of an ethically valid informed consent for research.			
5	**OVERVIEW OF STUDY DESIGNS**	**3**		**3**
	a. Observational i. Descriptive-Case study/ series, Cross sectional, Normative, Correlational			
	ii. Analytical; case control, cohort			
	b. Experimental- True & quasi experimental			
6	**SAMPLING**	**2**		**2**
	a. Random and non-random sampling			
	b. Various methods of sampling – simple random, stratified, systematic, cluster and multistage. Sampling and non-sampling errors and methods of minimizing these errors.			
7	**BASIC PROBABILITY DISTRIBUTIONS AND SAMPLING DISTRIBUTIONS**	**2**		**2**
	a. Concept of probability and probability distribution.			

	b. Normal, Poisson and Binomial distributions, parameters and application			
	c. Concept of sampling distributions.			
	d. Standard error and confidence intervals.			
	e. Skewness and Kurtosis			
8	**TESTS OF SIGNIFICANCE**	**3**		**3**
	a. Basics of testing of hypothesis – Null and alternate hypothesis, type I and type II errors, level of significance and power of the test, p value.			
	b. Tests of significance (parametric) - t – test (paired and unpaired), Chi square test and test of proportion, one way analysis of variance.			
	c. Repeated measures analysis of variance.			
	d. Tests of significance (non-parametric)- Mann-Whitney u test, Wilcoxon test,			
	e. Kruskal-Wallis analysis of variance. Friedman's analysis of variance			
	CORRELATIONS AND REGRESSION	**1**		**1**
	a. Simple correlation – Pearson's and			
	b. Spearman's; testing the significance of correlation coefficient, linear and multiple regressions.			
10	**STATISTICAL DATA**	**2**		**2**
	Tabulation, Calculation of central tendency and dispersion, Using software packages, Analysis, Presentation of data in diagrammatic & Graphic form.			
11	**RESEARCH REPORTS**	**1**		**1**
	Overview, Types and Publication, Plagiarism			
12	**COMPUTER APPLICATIONS** related to Research work	**2**	**3**	**5**

RECOMMENDED TEXTBOOK

1. Methods in Biostatistics - B.K. Mahajan
2. Research for physiotherapist-Hicks
3. Research Methodology, 2nd Revised - CR Kothari

SCHEME OF UNIVERSITY EXAMINATION

THEORY ONLY **40 MARKS + I.A. 10 MARKS** The question paper will give appropriate weightage to all the topics in the syllabus. [There shall be no LAQ in this paper]		**MARKS** **50**
SECTION A	**Q 1** Answer any **FOUR** out of **FIVE** **[4x 5 marks]** BIOSTATISTICS	**20**
SECTION B	**Q 2** Answer any **FOUR** out of **FIVE** **[4 x 5marks]** RESEARCH METHODOLOGY	**20**
TOTAL MARKS		**40**

DIAGNOSTIC IMAGING FOR PHYSIOTHERAPY

[Didactic: 20 Hours+ Practical 10 Hours =30 hours]

(COLLEGE EXAMINATION)

COURSE DESCRIPTION

This course will provide physiotherapists with a comprehensive understanding of medical imaging techniques such as X-rays, MRI, CT scans, and ultrasound. It will focus on the role of diagnostic imaging in clinical decision-making, enhancing skills in interpreting images relevant to musculoskeletal, neurological, and cardiopulmonary conditions. The course will cover indications, limitations, and the integration of imaging results into treatment planning. Designed for clinical application, it will help physiotherapists work effectively with other healthcare professionals in multidisciplinary settings, improving patient outcomes through accurate diagnosis and targeted interventions.

SR. NO.	TOPIC	DIDACTIC HOURS
1	**IMAGE INTERPRETATION**	**2**
	a. History	
	b. A New Kind of Ray	
	c. How a Medical Image Helps	
	d. What Imaging Studies Reveal	
2	**RADIOGRAPHY**	**4**
	a. Equipment components	
	b. Procedures for Radiography	
	c. Benefits versus Risks and Costs	
	d. Indications and contraindications.	
	e. Radiography (x-rays): Spine , Limbs, Chest	
3	**FLUOROSCOPY: (Use, Intervention, Interpretation and Demonstration)**	**1**

	a. What is Fluoroscopy?	
	b. Equipment used for fluoroscopy	
	c. Indications and Contra indications	
	d. How it helps in diagnosis	
	e. The Findings in Fluoroscopy	
	f. Benefits versus Risks and Costs.	
4	**COMPUTED TOMOGRAPHY (CT): (Use, Intervention, Interpretation and Demonstration)**	**4**
	a. What is Computed Tomography?	
	b. Equipment used for Computed Tomography	
	c. Indications and Contra indications	
	d. How it helps in diagnosis	
	e. The Findings in Computed Tomography	
	f. Benefits versus Risks and Costs.	
5	**MAGNETIC RESONANCE IMAGING (MRI): (Use, Intervention, Interpretation and Demonstration)**	**3**
	a. What is MRI?	
	b. Equipment used for MRI	
	c. Indications and Contra indications	
	d. How it helps in diagnosis	
	e. The Findings in MRI	
	f. Benefits versus Risks and Costs	
	g. Functional MRI.	
6	**ULTRASOUND: (Use, Intervention, Interpretation and Demonstration)**	**1**
	a. What is Ultrasound?	
	b. Equipment used for Ultrasound	
	c. Indications and Contra indications	
	d. How it helps in diagnosis	

	e. The Findings in Ultrasound	
	f. Benefits versus Risks and Costs.	
7	**MAMMOGRAPHY: (Use, Intervention, Interpretation and Demonstration)**	**1**
	a. Equipment components	
	b. Procedures for Mammography	
	c. Benefits versus Risks and Costs	
	d. Indications and contraindications.	
8	**2D ECHOGRAPHY (Use, Intervention, Interpretation and Demonstration)**	**1**
	a. What is 2D Echography?	
	b. Equipment components	
	c. Procedures for Mammography	
9	**ANGIOGRAPHY (Use, Intervention, Interpretation and Demonstration)**	**1**
	a. What is Angiography?	
	b. Types (Cardiac, Cerebral, Periperal)	
	c. Equipment components	
	d. Procedure	
	e. Indications and contraindications	
10	**ENDOSCOPY: (Use, Intervention, Interpretation and Demonstration)**	**1**
	a. What is Endoscopy?	
	b. Equipment used for Endoscopy	
	c. Indications and Contra indications	
	d. How it helps in diagnosis	
	e. The Findings in Endoscopy	
	f. Benefits versus Risks and Costs.	
11	**NUCLEAR MEDICINE: (Use, Intervention, Interpretation and**	**1**

	Demonstration)	
	a. What is Nuclear Medicine?	
	b. Equipment used for Nuclear Medicine	
	c. Indications and Contra indications	
	d. How it helps in diagnosis.	
	e. Benefits versus Risks and Costs.	

PRACTICAL HOURS (10 HOURS)

RECOMMENDED TEXTBOOKS

1. Essentials of Radiology , by Rajesh Raman,
2. Textbook Of Radiology For Residents And Technicians 5Ed by Satish Bhargav

RECOMMENDED REFERENCES BOOKS

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SCHEME OF EXAMINATION

THEORY ONLY **(College Exam)** *The question paper will give appropriate weightage to all the topics in the syllabus. [There shall be no LAQ in this paper]		**MARKS** **30**
SECTION A	Q1. Answer any THREE out of FOUR **[3 x 5 marks]**	**15**
SECTION B	Q2. Answer any FIVE out of SIX **[5 x 3marks]**	**15**
TOTAL MARKS		**30**
Passing in the examination is Mandatory **Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65.5 %, B = 50 to 54.5%, C = less than 50%**		

ANNEXTURE

SCHEME OF EXAMINATION

BHARATI VIDYAPEETH
(Deemed to be University)
SCHOOL OF PHYSIOTHERAPY
First Year BPTH University Exam

YEAR	SN	COURSE(S)	UNIVERSITY EXAM		IA		TOTAL	
			TH	PR	TH	PR	TH	PR
FIRST BPTh	1	HUMAN ANATOMY	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	2	HUMAN PHYSIOLOGY	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	3	BIOCHEMISTRY	Max. 40		Max.10		Max.50 Min. 25	
	4	FUNDAMENTALS OF KINESIOLOGY & KINESIOTHERAPY	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	5	FUNDAMENTALS OF ELECTROTHERAPY	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50

BHARATI VIDYAPEETH
(Deemed to be University)
SCHOOL OF PHYSIOTHERAPY
Second Year BPTH University Exam

YEAR	SN	COURSE(S)	UNIVERSITY EXAM		IA		TOTAL	
			TH	PR	TH	PR	TH	PR
SECOND BPTh	1	PHARAMCOLOGY	Max. 40		Max.10		Max.50 Min. 25	
	2	PATHOLOGY & MICROBILOGY	Max. 80		Max.20		Max.100 Min. 50	
	3	PSYCHOLOGY	Max. 40		Max.10		Max.50 Min. 25	
	4	KINESIOLOGY	Max. 80		Max.20		Max.100 Min. 50	
	5	KINESIOTHERAPY	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	6	ELECTROTHERAPY	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	7	COMPUTER APPLICATION	GRADE (Max. A+ and Min. B)					
	8	ENVIRONMENTAL SCIENCE	Max.50 Min. 25					

BHARATI VIDYAPEETH
(Deemed to be University)
SCHOOL OF PHYSIOTHERAPY
Third Year BPTH University Exam

YEAR	SN	COURSE(S)	UNIVERSITY EXAM		IA		TOTAL	
			TH	PR	TH		TH	PR
	1	SURGERY	Max. 40		Max.10		Max.50 Min. 25	
THIRD BPTh	2	ORTHOPAEDICS	Max. 40		Max.10		Max.50 Min. 25	
	3	MEDICINE	Max. 40		Max.10		Max.50 Min. 25	
	4	NEUROLOGY	Max. 40		Max.10		Max.50 Min. 25	
	5	PAEDIATRICS	Max. 40		Max.10		Max.50 Min. 25	
	6	COMMUNITY HEALTH & SOCIOLOGY	Max. 80		Max.20		Max.100 Min. 50	
	7	GYNAECOLOGY & OBSTRETICS	Max. 40		Max.10		Max.50 Min. 25	
	8	PSYCHIATRY	Max. 40		Max.10			
	9	DERMATOLOGY	GRADE (Maximum A+ and Minimum B)					
	10	FUNCTIONAL DIAGNOSIS & PHYSICAL SKILLS	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50

BHARATI VIDYAPEETH
(Deemed to be University)
SCHOOL OF PHYSIOTHERAPY
Fourth Year BPTH University Exam

YEAR	SN	COURSE(S)	UNIVERSITY EXAM		IA		TOTAL	
			TH	PR	TH	PR	TH	PR
FOURTH BPTh	1	PROFESSIONAL PRACTICE AND ETHICS	GRADE (Maximum A+ and Minimum B)					
	2	ADMINISTRATION, MANAGEMENT & MARKETING	GRADE (Maximum A+ and Minimum B)					
	3	MUSCULOKELATAL PHYSIOTHERAPY	Max. 80	Max. 80	Max. 20	Max. 20	Max.100 Min. 50	Max.100 Min. 50
	4	NEURO-PHYSIOTHERAPY	Max. 80	Max. 80	Max. 20	Max. 20	Max.100 Min. 50	Max.100 Min. 50
	5	CARDIOVASCULAR RESPIRATORY PHYSIOTHERAPY	Max. 80	Max. 80	Max. 20	Max. 20	Max.100 Min. 50	Max.100 Min. 50
	6	COMMUNITY PHYSIOTHERAPY	Max. 80	Max. 80	Max. 20	Max. 20	Max.100 Min. 50	Max.100 Min. 50
	7	PRINCIPLES OF BIOENGINEERING	GRADE (Maximum A+ and Minimum B)					
	8	RESEARCH METHODOLOGY & BIOSTATISTICS	Max. 40		Max. 10		Max.50 Min. 25	
	9	DIAGNOSING IMAGING FOR PHYSIOTHERAPY	GRADE (Maximum A+ and Minimum B)					