

Branch Name:	BACHELOR OF PHYSIOTHERAPY
Program Code:	PT101
Course Title:	PHYSICAL AND FUNCTIONAL DIAGNOSIS
Course Code:	2PT1010304
Pre-requisite Course:	Human Anatomy, Human Physiology, General Medicine, General Surgery, Orthopedics

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)			Credit	Evaluation Scheme (Marks)					
Lecture	Tutorial	Practical		Theory(T)		Practical(P)		Total Marks	
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment		
3	-	3	9	80	20	80	20	100	100

COURSE OUTCOMES:

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

1. Describe the human development & maturation; with special emphasis to psychomotor development, maturation & alteration during aging process
2. Acquire the skill of detection & objective documentation of the neurological, musculoskeletal, cardiovascular & pulmonary dysfunctions such as pain, altered muscle power, mobility, endurance, limb length, posture, gait, hand function & A.D.L. in adult & pediatric conditions & acquire skill & to arrive at the Functional diagnosis as per International Classification of Functioning (ICF)
3. Describe the physiology of nerve impulse, motor unit, its electro-physiological character and acquire the skill of performance and interpretation of various electro-diagnostic tests in the assessment of peripheral nerve lesions
4. Be able to do interpretation of common investigations used to arrive at the Physical & Functional diagnosis.
5. 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.

Subject Content:

Sr. No	Topic	Hours
1	General principles of Human development & maturation Aspects: a) Physical b) Motor c) Sensory d) Cognitive e) Emotional f) Cultural g) Social Factors influencing human development & growth: a) Biological b) Environmental c) Inherited. Principles of maturation: a) In general - in anatomical directional pattern cephalo – caudal proximo – distal centro – lateral b) Mass to specific pattern c) Gross to fine motor development	10

	Reflex maturation tests Development in specific fields: a) Oromotor development b) Sensory development, Neurodevelopment of hand function	
2.	Electro diagnosis a) Bioelectricity-Physiology of generation & propagation of action potential, volume conduction b) Therapeutic current-as a tool for electro diagnosis c) Physiological principles, use of alternating & direct currents in electro-diagnosis such as sensory & Pain threshold, Pain tolerance,-Short & long pulse test, S.D. curves, Chronaxie & Rheobase, accommodation ratio, d) Principles of nerve conduction studies, late responses * e) E.M.G. instrumentation, basic components, panel diagram, types of electrodes f) Principles of Electro- myography, motor unit –Normal characteristics-activity at rest, recruitment/frequency pattern at minimal activity, Interference pattern	15
3	Assessment of Neurological dysfunction a) Higher functions, cranial nerves, sensations & sensory organization, body image, tone, reflexes: superficial & deep, voluntary control, muscle strength, coordination, balance, posture, gait b) Scales: FRT, Berg's Balance, modified Ashworth, Glasgow Coma, TUG, FIM c) Functional diagnosis using ICF Interpretation of electro diagnostic findings, routine biochemical investigations	70
4.	Assessment of Musculoskeletal Dysfunction a) Tightness, deformity, joint mobility, muscle strength, limb length, trick movement, girth, posture, gait, special tests b) Functional diagnosis using ICF c) Interpretation of X-ray of extremities & spine, routine bio-chemical investigations, CT scan, MRI Assessment of pelvic floor muscle strength and function i. Digital evaluation of vagina ii. Perineometer iii. Pad test d) Disability Evaluation – gait and gait parameters, percentage of disability (temporary and permanent , Scales - NDI, MODI, WOMAC, SPADI, UEFS, LEFS	63
5.	Assessment of cardio -pulmonary dysfunction a) Vital parameters, chest expansion, chest excursion, breath holding test, breath sounds, rate of perceived exertion (RPE), peak flow rate b) Exercise Tolerance: six minutes' walk test, shuttle test, theoretical bases of Bruce's protocol, step test c) Ankle Brachial Index, tests for peripheral arterial & venous circulation d) Functional diagnosis using ICF Interpretation of X-ray chest, routine bio-chemical investigations, ABG, PFT, ECG (normal values)	50
6.	Assessment of pain a) Intensity & quality Objective assessment & documentation: VAS, Numerical Rating Scale. Other scales	05
7.	Assessment of Hand a) Sensations, mobility of joints, strength b) Special tests	05

	Hand function: Precision & power grips	
8.	Assessment of Obesity a) Classification b) Assessment – BMI, Waist circumference, Waist – Hip ratio Introduction to Quality of Life Questionnaire	05
9.	Assessment of wounds PRACTICALS: Skills to be practiced on peer/model	05

PT assessment for orthopedic conditions –

SOAP format- Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness.

Pain assessment- intensity, character, aggravating and relieving factors, site and location.

Objective Examination -

On observation - body built swelling, muscle atrophy, deformities, posture and gait.

On palpation- Tenderness-grades, muscle spasm, swelling-methods of swelling, assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances.

On examination – ROM – active and passive, resisted isometric tests, limb length apparent, true and segmental, girth measurement, muscle length testing-tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination- dermatomes, myotomes and reflexes, special tests and functional tests.

Prescription of home program. Documentation of case records, and follow up.

List of References:

Text Books:

1. Physical rehabilitation- Susan B. O'Sullivan
2. Clinical neurophysiology- UK Mishra
3. Orthopedic physical assessment- David J Magee
4. Physiotherapy for respiratory and cardiac problems- Jennifer A Pryor

Reference Books:

1. Principles And Practice Of Medicine By – Davidson, 20th edition, Churchill Livingstone Publication.
2. ACSM's guidelines
3. Principles and practice of Cardiopulmonary physical therapy- Donna Frown felter
4. Bickerstaff's Neurological examination in clinical practice

List of Open Source Software/learning website:

- k-hub.in e library/A single platform for all e resources (K-hub, E Resource)
 - User Name- KB4605VNG
 - Password- BL@69BX!
- knowledgegainer.delnet.in (Delnet, E Resource)
 - User Name-gjspum
 - Password- spu10924

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the human development & maturation; with special emphasis to psychomotor development, maturation & alteration during aging process	1 Remembering 2 Understanding
CLO2	Acquire the skill of detection & documentation of the neurological, musculoskeletal, cardiovascular & pulmonary dysfunctions.	1 Remembering 2 Understanding 3 Applying
CLO3	Understand the physiology of nerve impulse, motor unit, its electro-physiological character and acquire the skill of	2 Understanding

	performance and interpretation of various electro-diagnostic tests in the assessment of peripheral nerve lesions	3 Applying 4 Analyze
CLO4	Enable to do interpretation of common investigations used to arrive at the Physical & Functional diagnosis.	1 Remembering 2 Understanding 3 Applying 4 Analyze 5 Evaluate
CLO5	Develop the basic skills of manipulative, cardiovascular-respiratory and neuro-therapeutic on patients.	4 Analyze 5 Evaluate 6 Creating
CLO6	Able to assess and do Physical Therapy diagnosis for various orthopedic, neurological and cardiopulmonary dysfunctions.	3 Applying 5 Evaluate 6 Creating

Mapping of CLOs with Pos & PSOs

Course Learning Outcomes	Program Outcomes (POs)								Program Specific Outcomes (PSOs)							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CLO1	H							M	H		H					
CLO2		M	M	M					M	H		H				M
CLO3		M	M								M					M
CLO4	H	H	H								H	H		H		M
CLO5				M			M				H	H	M			M
CLO6	H				M					H	H	H		M		M

H= High M=Medium L=Low