



SYLLABUS & CURRICULA

FOR

DOCTOR OF PHYSICAL THERAPY (DPT)

(Five Year Degree Program)

SARGODHA MEDICAL COLLEGE
UNIVERSITY OF SARGODHA

CURRICULUM AND YEAR WISE COURSE DETAILS
DOCTOR OF PHYSICAL THERAPY (DPT)

SCHEME OF STUDIES

1st YEAR

Sr	Subject Title	Theory Marks	Practical / Viva / clinical Marks	Total Marks
1	ANATOMY I	100	100	200
2	PHYSIOLOGY I	100	100	200
3	KINESIOLOGY	100	100	200
4	BIOCHEMISTRY & GENETICS I	100	100	200
5	ENGLISH	100	Not Applicable	100
6	BIostatISTICS	100	Not Applicable	100
7	INTRODUCTION TO COMPUTERS	100	Not Applicable	100
	TOTAL	700	400	1100

2nd YEAR

Sr	Subject Title	Theory Marks	Practical / Viva / Clinical Marks	Total Marks
1	ANATOMY II	100	100	200
2	PHYSIOLOGY II	100	100	200
3	BIOCHEMISTRY & GENETICS II	100	100	200
4	BIOMECHANICS & ERGONOMICS	100	100	200
5	EXERCISE PHYSIOLOGY	100	Not applicable	100
6	SOCIOLOGY & HEALTH AND WELLNESS*	100(50+50)	Not applicable	100
7	MEDICAL PHYSICS	100	Not applicable	100
8	ISLAMIC STUDIES & PAKISTAN STUDIES*	100(50+50)	Not applicable	100
	TOTAL	800	400	1200

*** Question paper will comprise of 02 parts, attempted on 02 separate answer sheets**

3rd YEAR

Sr	Subject Title	Theory Marks	Practical / Viva / Clinical Marks	Total Marks
1	PATHOLOGY & MICROBIOLOGY	100	100	200
2	PHARMACOLOGY	100	100	200
3	PHYSICAL AGENTS & ELECTROTHERAPY	100	100	200
4	THERAPEUTICS EXERCISE AND TECHNIQUES	100	100	200
5	MANUAL THERAPY	100	100	200
6	EVIDENCE BASED & PROFESSIONAL PRACTICE	100	Not applicable	100
7	BEHAVIORAL SCIENCES	100	Not applicable	100
	TOTAL	700	500	1200

4th YEAR

Sr. #	Subject Title	Theory Marks	Practical / Viva / Clinical Marks	Total Marks
1	MEDICINE INCLUDING SUPERVISED CLINICAL PRACTICE I & II	100	200	300
2	CLINICAL DECISION MAKING & DIFFERENTIAL DIAGNOSIS	100	100	200
3	MUSCULOSKELETAL PHYSICAL THERAPY INCLUDING CLINICAL PRACTICE III	100	200	300
4	NEUROLOGICAL PHYSICAL THERAPY INCLUDING CLINICAL PRACTICE IV	100	200	300
5	COMMUNITY MEDICINE & RESEARCH METHODOLOGY	100	Not applicable	100
6	RADIOLOGY & DIAGNOSTIC IMAGING	100	100	200
7	PROSTHETICS & ORTHOTICS, HUMAN DEVELOPMENT & COMMUNITY BASED REHABILITATION *	100(50+50)	Not applicable	100
	TOTAL	700	800	1500

**** Question paper will comprise of 02 parts, attempted on 02 separate answer sheets***

FINAL YEAR

Sr	Subject Title	Theory Marks	Practical / Viva / Clinical Marks	Total Marks
1	CARDIOPULMONARY PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICE V	100	200	300
2	EMERGENCY PROCEDURES & PRIMARY CARE IN PHYSICAL THERAPY	100	Not applicable	100
3	SURGERY & INTEGUMENTARY PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICE VI	100	200	300
4	PHYSICAL THERAPY IN PAEDIATRIC AND GYNE & OBSTETRICS *	100	100	200
5	GERONTOLOGY & GERIATRIC PHYSICAL THERAPY	100	Not applicable	100
6	SPORTS PHYSICAL THERAPY	100	Not applicable	100
	TOTAL	600	500	1100
	Report Writing (in final year)			

*** Question paper will be compromise of 02 parts, attempted on 02 separate answer sheets**

Note:

1. 10% marks are reserved for internal assessment based upon 4-8 Class Tests average, Class attendance, and Overall performance.
2. The rules to be followed, regarding Admission and Examination are given as Annexure.

Contact hours

1st Year

Sr. #	Subject Title	Contact Hours		
		Total	Theory	Practical
1	Anatomy I	400	250	150
2	Physiology I	300	200	100
3	Kinesiology	300	200	100
4	Biochemistry & Genetics I	300	200	100
5	English	100	100	N/A
6	Biostatistics	100	100	N/A
7	Introduction to Computers	100	100	N/A
TOTAL		1600		

2nd Year

Sr. #	Subject Title	Contact Hours		
		Total	Theory	Practical
1	Anatomy II	400	250	150
2	Physiology II	300	200	100
3	Biochemistry & Genetics II	200	100	100
4	Biomechanics & Ergonomics	300	200	100
5	Exercise Physiology	100	100	N/A
6	Sociology & Health and Wellness	100	100	N/A
7	Medical Physics	100	100	N/A
8	Islamic Studies & Pakistan Studies	100	100	N/A
TOTAL		1600		

3rd Year

Sr.#	Subject Title	Contact Hours		
		Total	Theory	Practical
1	Pathology & Microbiology	300	200	100
2	Pharmacology	200	100	100
3	Physical Agents & Electrotherapy	300	200	100
4	Therapeutics Exercise and Techniques	300	200	100
5	Manual Therapy	200	100	100
6	Evidence Based & Professional Practice	100	100	N/A
7	Behavioral Sciences	100	100	N/A
Total		1500		

4th Year

Sr. #	Subject Title	Contact Hours		
		Total	Theory	Practical
1	Medicine Including Supervised Clinical Practice I & II	300	200	100
2	Clinical Decision Making & Differential Diagnosis	200	150	50

3	Musculoskeletal Physical Therapy Including Clinical Practice III	300	200	100
4	Neurological Physical Therapy Including Clinical Practice IV	200	100	100
5	Community Medicine & Research Methodology	150	150	N/A
6	Radiology & Diagnostic Imaging	100	50	50
7	Prosthetics & Orthotics, Human Development & Community Based Rehabilitation	100	100	N/A
TOTAL		1350		

5th Year

Sr.#	Subject Title	Contact Hours		
		Total	Theory	Practical
1	Cardiopulmonary Physical Therapy Including Supervised Clinical Practice V	400	200	200
2	Emergency Procedures & Primary Care in Physical Therapy	200	100	100
3	Surgery & Integumentary Physical Therapy Including Supervised Clinical Practice VI	300	150	150
4	Physical Therapy In Pediatric And Gynae & Obstetrics	200	150	50
5	Gerontology & Geriatric Physical therapy	200	200	N/A
6	Sports Physical Therapy	100	100	N/A
Total		1400		
Report Writing (In Final Year)		300		

PAPER PATTERNS & MARKS DISTRIBUTION OF UNIVERSITY EXAMINATIONS

PART-A. PAPER PATTERN

- I** TOTAL MARKS = 200 (having both Theory and Viva / Practical)
II TOTAL MARKS = 300 (having both Theory, Viva/Practical & Clinical Evaluation)
III TOTAL MARKS = 100 (having Theory Section only)
IV TOTAL MARKS = 100 (having 02 Theory Section of 50 marks each)

I- TOTAL MARKS = 200 (having both written/theory and General Viva /practical)

WRITTEN /THEORY (100 marks)			
Parts	No of questions	Marks for each question	Total marks
Part I MCQs	30 MCQs	01	01x30 = 30
Part II SEQs	06 SEQs	05	06x05 = 30
Part III LEQs	02 LEQs	15	02x15 = 30
Total			90
PRACTICAL/VIVA (100 marks)			
Marks for Internal			45
Marks for External			45
Total Practical/General Viva marks			90
INTERNAL ASSESSMENT (20 MARKS)			

Internal assessment Theory part		10
Internal assessment Practical/Viva part		10
Total		20
Grand total		200

II- TOTAL MARKS = 300 (having Theory, Viva/Practical & Clinical Evaluation)

WRITTEN /THEORY (90 marks)			
Parts	No of questions	Marks for each question	Total marks
Part I MCQs	30 MCQs	01	01x30 = 30
Part II SEQs	06 SEQs	05	06x05 = 30
Part III LEQs	02 LEQs	15	02x15 = 30
Total Theory marks			90
PRACTICAL/GENERAL VIVA (90 marks)			
Marks for Internal			45
Marks for External			45
Total			90
CLINICAL EVALUATION (90 marks)			
Marks for Internal	OSPE (01 Observed + 03 Non-observed)		45
Marks for External	OSPE (01 Observed + 03 Non-observed)		45
Total Clinical marks			90
INTERNAL ASSESSMENT (20 MARKS)			
Internal assessment Theory part			10
Internal assessment Practical/Viva			10
Internal assessment marks Clinical Evaluation			10
Total			30
Grand total			300

III- TOTAL MARKS = 100 (having Theory/Written only)

WRITTEN /THEORY (100 marks)			
Parts	No of questions	Marks for each question	Total marks
Part I MCQs	30 MCQs	01	01x30 = 30
Part II SEQs	06 SEQs	05	06x05 = 30
Part III LEQs	02 LEQs	15	02x15 = 30
Total Marks			90
INTERNAL ASSESSMENT (10 MARKS)			
Internal assessment Theory part			10
Total			10
Grand total			100

IV- TOTAL MARKS = 100 (having 02 Theory/Written parts of 50 marks each)

THEORY SECTION 1 (50 marks)			
Parts	No of questions	Marks for each	Total

		question	marks
Part I	MCQs	15 MCQs	01
Part II	SEQs	03 SEQs	05
Part III	LEQs	01 LEQs	15
Total			45
THEORY SECTION 2 (50 marks)			
Parts	No of questions	Marks for each question	Total marks
Part I	MCQs	15 MCQs	01
Part II	SEQs	03 SEQs	05
Part III	LEQs	01 LEQs	15
Total Marks			45
INTERNAL ASSESSMENT (10 MARKS)			
Internal assessment Theory Section 1			05
Internal assessment Theory Section 2			05
Total			10
Grand total			100

PART-B. REPORT WRITING (at the end of session in 5th year)

In 5th year class, a project will be allocated to each student. He has to collect data and write and submit a complete report of that project. All such reports will be evaluated by a committee of the department / institution and the reports if approved; the candidate will be entitled to confer a DPT degree.

DETAILED COURSE OUTLINE

1st YEAR DPT

1. ANATOMY -I
2. PHYSIOLOGY-I
3. BIOCHEMISTRY & GENETICS I
4. KINESIOLOGY
5. BIostatISTICS
6. ENGLISH
7. INTRODUCTION TO COMPUTER

1. ANATOMY I

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 upon 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, prosected materials and radiographs are utilized to identify anatomical landmarks and configurations of the upper limb and thoracic region.

DETAILED COURSE OUTLINE

CELL BIOLOGY

GENERAL ANATOMY

Terms related to position and movements, The skin and subcutaneous tissues, Layers of skin, Integuments of skin, Glands associated with hair follicle, Microscopic picture of skin

BONES AND CARTILAGES

Osteology, Functions of Bones, Classification of bones, Parts of developing long bones, Blood supply of bones, Lymphatic vessels & nerve supply, Rule of direction of nutrient foramen, Gross structure of long bone, Surface markings, Cartilage, Development of bone and cartilage and Microscopic picture of cartilage and bone

THE MUSCLE

Introduction, Histological Classification, Functions of muscles in general, Type of skeletal muscles, Parts of skeletal muscle and their action and Nomenclature and Microscopic picture of muscle

STRUCTURES RELATED TO MUSCLES & BONES

Tendons, Aponeurosis, Fasciae, Synovial bursae, Tendon Synovial sheaths, Raphaes, Ligaments, Condyle, Epicondyle, Ridge, Tuberosity, Tubercle, Foramen, Canal, Groove, Process and Spur

THE JOINTS

Introduction, Functional classifications, Structural classification, Structures comprising a Synovial joint, Movements of joints, Blood supply of Synovial joints, their nerve supply and lymphatic drainage and Factors responsible for joint stability and Development of joints

CARDIOVASCULAR SYSTEM

Definition, Division of circulatory system into pulmonary & systemic, Classification of blood vessels and their microscopic picture and Heart and its histology and Function of the Heart and Anastomosis

NERVOUS SYSTEM

Definition, Outline of cellular architecture, Classification of nervous system, Parts of the central nervous system, Microscopic picture of cerebrum, cerebellum, spinal cord, Functional components of a nerve, Typical spinal nerve and Microscopic picture of nerve and Introduction of autonomic nervous system and Anatomy of neuromuscular junction

UPPER LIMB

OSTEOLOGY:

Detailed description of all bones of upper limb and shoulder girdle along their musculature and ligamentous attachments

MYOLOGY

Muscles connecting upper limb to the axial skeletal, Muscles around shoulder joint, Walls and contents of axilla, Muscles in brachial region, Muscles of forearm, Muscles of hand, Retinacula and Palmar apouenrosis and Flexor tendon dorsal digital expansion

NEUROLOGY

Course, distribution and functions of all nerves of upper limb and Brachial plexus

ANGIOLOGY (CIRCULATION).

Course and distribution of all arteries and veins of upper limb, Lymphatic drainage of the upper limb and Axillary lymph node and Cubital fossa

ARTHROLOGY

Acromioclavicular and sternoclavicular joints, Shoulder joint, Elbow joint, Wrist joint, Radioulnar joints, Inter carpal joints, Joints MCP and IP and Surface Anatomy of upper limb, and Surface marking of upper limb

DEMONSTRATIONS:

Demonstration on Shoulder joint, attached muscles and articulating surfaces, Demonstration on Elbow joint, Demonstration on Wrist joint, Demonstration on Radioulnar joint, Demonstration on MCP and IP joints, Demonstration on acromioclavicular joint, Demonstration on sternoclavicular joint and Demonstration on Brachial plexus and Demonstration on Structure of bones

THORAX

STRUCTURES OF THE THORACIC WALL:

Dorsal spine (Vertebrae), Sternum, Costal Cartilages & Ribs, Intercostal Muscles, Intercostal Nerves, Diaphragm, Blood supply of thoracic wall and Lymphatic drainage of thoracic wall and Joints of thorax

THORACIC CAVITY:

Mediastinum, Pleura, Trachea, Lungs, Bronchopulmonary segments, Pericardium, Heart – Its blood supply, venous drainage & nerve supply, Large veins of thorax, superior and inferior vena cava., pulmonary veins brachiocephalic veins and Large Arteries – Aorta & its branches

LOWER LIMB

OSTEOLOGY

Detailed description of all bones of lower limb and pelvis along their musculature and ligamentous attachments.

MYOLOGY

Muscles of gluteal region, Muscles around hip joint, Muscles of thigh (anteriorly, posteriorly, laterally and medially) and Muscles of lower leg and foot

NEUROLOGY

Course, distribution, supply of all nerves of lower limb and gluteal region and Lumbosacral plexus.

ANGIOLOGY

Course and distribution of all arteries, veins and lymphatic drainage of lower limb

ARTHROLOGY

Pelvis, Hip joint, Knee joint, Ankle joint, Joints of the foot, Surface Anatomy of lower limb and Surface marking of lower limb

GENERAL HISTOLOGY

Cell, Epithelium, Connective tissue, Bone, Muscles tissue, Nervous tissues, Blood vessels, Skin and appendages and Lymphatic organs

GENERAL EMBRYOLOGY:

Male and female reproductive organs, Cell division and Gametogenesis, Fertilization, cleavage, blastocyst formation and implantation of the embryo. Stages of early embryonic development in second and third week of intrauterine life, Foetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and Placenta) and Developmental defects

PRACTICAL

During study of Gross Anatomy, emphasis should be given on applied aspect, radiological anatomy, surface anatomy and cross-sectional anatomy of the region covered in the respective semester /year

RECOMMENDED TEXT BOOKS:

- *Gray's Anatomy* by Prof. Susan Standring 39th Ed.,
- Elsevier, *Clinical Anatomy for, Medical Students* by Richard S.Snell,
- *Clinically Oriented Anatomy* by Keith Moore,
- *Clinical Anatomy* by R.J. Last, Latest Ed,
- *Cunningham's Manual of Practical Anatomy* by G.J. Romanes, 15th Ed., Vol-I, II and III,
- *The Developing Human. Clinically Oriented Embryology* by Keith L. Moore, 6th Ed, *Wheater's Functional Histology* by Young and Heath,
- Latest Ed, *Medical Histology* by Prof. Laiq Hussain, *Neuroanatomy* by Richard S.Snell.

2. PHYSIOLOGY I

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 metabolism, membrane function and cellular signaling; the mechanisms that match supply of nutrients to tissue demands at different activity levels; the mechanisms that match the rate of excretion of waste products to their rate of production; the mechanisms that defend the body against injury and promote healing.

These topics are addressed by a consideration of nervous and endocrine regulation of the cardiovascular, hematopoietic, pulmonary, renal, gastrointestinal, and musculoskeletal systems including the control of cellular metabolism. The integrative nature of physiological responses in normal function and disease is stressed throughout the course.

This course will serve as pre requisite for the further courses i.e. exercise physiology, pathology, etc.

DETAIL COURSE OUTLINE

BASIC AND CELL PHYSIOLOGY

Functional organization of human body, Homeostasis, Control systems in the body, Cell membrane and its functions, Cell organelles and their functions and Genes: control and function

NERVE AND MUSCLE

Structure and function of neuron, Physiological properties of nerve fibers, Physiology of action potential, Conduction of nerve impulse, Nerve degeneration and regeneration. Synapses, Physiological structure of muscle, Skeletal muscle contraction, Skeletal, smooth and cardiac muscle contraction, Neuromuscular junction and transmission, Excitation contraction coupling, Structure and function of motor unit

Clinical Module

1. Perform nerve conduction studies and explain their clinical importance
2. Myopathies and neuropathies
3. Peripheral nerve injuries

CARDIOVASCULAR SYSTEM

Heart and circulation, Function of cardiac muscle, Cardiac pacemaker and cardiac muscle contraction, Cardiac cycle, ECG: recording and interpretation. Common arrhythmias and its mechanism of development, Types of blood vessels and their function, Haemodynamics of blood flow (local control systemic circulation its regulation and control). Peripheral resistance its regulation and effect on circulation, Arterial pulse, Blood pressure and its regulation, Cardiac output and its control, Heart sounds and murmurs Importance in circulation and control of venous return., Coronary circulation, Splanchnic, pulmonary and cerebral circulation , Triple response and cutaneous circulation, Foetal circulation and circulatory changes at birth

Clinical Module

1. Clinical significance of cardiac cycle, correlation of ECG and heart sounds to cardiac cycle
2. Clinical significance of cardiac cycle, interpretation of ischemia and arrhythmias
3. Effects of hypertension
4. Clinical significance of heart sounds
5. Effects of ischemia
6. Shock

RESPIRATORY SYSTEM

Function of respiratory tract, Respiratory and non-respiratory function of the lungs, Mechanics of breathing, Production & function of surfactant and compliance of lungs, Protective reflexes, Lung volumes and capacities including dead space, Diffusion of gases across the alveolar membrane, Relationship between ventilation and perfusion. Mechanism of transport of oxygen and carbon dioxide in blood, Nervous and chemical regulation of respiration, Abnormal breathing, Hypoxia, its causes and effects, Cyanosis, its causes and effects

Clinical Module

1. Clinical importance of lung function tests
2. Causes of abnormal ventilation and perfusion
3. Effects on pneumothorax, pleural effusion, and pneumonia
4. Respiratory failure
5. Artificial respiration and uses & effects of O₂ therapy
6. Clinical significance of hypoxia, cyanosis, and dyspnoea

BLOOD

Composition and general functions of blood, Plasma proteins their production and function, Erythropoiesis and red blood cell function, Structure, function, production and different types of haemoglobin, Iron absorption storage and metabolism, Blood indices, Function, production and type of white blood cells, Function and production of platelets, Clotting mechanism of blood, Blood groups and their role in blood transfusion, Complications of blood transfusion with reference to ABO & RH incompatibility, Components of reticuloendothelial systems, gross and microscopic structure including tonsil, lymph node and spleen, Development and function of reticuloendothelial system

Clinical Module

1. Anemia and its different types
2. Blood indices in various disorders
3. Clotting disorders
4. Blood grouping and cross matching
5. Immunity

SKIN AND BODY TEMPERATURE REGULATION

PHYSIOLOGY PRACTICALS

HEMATOLOGY

1. Use of the microscope
2. Determination of haemoglobin
3. Determination of erythrocyte sedimentation rate
4. Determining packed cell volume
5. Measuring bleeding and clotting time
6. RBC count
7. Red cell indices
8. WBC count
9. Leukocyte count
10. Prothrombin and thrombin time

RESPIRATORY SYSTEM

1. Clinical examination of chest
2. Pulmonary volume, their capacities and clinical interpretation
3. Stethography

Cardiovascular System

Cardiopulmonary resuscitation (to be coordinated with the department of medicine), Examination of arterial puls, ECG recording and interpretation, Arterial blood pressure, Effects of exercise and posture on blood pressure, Apex beat and normal heart sounds

RECOMMENDED TEXT BOOKS

- *Textbook of Physiology* by Guyton and Hall, Latest Ed.
- *Review of Medical Physiology* by William F. Ganong, Latest Ed.
- *Physiology* by Berne and Levy, Latest Ed.
- *Human Physiology: The Basis of Medicine* by Gillian Pocock, Christopher D. Richards
- *Physiological Basis of Medical Practice* by John B. West and Taylor, 12th Ed.

3. BIOCHEMISTRY & GENETICS I

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 to the nutrients i.e. carbohydrates, fats, enzymes, nucleic acids and amino acids. The nutritional biochemistry concludes the course.

DETAILED COURSE OUTLINE

CELL

Introduction to Biochemistry, Cell: (Biochemical Aspects), Cell Membrane Structure, Membrane Proteins, Receptors & Signal Molecules

BODY FLUIDS

Structure and properties of Water, Weak Acids & Bases, Concept of pH & pK, Buffers, their mechanism of action, Body buffers

BIOMOLECULES

Amino Acids, Peptides & Proteins

Amino acids: Classification, Acid-Base Properties, Functions & Significance, Protein Structure, Primary, Secondary & Super secondary. & Structural Motifs, Tertiary & Quaternary Structures of Proteins, Protein Domains, Classification of Proteins, Fibrous proteins (collagens and elastins) & Globular proteins

ENZYMES

Introduction, Classification & Properties of Enzymes, Coenzymes, Isozymes & Proenzymes, Regulation & Inhibition of Enzyme activity & enzymes inhibitors, Clinical Diagnostic Enzymology

CARBOHYDRATES

Definition, Classification, Biochemical Functions & Significance of Carbohydrates, Structure & Properties of Monosaccharides & Oligosaccharides, Structure & Properties of Polysaccharides, Bacterial cell Wall, Heteropolysaccharides, GAGS

LIPIDS

Classification of Lipids, Fatty Acids: Chemistry, Classification occurrence & Functions, Structure & Properties of Triacylglycerols and Complex Lipids, Classification & Functions of Eicosanoids, Cholesterol: Chemistry, Functions & Clinical Significance, Bile acids/salts

NUCLEIC ACIDS

Structure, Functions & Biochemical Role of Nucleotides. Structure & Functions of DNA, Structure & Functions of RNA

MINERALS & TRACE ELEMENTS

Sources, RDA, Biochemical Functions & Clinical Significance of Calcium & Phosphorus, Sources, RDA, Biochemical Functions & Clinical Significance of Ca, Na, K, Cl, Mg, S, &P, Biochemical Functions & Clinical Significance of Fe, Cu, Zn, Mn, Mb, Se, Co, I,F etc.

VITAMINS

Sources, RDA & Biochemical Functions & Clinical Significance of Fat Soluble Vitamins, Sources, RDA & Biochemical Functions & Clinical Significance of Water Soluble, Vitamins

NUTRITION

Dietary Importance of Carbohydrates, Lipids & Proteins and other dietary Ingredients. Balanced Diet. Diet in specialized conditions

MOLECULAR BIOLOGY

Nitrogenous basis, Nucleosides and Nucleotides. Structure & Role of Nucleotide.

TISSUE BIOCHEMISTRY

Extracellular Matrix, Collagen, Elastin and Extracellular Matrix Components, Biochemistry of Proteoglycans, Bone & Teeth, Muscle & Cytoskeleton

PRACTICAL TRAINING

Section 1: Introduction to Biochemistry

1. Working SOPs for a Biochemistry Practical Laboratory
2. Introduction to Laboratory Equipments and Techniques
3. Preparation of solution (Normal, Molar Equivalent solution etc).

Section 2: Physical Biochemistry

4. Surface Tension
5. Process of adsorption
6. Buffer Action
7. Practical application of Henderson-Hasselbalch's equation

Section 3: Carbohydrate

8. Molisch's Test & Iodine Test
9. Benedict's Test & Barfoed's Test
10. Selivanoff's Test & Phenylhydrazine Test
11. Sucrose Hydrolysis
12. Starch Hydrolysis
13. Schematic Identification of an unknown carbohydrate

Section 4: Proteins

14. Biuret Test, Heat Coagulation Test & Salt Saturation Test
15. Ninhydrin Test, Xanthoproteic Test & Millon-Nasse's Test
16. Aldehyde Test, Sakaguchi's Test & Lead Sulphide Test
17. Determination of Isoelectric pH of casein Protein.
18. Schematic Identification of unknown protein

Section 5: Lipids

19. Emulsification of natural fat & Solubility of soap
20. Acrolein Test & Test for Cholesterol
21. Iodine & Peroxide value calculation
22. Saponification value calculation

Section 6: Biochemical analysis of different body fluid

23. Sample Collection & Physical Evaluation of Urine
24. Analysis of Normal Urine
25. Analysis of Abnormal Urine

RECOMMENDED BOOKS

1. *Harper's Biochemistry* by Robbert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwel (Latest Edition).
2. *Lippincott's Illustrated Review of Biochemistry* by Pamela C. Champe and Richard A. Harvey (Latest Edition).
3. *Practical Clinical Biochemistry* by Varley (Latest Edition).
4. *Textbook of Biochemistry* by Devlin (Latest Edition).
5. *Textbook of Medical Biochemistry* by M.A. Hashmi (Latest Edition).
6. *Biochemistry* by Stryer (Latest Edition).

4. KINESIOLOGY

COURSE DESCRIPTION:

This course covers the definition of kinesiology as well as its importance in physical therapy. It identifies the scope of kinesiology and studies its application. It covers the types of human motions as well as plane and relative axis of motion. It also explains the inter-relationship among kinematic variables and utilizes this knowledge to describe and analyze motion.

This course additionally covers the classification of the joints and muscles along their distinguishing characteristics; group action of muscles arthrokinematics and osteokinematics of human movement

DETAIL COURSE OUTLINE

INTRODUCTION TO KINESIOLOGY

Definition of kinesiology, Definition of rehabilitation

MECHANICS:

Mechanical Principles and Mechanics of Position

Force - force system – Description of units, Gravity: Center of gravity and line of gravity, Level of gravity, Equilibrium, Fixation and Stabilization

Mechanics of movement

Axes /Plane, Speed, Velocity, Acceleration, Momentum, Inertia, Friction, Lever - types – application, Pulley - types – application, Anatomical application of lever system and other pulley system application, Angle of pull

INTRODUCTION TO MOVEMENT

The body levers, Forces applied to the body levers, Types of movement and posture, Patterns of movement, Timing in movement, Rhythm of movement, The nervous control of movement

STARTING POSITIONS

Definition, Fundamental positions, Standing, Kneeling, Sitting, Lying, Hanging, The pelvic tilt

POSTURE

Inactive postures, Active postures, The postural mechanism, The pattern of posture, Principles of Re- Education, Techniques of Re-Education, Prevention of muscles wasting, The initiation of muscular contraction, Strengthening methods, Abnormal postures

MUSCLE STRENGTH AND MUSCLE ACTION

Types of Muscles contraction, Muscles tone, Physiological application to postural tone, Group action of muscles, Overview of muscle structure, Types of muscle work, Range of muscle work, Group action of muscles, Two joint muscle work, Active and passive insufficiency, Group movement of joints, Muscular weakness and paralysis

RANGE OF MOTION

Active Movements

Voluntary movements

Definition, Classification

Free Exercises

Classification of free exercises, Techniques of free exercises, Effects and uses

Assisted Exercises

The principles of assistance, Technique, Effects and uses

Assisted Resisted Exercises

Resisted Exercises

The principles of resistance, Variation of the power of the muscles in different parts of their range, Techniques of resisted exercises, Resistances, Progressive resistance exercise, Progression, Effects and uses of resisted exercises

Involuntary Movement

Reflex movement, The reflex arc, The stretch reflex, The righting reflexes, The postural reflexes, Effects and uses of reflex movement

PASSIVE MOVEMENT

Classification, Specific definitions, Relaxed passive movements, Principles of giving relaxed passive movements & its Effects and uses, Accessory movements, Principles of giving accessory movements and its Effects and uses, Passive manual mobilization and manipulations, Principles and Effects and uses, Controlled sustained stretching, Principles and Effects and uses.

RELAXATION

Definition, Muscle tone, Postural tone, Voluntary movement, Mental attitudes, Degrees of relaxation, Pathological tension in the muscles, Technique, General relaxation, Local relaxation

DERIVED POSITIONS

Purpose of derived positions, Positions derived from standing By: alteration of arms, alteration of the legs, alteration of trunk & alteration of legs and trunk, sitions derived from kneeling, sections derived from sitting By: alteration of the legs& by alteration of trunk, Positions derived from lying , By alteration of arms and by alteration of the legs, Positions derived from hanging, Other positions in which some of the weight is taken on the arms

SUSPENSION THERAPY

Suspension application, Suspension concept of inclined planes, The fixed point suspension, Supporting rope and its types, Sling and its types, Type of suspension: axial & vertical, Methods, techniques of suspension: upper limb & lower limb, Suspension effect on muscle work and joint mobility

NEUROMUSCULAR CO-ORDINATION

Coordinated movement, Group action of muscles, Nervous control, Inco-ordination, Re-Education, Frenkel's exercises

WALKING AIDS

Crutches, Sticks, Tripod or Quadra pod, Frames

GONIOMETRY

Introduction to Goniometry, Basic concepts in Goniometry, Joint motion, Range of motion, Factors affecting ROM, End-feel, Capsular and non capsular pattern of ROM limitation, Procedures, Positioning, Stabilization, Measurements Instruments, Alignment, Recording, Procedures, Validity and Reliability, Reliability Studies, Mathematical methods of evaluation measurement reliability, Exercise to evaluate reliability, Measurement of upper extremity, Measurement of lower extremity, Measurement of temporomandibular joint, Measurement of the cervical spine, Measurement of the thoracic spine, Measurement of the lumbar joint, Average range of motion, Joint measurement by body position

PRACTICAL TRAINING/ LAB WORK

Fundamentals of muscle testing, Methods of muscle recording, Basic muscle grading system, Evaluation of posture, Regional upper limb muscle testing as the region is covered in Anatomy I, Practical demonstrations of muscles work and its ranges, Practical demonstrations of various fundamental positions and posture analysis, Practical demonstrations of the techniques of active, passive movements, Manual muscle testing, Practical demonstrations of relaxation procedures, Practical demonstrations of various derived positions

RECOMMENDED TEXT BOOKS:

- *Practical exercise therapy* by Margaret Hollis (Latest Edition).
- *Brunnstrom's Clinical Kinesiology*(Latest Edition).
- *Clinical kinesiology and anatomy* by Lynn S Lippert(Latest Edition).
- *Joint structure and function: a comprehensive analysis* by: Pamela. K. Levangie and Cynthia. C. Norkin (Latest Edition).
- *Muscle function testing* by: Cunningham and Daniel (Latest Edition).
- *Human movement explain* by kim jonas and karenbaker(Latest Edition).
- *The principles of exercise therapy* by: M Dena Gardiner(Latest Edition).

5. BIOSTATISTICS

DETAILED COURSE OUTLINE

WHAT IS STATISTICS?

Definition of Statistics, Population, sample Descriptive and inferential Statistics, Observations, Data, Discrete and continuous variables, Errors of measurement, Significant digits, Rounding of a Number, Collection of primary and secondary data, Sources, Editing of Data.

PRESENTATION OF DATA

Introduction, basic principles of classification and Tabulation, Constructing of a frequency distribution, Relative and Cumulative frequency distribution, Diagrams, Graphs and their Construction, Bar charts, Pie chart, Histogram, Frequency polygon and Frequency curve, Cumulative Frequency Polygon or Ogive, Histogram, Ogive for Discrete Variable. Types of frequency curves.

MEASURES OF CENTRAL TENDENCY

Introduction, Different types of Averages, Quantiles, The Mode, Empirical Relation between Mean, Median and mode, Relative Merits and Demerits of various Averages. properties of Good Average, Box and Whisker Plot, Stem and Leaf Display, definition of outliers and their detection..

MEASURES OF DISPERSION

Introduction, Absolute and relative measures, Range, The semi-Inter-quartile Range, The Mean Deviation, The Variance and standard deviation, Change of origin and scale, Interpretation of the standard Deviation, Coefficient of variation, Properties of variance and standard Deviation, Standardized variables, Moments and Moments ratios. .

PROBABILITY AND PROBABILITY DISTRIBUTIONS.

Discrete and continuous distributions: Binomial, Poisson and Normal Distribution.

SAMPLING AND SAMPLING DISTRIBUTIONS

Introduction, sample design and sampling frame, bias, sampling and non sampling errors, sampling with and without replacement, probability and non-probability sampling, Sampling distributions for single mean and proportion, Difference of means and proportions.

HYPOTHESIS TESTING

Introduction, Statistical problem, null and alternative hypothesis, Type-I and Type-II errors, level of significance, Test statistics, acceptance and rejection regions, general procedure for testing of hypothesis.

TESTING OF HYPOTHESIS- SINGLE POPULATION

Introduction, testing of hypothesis and confidence interval about the population mean and proportion for small and large samples

TESTING OF HYPOTHESES-TWO OR MORE POPULATIONS

Introduction, Testing of hypothesis and confidence intervals about the difference of population means and proportions for small and large samples, Analysis of Variance and ANOVA Table.

TESTING OF HYPOTHESIS-INDEPENDENCE OF ATTRIBUTES

Introduction, Contingency Tables, Testing of hypothesis about the Independence of attributes.

REGRESSION AND CORRELATION

Introduction, cause and effect relationships, examples, simple linear regression, estimation of parameters and their interpretation. r and R^2 . Correlation. Coefficient of linear correlation, its estimation and interpretation. Multiple regression and interpretation of its parameters.

RECOMMENDED BOOKS

- Walpole, R. E. 1982. “Introduction to Statistics”, 3rd Ed., Macmillan Publishing Co., Inc. New York. Muhammad, F. 2005.
- “Statistical Methods and Data Analysis”, Kitab Markaz, Bhawana Bazar Faisalabad

6. ENGLISH

DETAILED COURSE OUT LINE

Comprehension

Answers to questions on a given text

Translation skills

Urdu to English

Paragraph writing

Topics to be chosen at the discretion of the teacher

Paragraph writing

Practice in writing a good, unified and coherent paragraph

Essay writing

Introduction

CV and job application

Translation skills, Urdu to English

Study skills

Skimming and scanning, intensive and extensive, and speed reading, summary and précis writing and comprehension

Academic skills

Letter/memo writing, minutes of meetings, use of library and internet

How to write a proposal for research paper/term paper

How to write a research paper/term paper (emphasis on style, content, language, form, clarity, consistency)

Technical Report writing

Progress report writing

RECOMMENDED TEXT BOOKS:

Functional English:

Grammar

- Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN 0194313492
- Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press. 1997. ISBN 0194313506

Writing

- Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41 45-53.

Reading/Comprehension

- Reading. Upper Intermediate. Brain Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2.

- Writing. Upper-Intermediate by Rob Nolasco. Oxford Supplementary Skills. Fourth Impression 1992. ISBN 0 19 435406 5 (particularly good for writing memos, introduction to presentations, descriptive and argumentative writing).
- Reading. Advanced. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 453403 0.
- Reading and Study Skills by John Langan

7. INTRODUCTION TO COMPUTER

COURSE DESCRIPTION:

This is an introductory course on Information and Communication Technologies. Topics include ICT terminologies, hardware and software components, the internet and world wide web, and ICT based applications.

DETAILED COURSE OUT LINE

Basic Definitions & Concepts

Hardware: Computer Systems & Components

Storage Devices , Number Systems

Software: Operating Systems, Programming and Application Software

Introduction to Programming, Databases and Information Systems

Networks

Data Communication

The Internet, Browsers and Search Engines

The Internet: Email, Collaborative Computing and Social Networking

The Internet: E-Commerce

IT Security and other issues

Project Week

Review Week

RECOMMENDED TEXT BOOKS

- Introduction to Computers by Peter Norton, 6th International Edition (McGraw HILL)
- Using Information Technology: A Practical Introduction to Computer & Communications by Williams Sawyer, 6th Edition (McGraw HILL)
- Computers, Communications & information: A user's introduction by Sarah E. Hutchinson, Stacey C. Swayer
- Fundamentals of Information Technology by Alexis Leon, Mathewsleon Leon press

2nd YEAR DPT

1. ANATOMY –II
2. PHYSIOLOGY-II
3. BIOCHEMISTRY & GENETICS II
4. BIOMECHANICS & ERGONOMICS
5. EXERCISE PHYSIOLOGY
6. SOCIOLOGY& HEALTH AND WELLNESS*
7. MEDICAL PHYSICS
8. ISLAMIC STUDIES / PAKISTAN STUDIES*

Note:

- **Question paper will be compromise of 02 parts, attempted on 02 separate answer sheets**

1. ANATOMY II

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 upon structure and function of human movement. A comprehensive study of human anatomy with emphasis on the nervous, skeletal, muscle, 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, prosected materials and radiographs are utilized to identify anatomical landmarks and configurations of the head and neck

DETAILED COURSE OUT LINE

EMBRYOLOGY:

SPECIAL:

- Musculoskeletal system, Cardiovascular system, CNS

THE HEAD AND NECK

THE NECK:

Muscles around the neck, Triangles of the neck, Main arteries of the neck, Main veins of the neck, Cervical part of sympathetic trunk, Cervical plexus, Cervical spine (Vertebrae), Joint of neck

THE FACE:

Sensory nerves of the face, Bones of the face, Muscles of the face, Facial nerve, Muscles of mastication, Mandible, Hyoid bone, Temporomandibular joint, Brief description of orbit and nasal cavity

THE SKULL:

Bones of skull, Anterior cranial fossa, Middle cranial fossa, Posterior cranial fossa, Base of skull and Structures passing through foramina

NEURO ANATOMY

Central Nervous System: Disposition, Parts and Functions, Brain stem (Pons, Medulla, and Mid Brain), Cerebrum, Cerebellum, Thalamus, Hypothalamus, Internal Capsule, Blood Supply of Brain, Stroke and its types, Ventricles of Brain, CSF circulation and Hydrocephalus, Meninges of Brain, Neural pathways (Neural Tracts), Pyramidal and Extra pyramidal System (Ascending and Descending tracts), Functional significance of Spinal cord level, Cranial Nerves with special emphasis upon IV, V, VII, XI, XII (their course, distribution, and palsies), Autonomic nervous system, its components and Nerve receptors

SPINAL CORD

- Gross appearance, Structure of spinal cord, Grey and white matter (brief description), Meninges of spinal cord, Blood supply of spinal cord and Autonomic Nervous system

ABDOMEN

ABDOMINAL WALL:

Structures of anterior abdominal wall: superficial and deep muscles, Structure of rectus sheath, Structures of Posterior abdominal wall, Lumbar spine (vertebrae), Brief description of viscera.

PELVIS

Brief description of anterior, posterior and lateral walls of the pelvis, Inferior pelvic wall or pelvic floor muscles, Sacrum, Brief description of perineum and Nerves of perineum.

PRACTICAL

During study, emphasis should be given on applied aspect, radiological anatomy, surface anatomy and cross-sectional anatomy of the region covered in the respective semester /year

RECOMMENDED TEXT BOOKS:

- *Gray's Anatomy* by Prof. Susan Standring 39th Ed., Elsevier.
- *Clinical Anatomy for Medical Students* by Richard S.Snell.
- *Clinically Oriented Anatomy* by Keith Moore.
- *Clinical Anatomy* by R.J. Last, Latest Ed.
- *Cunningham's Manual of Practical Anatomy* by G.J. Romanes, 15th Ed., Vol-I, II and III.
- *The Developing Human. Clinically Oriented Embryology* by Keith L. Moore, 6th Ed.
- *Wheater's Functional Histology* by Young and Heath, Latest Ed.
- *Medical Histology* by Prof. Laiq Hussain.
- *Neuroanatomy* by Richard S.Snell

2. PHYSIOLOGY II

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 metabolism, membrane function and cellular signaling; the mechanisms that match supply of nutrients to tissue demands at different activity levels; the mechanisms that match the rate of excretion of waste products to their rate of production; the mechanisms that defend the body against injury and promote healing.

These topics are addressed by a consideration of nervous and endocrine regulation of the cardiovascular, hematopoietic, pulmonary, renal, gastrointestinal, and musculoskeletal systems, including the control of cellular metabolism. The integrative nature of physiological responses in normal function and disease is stressed throughout

This course provides the foundation for the further course as exercise physiology, pathology, etc

DETAILED COURSE OUT LINE

NERVOUS SYSTEM

General organization of the nervous system, Classification of nerve fibers, Properties of synaptic transmission, Function of neurotransmitters and neuropeptides, Type and function of sensory receptors, Function of the spinal cord and ascending tracts, Reflex action and reflexes, Muscle spindle and muscle tone, Mechanism of touch, temperature and pain., Functions of the cerebral cortex, Difference between the sensory and motor cortex and their

functions, Motor pathways including pyramidal and extrapyramidal, Basal Ganglia and its functions, Cerebellum and its function, Control of posture and equilibrium, Physiology of sleep, Physiology of memory, Mechanism and control of speech, Function of the thalamus, Function of the hypothalamus and limbic system, Production of CSF, Mechanism of temperature regulation and Function of the autonomic nervous system and the physiological changes of aging.

Clinical Module

1. Significance of dermatomes.
2. Injuries of the spinal cord.
3. Hemiplegia and paraplegia.
4. Parkinsonism.
5. Effects of cerebellar dysfunction.

REPRODUCTION

Function of the male reproductive system, Spermatogenesis, Mechanism of erection and ejaculation, Production and function of testosterone and Physiological changes during male puberty, Function of the female reproductive system, Production and function of oestrogen, and progesterone, Menstrual cycle, Physiological changes during female puberty and menopause, Pregnancy and the physiological changes taking place in the mother, Function of the placenta, Parturition and lactation and Neonatal physiology.

Clinical Module

1. Male infertility.
2. Female infertility.
3. Contraception.
4. Basis for pregnancy tests.

GASTROINTESTINAL TRACT

General function of gastrointestinal tract, Enteric nervous system, control of gastrointestinal motility and secretion, Mastication, Swallowing: mechanism and control, Function, motility and secretions of stomach, Function, motility and secretions of small intestine, Function, motility and secretions of large intestine, Function of GIT hormones, Mechanism of vomiting and its control pathway, Defecation and its control pathway, Functions of liver, Functions of, gallbladder and bile in digestion and Endocrine & exocrine pancreas and functions of pancreas in digestion

Clinical Module

1. Dysphagia
2. Physiological basis of acid peptic disease
3. Causes of vomiting
4. Diarrhea and constipation in clinical settings
5. Jaundice and liver function tests in clinical settings

ENDOCRINOLOGY

Classification of endocrine glands, Mechanism of action, feedback and control of hormonal secretion, Functions of the hypothalamus, Hormones secreted by the anterior and posterior pituitary and their mechanism of action and function.. Function of the thyroid gland, Function of the parathyroid gland, Calcium metabolism and its regulation, Secretion and function of calcitonin, Hormones secreted by the adrenal cortex and medulla, and their function and mechanism of action, Endocrine functions of the pancreas, Control of blood sugar. Hormones secreted by the gastrointestinal system and their function, Function of the thymus and The endocrine functions of the kidney and Physiology of growth.

Clinical Module

1. Acromegaly, gigantism and dwarfism.
2. Effects of panhypopituitarism.
3. Diabetes insipidus.

4. Thyrotoxicosis and myxoedema.
5. Pheochromocytoma.
6. Cushing's disease.
7. Adrenogenital syndrome.
8. Diabetes mellitus and hypoglycemia.

BODY FLUIDS AND KIDNEY

Components and quantitative measurements of body fluids, Fluid compartments, tissue and lymph fluid, Structure of the kidney and nephron, General function of the kidney, GFR and its regulation, Formation of urine including filtration, re-absorption and secretion, Plasma clearance., Mechanism of concentration and dilution of urine, Water and electrolyte balance with reference to the kidney, Role of the kidney in blood pressure regulation, Hormonal functions of the kidney, Acidification of urine and its importance, Acid base balance with reference to the kidney and Micturition and its control.

Clinical Module

1. Renal function tests and their clinical importance.
2. Fluid excess and depletion.
3. Renal failure and dialysis.
4. Metabolic acidosis and alkalosis.
5. Abnormalities of micturition.

PHYSIOLOGY PRACTICALS

Nervous System

1. Examination of superficial and deep reflexes.
2. Brief examination of the motor and sensory system.
3. Examination of the cranial nerves.

Special Senses

1. Measurement of the field of vision.
2. Measurement of light reflex.
3. Ophthalmoscopy.
4. Colour vision.
5. Hearing tests.
6. Testing taste and smell.

Pregnancy tests

RECOMMENDED TEXT BOOKS

- *Textbook of Physiology* by Guyton and Hall, Latest Ed.
- *Review of Medical Physiology* by William F. Ganong, Latest Ed.
- *Physiology* by Berne and Levy, Latest Ed.
- *Human Physiology: The Basis of Medicine* by Gillian Pocock, Christopher D. Richards
- *Physiological Basis of Medical Practice* by John B. West and Taylor, 12th Ed

3. BIOCHEMISTRY & GENETICS II

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 to the nutrients i.e. carbohydrates, fats, enzymes, nucleic acids and amino acids. The nutritional biochemistry concludes the course.

METABOLISM

BIOENERGETICS

Introduction to Bioenergetics, Biological Oxidations and Electron Transport Chain and Oxidative Phosphorylation

METABOLISM OF CARBOHYDRATES

Digestion & Absorption of Carbohydrates, Glycolysis & its Regulation, Citric Acid Cycle, Metabolism of Glycogen, Gluconeogenesis and regulation of blood glucose and Pentose Phosphate Pathway & its Significance.

METABOLISM OF LIPIDS

Digestion & Absorption of Lipids, Metabolism & Clinical Significance of Lipoproteins, Fatty acid oxidation biosynthesis and metabolism of Triacylglycerols, Metabolism & clinical Significance of Cholesterol and Metabolism of Eicosanoids

METABOLISM OF PROTEINS & AMINO ACIDS

Digestion of Proteins & Absorption of Amino Acids, Transamination & Deamination of Amino Acids and urea cycle and Specialized products formed from Amino Acids

MOLECULAR BIOLOGY

Structural Organization of Chromosome and Genes. Replication, Transcription in Prokaryotes & Eukaryotes, Translation: (Genetic Code) in Prokaryotes & Eukaryotes, Translation Inhibition by Antibiotics, Regulation of Gene Expression and Recombinant DNA Technology & Polymerase Chain Reaction, Blotting Techniques.

HORMONES

Classification & Mechanism of Action of Hormones, Signal Transduction, Second Messengers and Receptors, Hypothalamic & Pituitary Hormones, Steroid Hormones: Glucocorticoids and Mineralocorticoids, Insulin & Glucagon and Disease related to hormones abnormalities

LIST OF PRACTICALS

Section 1:

Techniques of Instruments in Clinical Biochemistry with examples.

1. Visible Spectrophotometry
2. Flame photometry
3. UV & IR spectrophotometry
4. Atomic Absorption spectrophotometry
5. pH Metry
6. Chromatography and determination of Amino Acids in Urine by paper chromatography

Section 2: Clinical quantitative analysis in Biochemistry

7. Sample Collection Blood, Faces and body fluids
8. Serum Glucose Estimation

9. Glucose tolerance Test (GTT)
10. Serum Cholesterol estimation (Total, HDL and HDL cholesterol)
11. Serum Bilirubin Estimation (Total, Direct and Indirect bilirubins)
12. Serum Amylase Estimation
13. Serum AST Estimation
14. Serum ALT Estimation
15. Serum ALP Estimation
16. Serum Creatine Kinase(CK) Estimation
17. Serum Ascorbic acid Estimation
18. Serum LDH Estimation
19. Serum Proteins Estimation (Total, Albumin & Globulin)
20. Serum Total lipids Estimation
21. Serum calcium Estimation (total, ionized & unionized)
22. Serum Uric acid Estimation
23. Serum Magnesium Estimation
24. Serum Urea Estimation
25. Serum Creatinine Estimation

Recommended Text Books:

- *Harper's Biochemistry* by Robbert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwel (Latest Edition).
- *Lippincott's Illustrated Review of Biochemistry* by Pamela C. Champe and Richard A. Harvey (Latest Edition).
- *Practical Clinical Biochemistry* by Varley (Latest Edition).
- *Textbook of Biochemistry* by Devlin (Latest Edition).
- *Textbook of Medical Biochemistry* by M.A. Hashmi (Latest Edition).
- *Biochemistry* by Stryer (Latest Edition).by Stryer, Lubert, Latest Ed

4. BIOMECHANICS & ERGONOMICS

COURSE DESCRIPTION:

This course aims to develop appreciation of how mechanical principles can be applied to understand the underlying causes of human movement. It also examines selected anatomical, structural and functional properties of human connective, muscular, and nervous tissues, as well as skeletal structures. Emphasis is placed on the mechanical, neuroregulatory, and muscular events that influence normal and pathological motion

This course will also help to gain an understanding of basic theoretical concepts, principles and techniques of ergonomics as well as an introduction to fundamental ergonomic measurement tools for assessment of physical workload, posture, occupational exposure, and stress

DETAILED COURSE OUT LINE

PART A. BIOMECHANICS

BASIC TERMINOLOGY

Biomechanics, Mechanics, Dynamics, Statics, Kinematics, Kinetics and anthropometries, Scope of scientific inquiry addressed by biomechanics, Difference between quantitative and

qualitative approach for analyzing human movements and Biomechanics of human bone growth and development.

KINEMATIC CONCEPTS FOR ANALYZING HUMAN MOTION

Common units of measurement for mass, force, weight, pressure, volume, density, specific weight, torque and impulse, Different types of mechanical loads that act on human body and Uses of available instrumentation for measuring kinetic quantities.

BIOMECHANICS OF TISSUES AND STRUCTURES OF THE MUSCULOSKELETAL SYSTEM

Biomechanics of Bone, Biomechanics of Articular Cartilage, Biomechanics of Tendons and Ligaments, Biomechanics of Peripheral Nerves and Spinal Nerve Roots and Biomechanics of Skeletal Muscles.

BIOMECHANICS OF THE HUMAN UPPER EXTREMITY

Biomechanics of the Shoulder, Biomechanics of the Elbow, Biomechanics of the Wrist and Hand, Factors that influence relative mobility and stability of upper extremity articulation, Muscles that are active during specific upper extremity movements and Biomechanical contributions to common injuries of the upper extremity.

BIOMECHANICS OF HUMAN LOWER EXTREMITY

Biomechanics of the Hip, Biomechanics of the Knee, Biomechanics of the ankle and foot, Factors influencing relative mobility and stability of lower extremity articulations, Adaptation of lower extremity to its weight bearing functions, Muscles that are active in specific lower extremity movements and Biomechanical contribution to common injuries of the lower extremity.

BIOMECHANICS OF HUMAN SPINE

Biomechanics of the Lumbar Spine, Biomechanics of the Cervical Spine, Factors influencing relative mobility and stability of different regions of Spine, Biomechanical adaptations of spine during different functions, Relationship between muscle location and nature and effectiveness of muscle action in the trunk, Biomechanical contribution to common injuries of the spine

APPLIED BIOMECHANICS

Introduction to the Biomechanics of Fracture Fixation, Biomechanics of Arthroplasty, Engineering Approaches to Standing, Sitting, and Lying and Biomechanics of Gait.

ANGULAR KINETICS OF HUMAN MOVEMENT

Angular analogues of mass, force, momentum and impulse, Angular analogues of Newton's laws of motion, Centripetal and Centrifugal forces, Angular acceleration

ANGULAR KINEMATICS OF HUMAN MOVEMENT

Measuring body angles, Angular kinematics Relationships and Relationship between Linear and Angular motion.

HUMAN MOVEMENT IN FLUID MEDIUM

The nature of fluids, Buoyancy and floatation of human body, Drag and components of drag, Lift Force and Propulsion in a fluid medium

PART B. ERGONOMICS

OVERVIEW AND CONCEPTUAL FRAMEWORK.

Ergonomics and Therapy: An Introduction, A Client-Centered Framework for Therapists in Ergonomics, Macroergonomics.

KNOWLEDGE, TOOLS, AND TECHNIQUES.

Ergonomic Assessments/Work Assessments, Anthropometry, Cognitive and Behavioral Occupational Demands of Work, Psychosocial Factors in Work-Related Musculoskeletal Disorders, Physical Environment and Human Factors in Medical Rehabilitation Equipment: Product Development and Usability Testing.

SPECIAL CONSIDERATIONS

Lifting Analysis, Seating and Computers and Assistive Technology.

APPLICATION PROCESS

Ergonomics of Children and Youth, Ergonomics of Aging, Ergonomics in Injury Prevention and Disability Management and Ergonomics of Play and Leisure.

PRACTICAL TRAINING / LAB WORK

- Biomechanical assessment of Upper extremity
- Biomechanical assessment of Lower Extremity
- Biomechanical assessment of Gait
- Reflective case assignment related to biomechanics of various regions of the body
- Measurement of angles of joints
- Biomechanical study of deformities

RECOMMENDED TEXT BOOKS

- *Basic biomechanics of musculoskeletal system* By: Nordin & Frankel, 3rd edition.
- *Basic Biomechanics*, By: Susan J. Hall 4th edition.
- Additional study material as assigned by the tutor.
- Ergonomics for the therapist by Karen Jacobs 3rd edition mosby and Elsevier publishers

5. EXERCISE PHYSIOLOGY

COURSE DESCRIPTION:

This course aims to develop a critical appreciation of exercise and applied physiology, enabling design of specialist injury prevention, rehabilitation and performance enhancement programs and strategies

DETAILED COURSE OUTLINE:

PHYSIOLOGY OF EXERCISE

CONTROL OF INTERNAL ENVIRONMENT

Homeostasis, Control systems of the body, Nature of the control system, Examples of homeostatic control and Exercise : A test of homeostatic control.

HORMONAL RESPONSES TO EXERCISE (BRIEF REVISION)

Neuroendocrinology, Hormones: Regulation and action and Hormonal control of substrate mobilization during exercise.

MEASUREMENT OF WORK, POWER & ENERGY EXPENDITURE

Units of measure, Work and power defined, Measurement of work and power, Measurement of energy expenditure, Estimation of energy expenditure and Calculation of exercise efficiency.

CIRCULATORY RESPONSES TO EXERCISE (BRIEF REVISION):

Organization of the circulatory system, Heart: myocardium and cardiac cycle, Cardiac output, Hemodynamics, Changes in oxygen delivery to muscle during exercise, Circulatory responses to exercise, Regulation of cardiovascular adjustments to exercise.

RESPIRATION DURING EXERCISE (BRIEF REVISION)

Function of the lung, Structure of respiratory system, Mechanics of breathing, Pulmonary ventilation, Pulmonary volumes and capacities, Diffusion of gases, Blood flow to the lungs, Ventilation-perfusion relationships, O₂ and CO₂ transport in blood, Ventilation and acid base balance, Ventilatory and blood-gas responses to exercise, Control of ventilation.

TEMPERATURE REGULATION

Overview of heat balance during exercise, Overview of heat production/heat loss, Body's thermostat-hypothalamus, Thermal events during exercise, Exercise in the heat, Exercise in cold environment

THE PHYSIOLOGY OF TRAINING: EFFECT ON VO₂ MAX, PERFORMANCE, HOMEOSTASIS AND STRENGTH

Principles of training, Research designs to study training, Endurance training and VO₂ max, VO₂ max: cardiac output and arterio-venous oxygen difference, Detraining and VO₂ max, Endurance training: effects on performance and homeostasis, Endurance training: links between muscle and system physiology, Physiological effects of strength training, Physiological mechanisms causing increased strength.

PHYSIOLOGY OF HEALTH AND FITNESS

WORK TESTS TO EVALUATE CARDIO RESPIRATORY FITNESS

Cardio respiratory fitness, Testing procedures, FIELD Tests for estimating CRF, Graded exercise tests: measurements, VO₂ max and Graded exercise tests : protocols

EXERCISE PRESCRIPTION FOR HEALTH AND FITNESS

Prescription of exercise, General guidelines for improving, Exercise prescription for CRF, Sequence of physical activity and Strength and flexibility training

EXERCISE FOR SPECIAL POPULATIONS

Diabetes, Asthma, Chronic obstructive pulmonary disease, Hypertension, Cardiac rehabilitation, Exercise for older adults and Exercise during pregnancy

PHYSIOLOGY OF PERFORMANCE

FACTORS AFFECTING PERFORMANCE:

Sites of fatigue, Factors limiting All-out anaerobic performances and Factors limiting All-out aerobic performances

LABORATORY ASSESSMENT OF HUMAN PERFORMANCE:

Laboratory assessment of physical performance, Direct testing of maximal aerobic power, Laboratory tests to predict endurance performance, Determination of anaerobic power, Evaluation of muscular strength

TRAINING OF PERFORMANCE

Training principles, Components of a training session: warm-up, workout and cool down, Training to improve aerobic power, Injuries and endurance training, Training for improved anaerobic power, Training to improve muscular strength, Training for improved flexibility, Year-round conditioning for athletes, Common training mistakes

TRAINING FOR THE FEMALE ATHLETE, CHILDREN AND SPECIAL POPULATION

Factors important to women involved in vigorous training, Sports conditioning for children, Competitive training for diabetics, Training for asthmatics and Epilepsy and physical training

Recommended Textbooks

- *Exercise Physiology- Theory and Application to Fitness and Performance* by: Scott K. Powers, Edward T. Howley.
- *Exercise physiology, A thematic Approach* By: Tudor Hale, University College Chichester, UK
- Additional study material as assigned by the tutor

6. SOCIOLOGY & HEALTH & WELLNESS*

PART A. SOCIOLOGY*

COURSE DESCRIPTION

This course covers the basic knowledge and concepts of sociology to with the aim to help them understand the impact of group, culture and environment on the behavior and health of the patients. Make them realize the importance of the relationship of the physical therapist and the patient and the environment around them

DETAILED COURSE OUTLINE:

INTRODUCTION TO SOCIOLOGY

Definition, Subject matter, Sociology and The science of society

SOCIAL ACTION AND INTERACTION

Social processes, Co-operation, Competition and Conflict and Accommodation.

SOCIAL GROUPS

Primary-Secondary, In and Out Group and Reference group

CULTURE

Meanings, Materials, Non-material aspects of culture, Values, Beliefs, Sanctions, Cultural relativism and Ethnocentrism, Norms, Folk ways, Mores and Laws, Role and Status, Conflict, Deviancy and Social control.

SOCIALIZATION AND PERSONALITY

Socialization and personality formation

SOCIAL INSTITUTION

Meanings, Social stratification and Meanings and Forms (Classes and Castes)

SOCIAL AND CULTURAL CHANGE

Factors of promoting and resisting social change

THE FIELD OF MEDICAL SOCIOLOGY

Contribution of sociology to medicine, Social causes of diseases, Aging and its socio-medical implication, Environmental pollution and health, Patient perspective of Illness, Patient, Physiotherapist relationship and Role of Physiotherapists and attendants in the managements of patient.

RECOMMENDED TEXT BOOKS:

- *Text book of Community Medicine* by: Park J E. Latest Edition
- *David, Tucket (ed), 1976, An Introduction to Medical Sociology, Lahore, Tavistock Publication.*
- *Horton, Paul B. and Chester L. Hunt, 1984 Sociology, Singapore: Megraw Hill Book Co.*
- *Moon, Graham, 1995. Society and Health; An introduction to Social Science for Professionals, London: Routledge.*
- *Smelter Heil J. 1993. Sociology, New Delhi, Prentice Hall of India:*

PART B. HEALTH & WELLNESS

COURSE DESCRIPTION:

This course includes discussion on the theories of health and wellness, including motivational theory, locus of control, public health initiative, and psycho-Social, spiritual and cultural consideration. Health risks, screening, and assessment considering epidemiological principles are emphasized. Risk reduction strategies for primary and secondary prevention, including programs for special populations are covered.

DETAILED COURSE OUTLINE:

PREVENTION PRACTICE: A HOLISTIC PERSPECTIVE FOR PHYSICAL THERAPY:
Defining Health, Predictions of Health Care, Comparing Holistic Medicine and Conventional Medicine, Distinguishing Three Types of Prevention Practice.

HEALTHY PEOPLE:

Definition of healthy people, Health education Resources, Physical Therapist role for a healthy community.

KEY CONCEPTS OF FITNESS:

Defining & Measuring Fitness, Assessment of Stress with a Survey, Visualizing Fitness, Screening for Mental and Physical Fitness, Body Mass Index calculations.

FITNESS TRAINING:

Physical Activities Readiness Questionnaire, Physical Activities Pyramid, Exercise Programs and Evidence-Based Practice.

SCREENING FOR HEALTH, FITNESS, AND WELLNESS:

Distinguishing Screening, Examination, and Evaluation, Interviewing for Health, Fitness and Wellness, Vital Signs, 3-minute Step Test, and Borg perceived Scale of Exertion, Seven Dimensions of Wellness and Physical Health Screening,

HEALTH, FITNESS, AND WELLNESS ISSUES DURING CHILDHOOD AND ADOLESCENCE:

Structure and Function, Recognizing and Reporting Child abuse, Denver II Developmental Screening, Special Concerns in Pediatrics and Program for Prevention of Obesity

HEALTH, FITNESS, AND WELLNESS DURING ADULTHOOD:

Tasks of Adulthood, Adult Health and Wellness Risks, Screening Tools for Adulthood and Adult Educational Materials

WOMEN'S HEALTH ISSUES: FOCUS ON PREGNANCY:

Screening for Women's Health, Women's Heart Disease, Female Athlete Triad, Educational Material for Women, Prepartum and Postpartum Exercises.

PREVENTION PRACTICE FOR OLDER ADULTS :

Ageism, Anatomical and Physiological Changes with Aging, Common Health Problems of Older Adults, Screening Older Adult for Health Fitness and Wellness, Fitness for Older Adults.

RESOURCES TO OPTIMIZE HEALTH AND WELLNESS:

Chronic Illness, Nutrition, Progressive Relaxation, Time management and Spirituality.

HEALTH PROTECTION:

Infection Control, Injury Prevention during Childhood, Injury prevention during Adolescence, Injury Prevention during Adulthood, Injury Prevention during Older Adulthood.

PREVENTION PRACTICE FOR MUSCULOSKELETAL CONDITIONS:

Musculoskeletal, Changes in Childhood and Adolescence, Musculoskeletal Changes with Aging and Ergonomics and Workplace Screening for Musculoskeletal Risk.

PREVENTION PRACTICE FOR CARDIOPULMONARY CONDITIONS:

Common Cardiopulmonary Disorders, Screening for Cardiopulmonary Conditions, Prevention of Cardiovascular Conditions, Prevention of pulmonary Conditions and Recommended Exercises for Chronic Diseases

PREVENTION PRACTICE FOR NEUROMUSCULAR CONDITIONS:

Prevention Practice for Stroke, Prevention Practice for spinal Cord Injury, Prevention Practice for Parkinson's disease and Prevention practice for Multiple Sclerosis

PREVENTION PRACTICE FOR INTEGUMENTARY DISORDERS:

Lifespan Changes of the integumentary System and Skin Care

PREVENTION PRACTICE FOR INDIVIDUALS WITH DEVELOPMENTAL DISABILITIES:

Defining Developmental Disabilities, Misconceptions about Disabilities, Promoting Health for Individuals with Developmental Disabilities and Quality of life for Individuals with Developmental Disabilities.

MARKETING HEALTH AND WELLNESS:

Definition of Marketing and Marketing Strategies for health and wellness Centers

Recommended Text Book

- A Physical Therapist's Guide to Health, Fitness, and Wellness By Catherine R Thompson, PhD, MS, PT

7. MEDICAL PHYSICS

COURSE DESCRIPTION:

This course will cover the basic principal of Physics which are applicable in medical equipment used in Physical therapy. Also help to understand the fundamentals of currents, sound waves, Heat & its effects, electromedical radiations and their effects as well as their application in physical therapy.

DETAILED COURSE OUTLINE:

ELECTRICITY AND MAGNETISM:

Structure of an atom, Electron Theory, Conductors & Insulations, Conduction & Convection, Displacement Current.

STATIC ELECTRICITY

Charging by conduction and Induction, Electrostatic Fields, Gold leaf Electroscope, Capacitors, types of capacitors, Construction, Units, Arrangement of Capacitors in series and parallel, Charging and discharging of capacitors, Oscillating Discharge of Capacitors.

CURRENT ELECTRICITY

Ohm's Law. Electrical Components and their unit, Resistance, Types of Resistance, Units, Chemical effects of a Current, Types of Current, Cell and Batteries, Simple Voltage Cell, Wet and dry Lachlanhe Cell, Combination of Cells in series and parallel, Thermal effects of current, Electrolysis and Electrolytic burns, Ionization of gases and Thermionic emission, Electronic tubes, Diodes and Triodes

ELECTROMAGNETISM:

Molecular theory of magnetism, Magnetic effect of an electric current, Moving coil volt meter and Ammeter, Moving iron type, hot wire type and Thermocouple type meter, Measurement of high frequency and alternate current with meters, Electromagnetic induction, Faradays law and Lenses law, Mutual and self Induction, Eddy currents, Transformer, Construction and types, Static and auto Transformer, Dynamo, construction and A.C & D.C Dynamo.

ELECTRO MECHANICS:

Current for treatment, Rectification, Rectification of A.C, Half wave and full wave Rectification, Valve rectification circuits and metal rectifier, Surging of current, Lewis surger and valve surger, Reverser, Metronome interrupter and Reverse Jones motor interrupter, Vibrations and Multivibrators circuit.

CLASSIFICATION OF CURRENTS (OVERVIEW)

LOW FREQUENCY CURRENT

Sinusoidal current, Faradic current, Galvanic current (constant and interrupted), Diadynamic current TENS, Smart Bristow faradic coil and Super imposed current and their graphical representation.

MEDIUM FREQUENCY CURRENT

Interferential current and Russian current

HIGH FREQUENCY CURRENT (Produced by)

Spark, Valves, Transistors and Long waves, medium waves short waves micro waves

SOUND WAVES

Wave motion in sound, Infrasonic, Normal hearing band, Characteristics of the sound waves and their velocities, Ultrasonic, Reflection and refraction of sound waves, Characteristics of tone resonance and beats and Interference of sound waves

HEAT

Scales of temp and its conversion to other scales, Nature of heat energy, Specific heat and three modes of heat energy transfer effect of impurities on melting and boiling points

ELECTROMAGNETIC RADIATION

Electromagnetic spectrum, Relationship between frequency and wave length, Laws of reflection, refraction and absorptions, Total internal reflection, Cosine law and inverse square law, Concave and convex mirrors, Lenses and prisms, Reflectors, Radio wave (long, medium, short, micro waves), Infra red rays, Visible rays, Ultra violet rays, X-rays and Nuclear waves (alpha beta and gamma).

SAFETY IN BIOMEDICAL INSTRUMENTS

Electrical outlets, hot, neutral and ground connections, House wiring, Pervasiveness of electricity and of electric shocks, Causes of electric shocks and precaution, Effect of electric current on human body, Techniques to reduce the effect of electric shock and Earth shocks and precaution against earth shocks

RADIATION PROTECTION

Ionizing and non ionizing radiations, Quantities and associated units of radiations, Effect of ionizing and non ionizing radiation's, Internal and external hazards, Main principle to control external hazard and Distance and shielding.

RECOMMENDED TEXT BOOKS

- *Clayton's Electrotherapy and actinotherapy* by: PM Scott
- *Medical physics for physical therapists* by: AD Moore
- Preliminary Electricity for Physiotherapists by B. Savage.
- Basic Electronics by Grob.
- Principles of Bio-instrumentation by Richard A. Normann.
- Hand book of Biomedical Instrumentation by R.S. Khanpur.
- Basic Radiation Protection Technology by Gollnick

8. ISLAMIC STUDIES AND PAK STUDIES

FUNDAMENTAL BELIEFS AND PRACTICES OF ISLAM.

Tauheed (Unity of Allah), Risalat (Finality of the Prophet-hood). Akhirat (Day of Judgement), Salat, Soum, Zakat, Hajj and Jihad

NEED OF RELIGION AND ITS ROLE IN HUMAN LIFE.

MORALITY IN ISLAM.

Concept of morality, Concept of morality and Faith., Islamic principles and methods of character building., Moral values in Islam.

RIGHTS OF THE INDIVIDUAL IN ISLAM.

QURAN AS A GUIDE FOR THE MODERN SOCIETY AND SCIENTIFIC DEVELOPMENT.

HOLY PROPHET (PEACE BE UPON HIM) AND HIS LIFE.

ISLAMIC CONCEPT OF STATE.

ISLAM AND SOCIETY.

Role of man and women in society, Rights of women children in Islam. Concept of woman's freedom in Islam., Hukook-ul-Ibad.

IMPORTANCE OF RIZK-E-HILAL.

CONTRIBUTION OF ISLAMIC SCHOLARS IN SCIENCE AND MEDICINE.

RECOMMENDED BOOKS (ISLAMIC STUDIES)

1. Introduction to Islam by Dr. Hamidullah.
2. Islam: Its meaning and message by Khurshid Ahmad

3. اسلام کی نظر میں مولانا صدرا الدین اصلاحی

4. قرآن اور تفسیر سیرت ڈاکٹر میر ولی الدین

PAKISTAN STUDIES

IDEOLOGY OF PAKISTAN.

Definition and elucidation. Historical aspect. Ideology of Pakistan in the light of speeches and sayings of Allama Iqbal and Quaide-Azam.

PAKISTAN MOVEMENT

Basis for the creation of Pakistan., Historical developments : 1857-1947

POLITICAL DEVELOPMENTS IN PAKISTAN SINCE 1947

LAND AND PEOPLE OF PAKISTAN

Geography, Society., Culture., Natural resources., Health and education with reference to characteristics trends and problems.

RECOMMENDED BOOKS (PAKISTAN STUDIES)

1. Ideological Orientations of Pakistan by Sharif Al Mujahid.
2. Struggle for Pakistan by I.H. Qureshi.
3. The Making of Pakistan by Richard Symond

3rd YEAR DPT

1. PATHOLOGY & MICROBIOLOGY
2. PHARMACOLOGY
3. PHYSICAL AGENTS & ELECTROTHERAPY
4. THERAPEUTIC EXERCISES & TECHNIQUES
5. MANUAL THERAPY
6. EVIDENCE BASED & PROFESSIONAL PRACTICE
7. BEHAVIORAL SCIENCES (*PSYCHIATRY & PSYCHOLOGY*)

Note: * Question paper will be comprise of 02 parts, attempted on 02 separate answer sheets

1. PATHOLOGY & MICROBIOLOGY

COURSE DESCRIPTION:

Students will develop an understanding of pathology underlying clinical disease states and involving the major organ systems. Epidemiological issues will be presented and discussed. Students will learn to recognize pathology signs and symptoms that are 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 be expected to develop the ability to disseminate pertinent information and findings, and ascertain the appropriate steps to follow.

DETAILED COURSE OUTLINE:

GENERAL PATHOLOGY

CELL INJURY AND DEATH:

Causes of cell injury, Necrosis, Apoptosis and Subcellular responses .

CELL ADAPTATIONS:

Hyperplasia, Hypertrophy, Atrophy, Metaplasia and Intracellular accumulation

INFLAMMATION:

- Acute inflammation
 - Vascular events, Cellular events and Chemical mediators

CHRONIC INFLAMMATION

General, Granulomatous and Morphologic patterns of acute and chronic inflammation

HEALING AND REPAIR:

Normal controls, Repair by connective tissue and Wound healing

HAEMODYNAMIC DISORDERS

Edema, Hyperemia / congestion, Hemorrhage, Thrombosis, Embolism, Infarction and Shock.

DISEASES OF IMMUNITY

General features, Hypersensitivity reactions, Immune deficiencies, Autoimmunity and Amyloidosis

NEOPLASIA:

Nomenclature, Molecular basis, Carcinogenic agents and Clinical aspects

MICROBIOLOGY

THE BACTERIA

Bacterial cell structure, Bacterial forms and function, Bacterial identification and classification and The gram stain

METHODS OF STUDYING MICRO-ORGANISM

Culturing, inoculation and identification, Types of media and Physical states of media.

MICROBIAL GROWTH

Stages in the normal growth curve, Microbial genetics, Prokaryotic transcriptions and translations, Conjugations, Mutation and its causes, Mechanism of drug resistances, Pathogenesis, Gateway to infection, Resident flora, Mechanism of invasions, Classic stages of clinical infection and Sterilization and disinfection

THE INTEGUMENTARY SYSTEM

Skin Lesions, Signs and Symptoms of Skin Disease, Aging and the Integumentary System, Common Skin Disorders, Skin Infections, Skin Cancer, Skin Disorders Associated With Immune, Dysfunction, Thermal Injuries and Miscellaneous Integumentary Disorders.

THE CARDIOVASCULAR SYSTEM

Signs and Symptoms of Cardiovascular Disease, Aging and the Cardiovascular System, Gender Differences and the Cardiovascular System, Diseases Affecting the Heart Muscle, Disease Affecting the Cardiac Nervous System, Diseases Affecting the Heart Valves, Diseases Affecting the Pericardium, Diseases Affecting the Blood Vessels, Other Cardiac Considerations

THE LYMPHATIC SYSTEM

Anatomy and Physiology, Inflammation and Infection in the Lymphatic System

THE RESPIRATORY SYSTEM

Aging and the Pulmonary System, Infectious and Inflammatory Diseases, Obstructive Diseases, Environmental and Occupational Diseases, Near Drowning, Congenital Disorders, Parenchymal Disorders, Disorders of the Pulmonary Vasculature, Disorders of the Pleural Space

PATHOLOGY OF THE MUSCULOSKELETAL SYSTEM

INTRODUCTION TO PATHOLOGY OF THE MUSCULOSKELETAL SYSTEM

Advances in Musculoskeletal Biotechnology, Biologic Response to Trauma, Aging and the Musculoskeletal System, The Musculoskeletal System and Exercise and Musculoskeletal System Disease.

GENETIC AND DEVELOPMENTAL DISORDERS

Down syndrome, Scoliosis, Kyphoscoliosis, Spina Bifida Occulta, Meningocele, Myelomeningocele, Developmental Dysplasia of the Hip, Neuromuscular Disorders, Torticollis, Erb's Palsy, Osteogenesis Imperfecta and Arthrogryposis Multiplex Congenita.

METABOLIC DISORDERS

Osteoporosis, Osteomalacia and Paget's Disease.

INFECTIOUS DISEASES OF THE MUSCULOSKELETAL SYSTEM

Osteomyelitis, Infections of Prostheses and Implants, Diskitis, Infectious (Septic) Arthritis, Infectious (Inflammatory) Muscle Disease, Extra pulmonary tuberculosis and Summary of Special Implications for the Therapist

MUSCULOSKELETAL NEOPLASMS

Primary Tumors, Primary Benign Bone tumors, Primary Malignant Bone tumors, Multiple Myeloma, Primary Soft Tissue Tumors and Metastatic Tumors

SOFT TISSUE, JOINT AND BONE DISORDERS

Soft Tissue, Joint and Bone.

PATHOLOGY OF THE NERVOUS SYSTEM

INTRODUCTION TO CENTRAL NERVOUS SYSTEM DISORDERS

Overview, Pathogenesis, Clinical Manifestations, Diagnosis, Treatment and Prognosis.

INFECTIOUS DISORDERS OF THE CENTRAL NERVOUS SYSTEM

Overview, Meningitis, Encephalitis, Brain Abscess, Prion Disease

CENTRAL NERVOUS SYSTEM NEOPLASMS

Primary Brain Tumors, Specific Primary Brain Tumors, Primary Intraspinial Tumors, Metastatic Tumors, Paraneoplastic Syndromes, Leptomeningeal Carcinomatosis, Pediatric Tumors

DEGENERATIVE DISEASES OF THE CENTRAL NERVOUS SYSTEM

Amyotrophic Lateral Sclerosis, Alzheimer's Disease, Alzheimer's Dementia, and Variants, Dystonia, Huntington's Disease, Multiple Sclerosis, Parkinsonism and Parkinson's Disease

STROKE

Stroke and Vascular Disorders of the Spinal Cord

MEDICAL MICROBIOLOGY

G +VE COCCI

Staphylococci and Streptococci

G -VE COCCI

Nessessia

G +VE SPORE FORMING RODS

Bacillies, Clostridia and G –ve rods (introduction to Enterics)

ACID FAST BACILLI

Mycobacteria

SPIROCHETES

Introduction and Treponemes.

BASIC VIROLOGY

General characteristics, Viral structure, Nomenclature and classification

MYCOLOGY

Introduction to mycology

PARASITOLOGY

Introduction to protozoan

Practical Training/ Lab Work

- To study the microscope, To study the calcification, To study the osteogenic sarcoma, To study the granulation tissue, To study the chronic inflammation (cholecystitis), To study the acute inflammation (appendicitis), To Fibroedenoma, To study the carcinoma of breast, To study the actinomycosis, To study the culture media, To study the gram staining, To study the Z-N staining, To study the giant cell tumor, Examination of urine

RECOMMENDED TEXT BOOKS

- *Pathology: implications for the Physical therapist* by: Catherine cavallaro Goodman, 3rd edition
- *Basics &advanced Human Pathology*
- *Pathology* by Robbins
- *Introduction to Pathology* by Weight
- *Lecture notes on Pathology* by Thomas and Cotton
- *General Pathology* by Florey *Medical Microbiology and Immunology*By: Levinson and Jawetz, 9th Ed., Mc Graw-Hill.

2. PHARMACOLOGY

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.

DETAILED COURSE OUTLINE:

GENERAL PRINCIPLES OF PHARMACOLOGY;

Basic Principles of Pharmacology, Pharmacokinetics; Drug Administration, Absorption, and Distribution, Pharmacokinetics; Drug Elimination and Drug Receptors.

PHARMACOLOGY OF THE CENTRAL NERVOUS SYSTEM;

Central Nervous System Pharmacology, General Principles, Sedative-Hypertonic and Anxiety Agents, Drugs used to treat affective Disorders; Depression and Manic-Depression, Antipsychotic Drugs, Antiepileptic Drugs, Pharmacologic Management of Parkinson Disease, General Anesthetics and Local Anesthetics.

DRUGS AFFECTING SKELETAL MUSCLE;

Skeletal Muscle Relaxants

DRUGS USED TO TREAT PAIN AND INFLAMMATION

Opioid Analgesics, Nonsteroidal Anti-Inflammatory Drugs (NASID), Pharmacologic Management of Rheumatoid Arthritis and Osteoarthritis and Patient-Controlled Analgesia.

AUTONOMIC AND CARDIOVASCULAR PHARMACOLOGY

Introduction to Autonomic Pharmacology, Cholinergic Drugs, Adrenergic Drugs, Antihypertensive Drugs, Treatment of Angina Pectoris, Treatment of Cardiac Arrhythmias, Treatment of Congestive Heart Failure and Treatment of Coagulation Disorders and Hyperlipidemia.

RESPIRATORY AND GASTROINTESTINAL PHARMACOLOGY;

Respiratory drugs, Gastrointestinal Drugs

ENDOCRINE PHARMACOLOGY;

Introduction to Endocrine Pharmacology, Adrenocorticosteroids, Male and Female hormones, Thyroid and Parathyroid Drugs; Agents affecting bone mineralization, Pancreatic Hormones and the Treatment of Diabetes Mellitus

CHEMOTHERAPY OF INFECTIOUS AND NEOPLASTIC DISEASES;

Treatment of Infections; Antibacterial Drugs, Treatment of Infections; Antiviral Drugs, Treatment of Infections; Antifungal and Antiparasitic drugs, Cancer Chemotherapy and Immunomodulating Agents.

DRUGS USED IN CURRENT PHYSICAL THERAPY PRACTICE:

Drugs administered by Iontophoresis and Phonophoresis and Potential Interactions Between Physical Agents and Therapeutic drugs

PRACTICAL TRAINING

- Introduction to Pharmacology
- Dosage forms
- Mixture
- Inhalational dosage forms & topical dosage forms
- Organ bath introduction
- Dose calculation formulas according to age and weight
- Half ($t_{1/2}$) life, bioavailability, and volume of distribution
- Pharmacological calculations

- Percentage solutions
- Replacement fluids & dehydration
 - a. Normal saline, half normal saline
 - b. Ringers solution, ringers lactate
 - c. Plasma substituents --- dextran
- Weights & measures
- ORS powder
- Carminative mixture
- Sulphur ointment
- KMNO₄ lotion
- 0.5% dextrose saline
- Biostatistics
- Methodology of clinical trials
- Drug development
- Prescription writing and abbreviation
- Effect of drugs on Rabbits eye
- Effects of drugs on isolated piece of rabbit's ileum
- Effect of atropine & Ach on ileum
- Effect of atropine & Ach on ileum (Dose-response curve)
- Histamine/anti histamine on ileum
- Scheme to find the effect of unknown drug on rabbits ileum
- Effects of drug on Reflex time in frog
- Effect of NMB drugs on frogs rectus abdominal muscle
- Effect of drugs on frog's heart

Recommended Text Book

- Pharmacology in Rehabilitation (3rd Edition) By Charles D. Ciccone
- Pharmacology, Richard A, Harvey, 2nd Edition, Lippincott's
- Mutlianthore text book of Pharmacology and Therapeutics, M.Cheema, A vol 1 and Vol 2

3. PHYSICAL AGENTS & ELECTROTHERAPY

Course Description

This course tends to explore fundamental skills in application of electromodalities and knowledge of indications, contraindications and physiological principles needed for appropriate patient care. It includes topics such as electric stimulation, T.E.N.S. Iontophoresis, ultrasound /Phonophoresis, diathermy and electro diagnostic testing etc.

DETAILED COURSE OUTLINE:

INTRODUCTION & GENERAL CONSIDERATION OF ELECTROTHERAPY

TYPES OF CURRENT USED

Low frequency current, Medium frequency current

LOW FREQUENCY CURRENT

Faradic current, Sinusoidal current, Galvanic current

- constant galvanic current
- modified galvanic current

Superimposed currents, Transcutaneous electrical nerve stimulation (TENS) and Di-dynamic currents.

MEDIUM FREQUENCY CURRENT:

Interferential Current, Introduction, physical principles, electro-physiological effects, Clinical applications, methods of application and Treatment consideration & contraindications

FARADIC CURRENT

Detailed description of faradic current, Treatment techniques and Methods of application.

SINUSOIDAL CURRENT

Detailed description of sinusoidal current, Treatment and Methods of application

GALVANIC CURRENT

- Constant galvanic current
 - Detailed description of galvanic current treatment, Methods of application, Dangers, precautions, contraindications & Ionization

MEDICAL IONIZATION

Theory & proof of ionization, Effects of various ions, i.e iodine, salicylate, albucid, copper, zinc, histamine, carbacol, renitinenovocaine, lithium, Techniques of medical ionization with vasodilator drugs and techniques for special areas.

MODIFIED GALVANIC CURRENT

Definition, Physical effects, Therapeutic effects, Uses, Treatment techniques & methods of application, Electrical stimulation of nerve & muscle

- A nerve impulse & Property of accommodation

Electrical Reactions, Normal & abnormal reactions of nerve & muscle to faradism & interrupted direct current

- Changes in electrical reaction in
 - Upper motor neurons, Lower motor neurons & Muscular disease
- Methods of electrical test
 - Faradic & I.D.C test,
 - Strength duration curve
 - Accomodity test
 - Electromyography
 - Definition, method, value, uses of E.M.G, Electromyography & temperature , feed back technique

SUPER IMPOSED CURRENT

Introduction, Definition, Effects & uses and Technique, Methods, Dangers & Precautions

TRANSCUTANEOUS ELECTRICAL STIMULATION (TENS)

Definition, Theoretical basis of pain, Equipment selection, Electrode placement and Clinical indications

DIA DYNAMIC CURRENT

Definition and introduction, Basic currents (MF,DF), Derivative of basic current, Brief description of Dia dynamic and basic currents, Characteristics of diadynamic current, Techniques of application & treatment, frequency of treatment and Clinical indication e.g. Sprain ankle, Sciatica. Facial neuralgia. Trigeminal neuralgia & Qtitis media.

MEDIUM FREQUENCY CURRENT:

Interferential Current, Introduction, physical principles, electro-physiological effects, Clinical applications, methods of application and Treatment consideration & contraindications

PHYSICS OF HEAT AND RADIATION

Definition of heat and temperature, Physical effects, Transmission of heat, Radiant energy electromagnetic spectrum its production & properties and Laws governing radiation

INFRA-RED RAYS

Definition, Production, luminous & non-luminous generators, Physiological effects, Therapeutic effects, Uses, Techniques of application and Dangers and contraindications

ULTRA VIOLET RAYS

Production, U.V. rays, Mercury Vapor Lamp: Air cooled mercury vapor lamp & Kromayer lamp, Fluorescent Tubes and Penetration of rays into the skin, Physiological effects (local & general), Therapeutic effects and Sensitizers, Assessment of doses, Test dose, Techniques of local and general radiation with special techniques of treatment of wounds, Techniques with compression, Dangers & precautions and Contraindications

HELIO THERAPY

Introduction, Effects, Uses and dangers and contraindications

ULTRASONIC THERAPY

Introduction, Production, Physiological & therapeutic effects, Uses, dangers, precautions & contraindications and Techniques and application of treatment

CRYOTHERAPY

Definition, Methods, Physiological & therapeutic effects and Dangers, indications and precautions

HYDROTHERAPY

Physiological principles of hydrotherapy, Application of heat & cold, Outline of methods of applying moist heat, Medium used, contrast bath, paraffin baths, whirlpool baths, techniques, effects, uses, dangers, contraindications of each, The use of water as medium of each, the use of water as a medium of movement pool therapy, Immersion baths, full, plain and medicated, partial baths, packs, general local methods of application, Hot air, vapors, the care of patients in hydrological department and Detailed description of indication of hydrotherapy

TRACTION

Effects of spinal traction, Clinical indications for the use of spinal traction, Contraindications and precautions for spinal traction, Adverse effects of spinal traction and Application technique

COMPRESSION

Effects of External Compressions, Clinical indications for the Use of External Compression, Contraindications and Precautions of External Compression, Contraindications for the Use of Intermittent or Sequential Compression Pumps, Precautions for the Use of Intermittent or Sequential Compression Pumps, Adverse Effects of External Compression and Application Techniques

LASER THERAPY:

Definition, Properties of laser, Production of Lasers, Types of Lasers, Techniques of application, Dosage parameters, Interaction of laser with body tissues, Physiological and therapeutic effects of lasers, Dangers and contraindications and Methods of Treatment

PRACTICAL TRAINING/ LAB WORK

The practical training will be practiced in physiotherapy treatment ward under the supervision of qualified physiotherapists

Location of motor points, Faradic & I.D.C test, Strength duration curve, determination of Rheobase and Chronaxie, Accomodity test, Electromyography, Definition, method, value, uses of E.M.G, Electromyography & temperature, feedback technique, Practical application of TENS in physical therapy treatment ward, Reflective clinical case studies, Iontophoresis, Practical application of Infra red rays, Practical application of ultrasound including Phonophoresis, Supervised application of Ultraviolet rays including determination of test dosage, Practical application of cold packs, Practical application of traction, Paraffin Wax bath application

Demonstration of techniques during practical classes, later on techniques practiced by students on patients attending the department under supervision of trained

Note: The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a reflective record of achievements.

The log book shall also contain a record of the procedures which student would have performed/observed.

RECOMMENDED TEXT BOOKS:

- *Clayton's Electrotherapy and Actinotherapy*, 10th edition by PM Scott
- *Electrotherapy: Evidence based Practice*, 11th edition by Shelia Kitchen
- *Michelle H Cameron's Physical Agent in Rehabilitation: From research to Practice*
- *Electrotherapy and Electrodiagnosis* by S. Lient
- *Applications of Shortwave Diathermy* by P.M. Scott
- *Practical Electrotherapy* by Savage

4. THERAPEUTIC EXERCISES & TECHNIQUES

COURSE DESCRIPTION:

This course presents anatomical and physiological principles to allow students to develop integrated therapeutic exercise interventions. Students have the opportunity to develop an acquired understanding of physiological responses to various types of training and develop skills in prescription, implementation, and modeling of exercise programs.

Exercise components of strength, aerobic/ anaerobic conditioning, flexibility, balance and stage of healing/rehabilitation are examined. Evidence of appropriate, safe and effective exercise design and proper exercise biomechanics and prescription parameters are addressed with all interventions. Exercise considerations for special populations and across the age span are covered. Concepts are presented in lecture and practiced in the laboratory.

DETAILED COURSE OUTLINE:

GENERAL CONCEPTS

THERAPEUTIC EXERCISE: FOUNDATIONAL CONCEPTS

Therapeutic exercise: impact on physical function, Process and models of disablement, Patient management and clinical decision making: an, Interactive relationship:, Strategies for effective exercise and task-specific and Instruction:

PREVENTION, HEALTH, AND WELLNESS

Role of physical therapy in healthy people

APPLIED SCIENCE OF EXERCISE AND TECHNIQUES

RANGE OF MOTION

Types of ROM exercises, Indications and goals for ROM, Limitations of ROM exercises, Precautions and contraindications to ROM exercises, Principles and procedures for applying ROM Techniques, ROM techniques, Self-assisted ROM, Continuous passive motion and ROM through functional patterns

STRETCHING FOR IMPAIRED MOBILITY

Definitions of terms related to mobility and stretching, Properties of soft tissue–response to immobilization and stretch, Determinants, types, and effects of stretching interventions, Procedural guidelines for application of stretching interventions, Precautions for stretching, Adjuncts to stretching interventions, Manual stretching techniques in anatomical planes of motion.

PERIPHERAL JOINT MOBILIZATION

Definitions of terms; mobilization/manipulation, self-mobilization (auto-mobilization), mobilization with movement, physiological movements, accessory movements, thrust, manipulation under anesthesia, muscle energy, Basic concepts of joint motion: arthrokinematics, Indications for joint mobilization, Limitations of joint mobilization techniques contraindications and precautions, Procedures for applying passive joint mobilization techniques, Mobilization with movement: principles of application and Peripheral joint mobilization techniques including Shoulder Girdle Complex, Elbow and Forearm Complex, Wrist Complex, Hand and Finger Joints, Hip Joint, Knee and Leg, Ankle and Foot Joint

RESISTANCE EXERCISE FOR IMPAIRED MUSCLE PERFORMANCE

Muscle performance and resistance exercise—definitions and guiding principles, Skeletal muscle function and adaptation to resistance exercise, Determinants of an exercise program , Exercise program, Physiological changes that occur with training, Determinants of resistance exercise, Types of resistance exercise, General Principles Of Resistance Training, Precautions For Resistance Exercise, Contraindications to resistance exercise, Manual resistance exercise; definition and use, guidelines and special considerations, techniques—general background, upper extremity, lower extremity, Proprioceptive neuromuscular facilitation—principles and Techniques, Diagonal patterns, basic procedures with PNF patterns, upper extremity diagonal patterns, lower extremity diagonal patterns, specific techniques with PNF, Mechanical resistance exercise; use in rehabilitation, use in conditioning programs, special considerations for children and older adults, Selected resistance training regimens and Equipment for resistance training.

PRINCIPLES OF AEROBIC EXERCISE

- Application of principles of an aerobic conditioning program for the patient with coronary disease; inpatient phase
 - (phase i) outpatient phase
 - (phase ii) outpatient program
 - (phase iii) special considerations, adaptive changes
- Applications of aerobic training for the de-conditioned individual and the patient with chronic illness
- Age differences; children, young adults, older adults

AQUATIC EXERCISE

Background and principles for aquatic exercise, Definition of aquatic exercise, Goals and indications for aquatic exercise, Precautions and contraindications to aquatic exercise, Properties of water, Aquatic temperature and therapeutic exercise, Special equipment for aquatic exercise, Exercise interventions using an aquatic environment stretching exercises, Strengthening Exercises and Aerobic Conditioning.

Practical training:

Practical demonstration of ROM techniques, Practical demonstration of stretching techniques, Practical demonstration of resisted exercise techniques, Practical demonstration of peripheral joint mobilization techniques, Aerobic exercises, Balance training, Hydrotherapy. Reflective clinical case studies and Supervised and independent Practical application of therapeutic techniques on patients in outdoor and indoor physiotherapy treatment settings.

Note: The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a reflective record of achievements.

The log book shall also contain a record of the procedures which student would have performed/observed.

RECOMMENDED TEXT BOOKS

- *Therapeutics Exercises and Technique*, By: Carolyn Kisner & Lynn Allen Colby 4th 5th edition.
- *Therapeutics Exercises: Techniques for Intervention* By: Willim D. Bandy
- *Clinical decision making in therapeutic exercise* By: Patricia e. Sullivan & prudence d. Markos, Appleton & Lange Norwalk, Connecticut

5. MANUAL THERAPY

COURSE DESCRIPTION:

Through the utilization of instruction, demonstration, practical exercises, research article critical review and case study discussions and presentations this course will provide the best evidence in state of the art advanced manual therapy A detailed overall review of all Manual Therapy techniques, along with manual therapy techniques covering spine and Temporo-Mandibular joint, will take place

Techniques covered are: advanced myofascial trigger point therapy, Proprioceptive training, muscle energy combination techniques, strain counter strain, neuromobilization combination techniques and mobilization, manipulation techniques with emphasis on thrust manipulation

Thorough evaluation, assessment and technique selection training will take place utilizing evidence based models such as APTAs “Open Door” and “Hooked in Evidence” programs All skills will be introduced through on-site demonstration and hands-on practice Students will also get significant exposure in critical review of research articles pertaining to application of manual therapy techniques Case review, discussion and case presentations are an important component of this course

DETAILED COURSE OUTLINE

INTRODUCTION TO MANUAL THERAPY

OMT (ORTHOPEDIC MANUAL THERAPY) KALTENBORN-EVJENTH CONCEPT

History, Special features and Overview.

PRINCIPLES

SPINAL MOVEMENT

The mobile segment, Spinal range of movement, Joint positioning for evaluation and treatment, Three-dimensional joint positioning

- Resting position, Actual resting position & Nonresting positions
- Joint locking
- Bone and joint movement
- Rotations of a vertebral bone
 - Standard bone movements, Combined bone movements, Coupled movements & Noncoupled movements
- Joint roll-gliding associated with bone rotations
 - Joint roll-gliding & Abnormal roll-gliding
- Translation of vertebral bone
- Joint play associated with bone translation

TRANSLATORIC JOINT PLAY

The Kaltenbom Treatment Plane, Translatory Joint Play Movements, Determining the direction of restricted gliding, Glide test, Kaltenbom Convex-Concave Rule, Grades of translatory movement, Normal grades of translatory movement (Grades I - III)

- Palpating resistance to normal movement

Pathological grades of translatory movement and Using translatory grades of movement

TESTS OF FUNCTION

- Principles of function testing
- Assessing quantity of movement
 - Measuring rotatoric movement with a device &
 - Manual grading of rotatoric movement
- Assessing quality of movement
 - Quality of movement to the first stop
 - End-feel: Quality of movement after the first stop
- Elements of function testing
- Active and passive rotatoric movements
 - Testing rotatoric movement
 - Localization tests
 - Differentiating articular from extra-articular dysfunction
 - Differentiating muscle shortening from muscle spasm
- Translatory joint play tests
- Resisted movements
- Passive soft tissue movements
- Additional tests

OMT EVALUATION

- Goals of the OMT evaluation, Physical diagnosis, Indications and contraindications, Measuring progress, Elements of the OMT evaluation, Screening exam
- Detailed exam
 - History, inspection, Tests of function, Palpation & Neurologic and vascular tests
- Medical diagnostic studies & Diagnosis and treatment

SPINAL JOINT MOBILIZATION

- Goals of joint mobilization
- Mobilization techniques
- Pain relief mobilization
 - Pain-relief traction mobilization (Grade I -IISZ), Vibrations and oscillations
- Relaxation mobilization
 - Relaxation-traction mobilization (Grade I -II)
- Stretch mobilization
 - Stretch-traction mobilization (Grade III), Stretch-glide mobilization (Grade /)
- Manipulation
- If traction exacerbates symptoms
- Avoiding high-risk manual treatment
 - Rotation mobilization, Joint compression

OMT TREATMENT

- Elements of OMT
- Treatment to relieve symptoms
 - Immobilization, Thermo-Hydro-Electric (T-H-E) therapy, Pain-relief mobilization & Special procedures for pain relief
- Treatment to increase mobility
 - Soft tissue mobilization, Passive soft tissue mobilization, Active-facilitated soft tissue mobilization, Muscle stretching principles, Joint mobilization to increase mobility & Neural tissue mobilization
- Specialized exercise to increase mobility
- Treatment to limit movement
- To inform, instruct and train
- Research

SPINAL SYNDROMES

Notes on spinal syndromes, Cervical syndromes, Thoracic syndromes, Lumbar syndromes, Neurologic evaluation of nerve root syndromes, Sensory innervation of the skin, Sensory innervation of deep structures, Motor innervation and Common nerve root syndromes

MANUAL THERAPY ASSESSMENT

The Maitland's and Mulligan concept, Subjective examination, Physical examination, Examination of the temporomandibular joint, Examination of the upper cervical spine, Examination of the cervicothoracic spine, Examination of the thoracic spine and Examination of the lumbar spine

THE SUBJECTIVE EXAMINATION STEP BY STEP

Introduction, Body chart, Behavior of symptoms, Special questions, History of the present condition (HPC), Past medical history (PM H), Social and family history (SH, FH), Plan of the physical examination, Case scenarios, Counterfeit clinical presentations

PHYSICAL EXAMINATION STEP BY STEP

Introduction, Observation, Joint tests, Muscle tests, Neurological tests, Special tests, Functional ability, Palpation, Accessory movements, Completion of the physical examination.

TECHNIQUES

TECHNIQUE PRINCIPLES

Learning manual techniques, Applying manual techniques, Objective

- Starting position
 - Patient's position & Therapist's position
- Hand placement and fixation/stabilization
 - Grip, Therapist 's stable hand & Therapist's moving hand
- Procedure
 - Joint pre-positioning, Mobilization technique & Symbols
- Recording
- Identifying an intervertebral segment
- The Star Diagram

PELVIS

Functional anatomy and movement, Notes on evaluation and treatment and Pelvis tests and mobilizations

LUMBAR SPINE

Functional anatomy and movement, Notes on evaluation and treatment, Lumbar tests and mobilizations

THORACIC SPINE AND RIBS

Functional anatomy and movement, Notes on evaluation and treatment, Thoracic tests and mobilizations

CERVICAL SPINE

Functional anatomy and movement, Notes on evaluation and treatment, Cervical tests and mobilizations

UPPER CERVICAL SPINE

Functional anatomy and movement, Notes on evaluation and treatment, Upper cervical tests and mobilizations

JAW

Functional anatomy and movement, Jaw examination scheme and Jaw tests and mobilizations

SPINAL MOBILIZATIONS

THE CERVICAL AND UPPER THORACIC SPINES

NAGS, REVERSE NAGS, SNAGS, SELF SNAGS, Spinal Mobilization with arm Movement and Other mobilization with movement techniques (MWMS) for the Cervical and Upper Thoracic Spines

THE UPPER CERVICAL SPINE SPECIAL TECHNIQUES

The acute Wry Neck, Headaches, Vertigo, Nausea and other vertebral artery Signs

THE LUMBAR SPINE

SNAGS AND SELF SNAGS

THE SACROILIAC JOINTS (S/I) JOINTS

THE THORACIC SPINE

THE RIB CAGE

INTEGRATIVE MANUAL THERAPY

Postural Compensations of the spine, Muscle Energy and 'Beyond' Technique for the spine, Treatment of spine Hypertonicity for Synergic Pattern, Release with Strain and Counter strain Technique, Myofascial Release, Tendon Release Therapy for Treatment of Tendon Tissue Tension with Advanced Strain and Counter strain Technique, Ligaments: a Tensile Force Guidance System: Treatment with Ligament Fiber Therapy and Procedures and Protocols to correct spinal Dysfunction with Integrative Manual Therapy

PRACTICAL/ CLINICAL TRAINING

In the laboratory sessions, Supervised evaluation and manual therapy treatment techniques will be demonstrated and practiced, including joint and soft-tissue mobilization, manipulations, and posture and movement retraining in the physiotherapy clinic/Ward and Orthopaedic clinic/Ward, Indoor as well as outdoor. Various reflective case studies related to manual therapy of the spine and TM joint will be assigned to the students.

Note:

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place.

It is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed.

RECOMMENDED TEXT BOOKS

- *Manual Mobilization of the Joints The Kaltenborn Method of Joint Examination and Treatment Volume I The Extremities* By: Freddy M. Kaltenbomin collaboration with Olaf Evjenth, Traudi Baldauf Kaltenbom, Dennis Morgan, and Eileen Vollowitz, OPTP Minneapolis, Minnesota, USA.
- *Manual Therapy* By: Ola Grimsby, the Ola Grimsby institute San Diego.
- *Integrative Manual therapy for the upper and lower extremities* By: Sharon weiselfish, North Atlantic books Berkeley, California.
- *Orthopedic manual therapy an evidence-based approach* by: Chad Cook
- *Orthopaedic Manual Therapy Diagnosis Spine and Temporomandibular Joints* By: Aad van der
- *Translatoric Spinal Manipulation* By: John R. Krauss, Olaf Evjenth, and Doug Creighton John R. Krauss A Lakeview Media L. L.C. Publication
- *Neuromusculoskeletal Examination and Assessment A Handbook for Therapists*
- By: Nicola J Petty, Ann P Moore & G D Maitland, Second Edition Churchill Livingstone

- *Myofascial Manipulation Theory and Clinical Application*, Second Edition By: Robert I. Cantu, Alan J. Grodin an Aspen Publication Aspen Publishers, Inc. Gaithersburg, Maryland 2001
- *Maitland's Vertebral Manipulation* Seventh Edition By: Geoffrey D. Maitland
- *Musculoskeletal manual medicine, diagnosis and treatment* by Jiri Dovark, Vaclav Dovark, Werneir Schneider etc
- *Manual therapy, NAGS, SNAGS, MWMS etc* by Brian R Mulligan fifth edition

6. EVIDENCE BASED & PROFESSIONAL PRACTICE

COURSE DESCRIPTION:

This course introduces the concept of evidence-based practice in physical therapy including the formulation of answerable clinical questions, methods of obtaining peer-reviewed evidence to those clinical questions, and how to critically appraise evidence once located.

This course is a lecture and seminar course that will focus on developing the skills need for evaluating, critiquing, and consuming the literature germane to physical therapy practice. Current journal articles, texts, and online resources will be used in the course to develop critical reading and writing skills.

DETAILED COURSE OUTLINE

EVIDENCE-BASED PHYSIOTHERAPY

An introduction about evidence-based Physiotherapy:

- What do we mean by ‘high quality clinical research’? , What do we mean by ‘patient preferences’? , What do we mean by ‘practice knowledge’? , Additional factors and The process of clinical decision-making

Importance of evidence-based Physiotherapy:

- For patients, For physiotherapists and the profession , For funders of physiotherapy services, History of Evidence-Based Health Care and Steps for practicing evidence-based Physiotherapy.

WHAT DO WE NEED TO KNOW?

Relevant clinical questions, Refining your question, Effects of intervention, Experiences, Prognosis and Diagnosis.

WHAT CONSTITUTES EVIDENCE?

Evidence about effects of interventions, Different forms of evidence, Different sources of evidence, Hierarchy of evidence and Research study design.

FINDING THE EVIDENCE

- Search Strategies
 - The World Wide Web & Selecting search terms AND and OR
- Finding Evidence of Effects of Interventions
 - PEDro
 - The Cochrane Library
- Finding Evidence of Prognosis and Diagnostic Tests
- Finding Evidence of Experiences
 - CINAHL & Pub Med
- Getting full text
- Finding evidence of advances in clinical
- Practice (Browsing)

TRUST UPON EVIDENCE

- A process for critical appraisal of evidence

- Critical appraisal of evidence about the Effects of intervention
 - Randomized trials & Systematic reviews of randomized trials
- Critical appraisal of evidence about experiences
- Critical appraisal of evidence about prognosis
 - Individual studies of prognosis & Systematic reviews of prognosis
- Critical Appraisal of Evidence about Diagnostic Tests
 - Individual studies of diagnostic tests & Systematic reviews of diagnostic tests

CLINICAL GUIDELINES AS A RESOURCE FOR EVIDENCE-BASED PHYSIOTHERAPY

- What are clinical guidelines?
- History of clinical guidelines and why they are important
- Where can I find clinical guidelines?
- How do I know if I can trust the recommendations in a clinical Guideline?
 - Scope and purpose, Stakeholder involvement, Rigor of development, Clarity and presentation, Applicability, Editorial independence & What do the results of the critical appraisal mean for my practice?
- Legal Implications of Clinical Guidelines
 - Clinical guidelines or ‘reasonable care’: which do the courts consider more important?
 - Documenting the use of a clinical guideline in practice: legal implications
- Reflections on the Future of Guideline Development
 - Who should develop clinical guidelines?
 - Collaboration in guideline development
 - Uniprofessional or multiprofessional guideline development?

CRITICAL THINKING

The Benefit of Asking the Right Questions, What Are the Issue and the Conclusion?, What Are the Reasons?, What Words or Phrases Are Ambiguous?, What Are the Value Conflicts and Assumptions?, What Are the Descriptive Assumptions?, Are There Any Fallacies in the Reasoning?, How Good Is the Evidence: Intuition, Personal Experience?, Testimonials, and Appeals to Authority?, How Good Is the Evidence: Personal Observation, Research?, Studies, Case Examples, and Analogies, Are There Rival Causes?, Are the Statistics Deceptive?, What Significant Information Is Omitted?, What Reasonable Conclusions Are Possible?, Practice and Review, The Tone of Your Critical Thinking and Strategies for Effective Critical Thinking.

PROFESSIONAL PRACTICE IN PHYSICAL THERAPY **(Law, Ethics & Administration)**

THE PHYSICAL THERAPIST AS PROFESSIONAL

What does professional mean?, Preliminary definitions of profession and professional, Sociological perspective, Structural approach, Processual approach, Characteristics of professions cited in the literature, Power approach, Dimensions of occupation & profession, Autonomy, self-regulation of ethical standards, and accountability, Privileges of autonomous practice in 2020, Self-regulation of ethical standards, Accountability of professionals, Individual professionalism—professionalism without professions?, The history of a profession and Professional recognition.

CONTEMPORARY PRACTICE ISSUES

A vision for the future, The doctorate in physical therapy, Perspective of the profession, Perspective of the practitioner, Direct access issue, Selected curriculum requirements from evaluative criteria for physical therapist, Plan of care, Social responsibility, Career development, Physical therapy practice patterns, Components of a practice pattern, Important factors that affect health

THE FIVE ROLES OF THE PHYSICAL THERAPIST

THE PHYSICAL THERAPIST AS PATIENT/CLIENT MANAGER

Evaluation and diagnosis, Diagnosis as clinical decision making, Prognosis, Discharge planning and discontinuance of care, Discontinuance of care, Outcomes, Clinical decision making, Referral relationships, Interpersonal relationships, Ethical and legal issues, Informed consent and Managed care and fidelity.

THE PHYSICAL THERAPIST AS CONSULTANT

Physical therapy consultation, Building a consulting business, The consulting process, The skills of a good consultant, Trust in the consultant/client relationship, Ethical and legal issues in consultation and Components of a consulting agreement

THE PHYSICAL THERAPIST AS CRITICAL INQUIRER

History of critical inquiry, Evidence-based medicine, Outcomes research, Whose responsibility is research? Roles of the staff physical therapist in critical inquiry, Collaboration in clinical research, Ethical and legal issues in critical inquiry

THE PHYSICAL THERAPIST AS EDUCATOR

History of physical therapy education, Contemporary educational roles of the physical therapist, Teaching opportunities in continuing education, Academic teaching opportunities, Theories of teaching and learning in professional education, Ethical and legal issues in physical therapy education

THE PHYSICAL THERAPIST AS ADMINISTRATOR

History of physical therapy administration, Contemporary physical therapy administration, Patient/client management, First-line management, Midlevel managers and chief executive officers, Leadership and Ethical and legal issues.

PROFESSIONAL DEVELOPMENT, COMPETENCE, AND EXPERTISE

Lifelong process of skill enhancement, The professional development continuum: from competence to expertise, Activities that promote professional development, Evaluation of competence and professional development, Professional development planning, Possible evaluators of professional achievement, Career advancement and Organizational impact on professional development.

FUTURE CHALLENGES IN PHYSICAL THERAPY

Physical therapy's moral mission, The future in three realms, individual, institutional & societal, Professionalism and the physical therapist

RECOMMENDED TEXT BOOKS:

- *Professionalism in Physical Therapy: History, Practice, & Development*, Lisa L. Dutton, PT, PhD
- APTA. *Guide to Physical Therapy Practice: Revised second edition*. Alexandria, VA: American Physical Therapy Association; 2003. ISBN: 978-1-887759-85-
- *Practical Evidence based physiotherapy* By, Rob Herbert, Gro Jamtdvedt, Judy Mead & Kare Birger Hagen.
- *Asking the right question-A guide to critical thinking*, 8th Edition By, M.Neil.Browne & Stuart M Keeley

7. BEHAVIORAL SCIENCES

(Psychiatry & Psychology)

COURSE DESCRIPTION

This course is designed to increase awareness of psychosocial issues faced by individuals and their significant reference groups at various points on the continuum of health and disability, including factors that influence values about health promotion, wellness, illness and disability. Personal and professional attitudes and values are discussed as they relate to developing therapeutic relationships. Communication skills are emphasized for effective interaction with clients, health-care professionals and others

DETAILED COURSE OUTLINE:

INTRODUCTION

Behavioral Sciences and their importance in health, Bio-Psycho-Social Model of Healthcare, Desirable attitudes, Correlation of brain, mind and Behavioural Sciences, Roles of a doctor

UNDERSTANDING BEHAVIOUR

Sensation, sense organs / special organs, Perception and factors affecting it, Attention and concentration, Memory and its stages, types and methods to improve it, Types and theories of thinking, Cognition and levels of cognition, Problem solving and decision making strategies, Communication Its types, modes and factors affecting it Non-verbal cues and Characteristics of a good communicator

PERSONALITY AND INTELLIGENCE

Stages and characteristics of psychological growth and development, Personality and development theories of personality Factors affecting personality development, Assessment of personality Influence of personality in determining reactions during health, disease, hospitalization, stress, etc, Intelligence and its types Relevance of IQ and EQ Methods of enhancing EQ and effectively using IQ Factors affecting intelligence and their assessment

STRESS MANAGEMENT

Definition and classification of stress and stressors, Relationship of stress and stressors with illness, Stress and health, Anxiety, Coping skills, Psychological defence mechanisms, Conflict and frustration, Adjustment and maladjustment, Patient anxiety / stress, Psychological theories of pain perception and patients' experience of pain Treatment adherence and compliance, Psychological techniques including hypnosis

DOCTOR – PATIENT RELATIONSHIP

Concept of boundaries and psychological reactions in doctor – patient relationship (such as transference and counter transference)

PAIN, SLEEP AND CONSCIOUSNESS

Concept of pain, Physiology of pain, psychosocial assessment and management of chronic /intractable atypical facial pain, Stages of sleep, Physiology of consciousness, Attend states of consciousness, Psychological influence on sleep and consciousness, Non-pharmacological methods of inducing sleep, Changes in consciousness.

COMMUNICATION SKILLS

Principles of effective communication

Active listening, Art of questioning, Good and bad listener, Counseling: steps, scope, indication and contraindications, Dealing with real life crisis and conflict situations in health settings, A practical method of communication between the doctor and patient about disease, drugs, prognosis etc

INTERVIEWING

Collecting data on psychosocial factors in Medicine / Surgery / Reproductive Health / Paediatrics and other general health conditions, Types of interview and Skills of interviewing

HEALTH PSYCHOLOGY

Importance of psychological consideration in clinical management of patients, Psychological therapies, Key concepts in child's social and cognitive development, Psychological changes during adolescence and old age and their clinical management, Impact of illness on a patient's psychological well being including the ability to cope and understand the association between psychological stress and physical well being, Role of doctor in patient reassurance and allaying anxiety and fear

SOCIAL AND COMMUNITY PERSPECTIVE

Inequalities of healthcare and the relationship of social class, Ethnicity, culture and racism, How disease pattern and medical care vary by culture and ethnicity?, Gender and Healthcare and Influence of health and illness on behavior

APPLICATION OF BEHAVIOURAL PRINCIPLES IN HEALTH AND DISEASE

Mentally / emotionally handicapped, Physically handicapped, Chronically ill, Homebound and Medically compromised.

RECOMMENDED TEXT BOOKS

- *A Handbook of Behavioural Sciences for Medical and Dental Students* By: Mowadat H Rana, Sohail Ali and Mansoor Mustafa, , University of Health Sciences Lahore
- *Medicine in Society ; Behavioural Sciences for Medical Students,* By: Christopher Dowrick, , Arnold Publisher
- *Behavioural Sciences in Clinical Medicine* By: Wolf & Stewart
- *Developmental Psychology for Healthcare Professions* By: Katherine A Billingham

4th YEAR DPT

1. MEDICINE INCLUDING SUPERVISED CLINICAL PRACTICE I &II
2. CLINICAL DECISION MAKING & DIFFERENTIAL DIAGNOSIS
3. MUSCULOSKELETAL PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICE III
4. NEUROLOGICAL PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICE IV
5. COMMUNITY MEDICINE & RESEARCH METHODOLOGY
6. RADIOLOGY & DIAGNOSTIC IMAGING
7. PROSTHETICS & ORTHOTICS AND HUMAN DEVELOPMENT ,COMMUNITY BASED REHABILITATION *

1. MEDICINE

A. COURSE DESCRIPTION:

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

DETAILED COURSE OUTLINE

CARDIOVASCULAR DISEASES

CARDIAC DISEASES:

Chest pain, Dyspnoea, Palpitation, Peripheral edema, Syncope, Cardiac failure, Acute pulmonary edema, Cardiogenic shock, Systemic hypertension, Ischemic heart disease, Angina pectoris, Unstable angina, Myocardial infarction, Rheumatic fever, Valvular heart diseases, Congenital heart diseases, Ventricular septic defect , Atrial septal defect, pulmonary heart disease, Pericardial disease, Pulmonary hypertension and Cardiac arrhythmias and heart in pregnancy.

VASCULAR DISEASES:

Arteriosclerosis, Acute & Chronic ischemia of leg, Aortic aneurysm, Buerger's disease, Raynaud's disease, Varicose veins and Venous thrombosis.

RHEUMATOLOGY AND BONE DISEASES

ARTHRITIS

Osteoarthritis, Rheumatoid arthritis, Connective tissue diseases, Arthritis in elderly, Arthritis in children, Seronegative spondyloarthropathies, Crystals deposition disease, Arthritis associated with other diseases

BACK PAIN

Back Pain due to serious disease, Inflammatory Back Pain, Disc disease, Mechanical problems, Soft tissues problems, Psychogenic Back Pain, Nonspecific Back Pain and Neck pain.

SOFT TISSUE RHEUMATISM

BONE DISEASES

Paget's disease, Infections of bones, Neoplastic disease, Skeletal dysplasia and Other hereditary diseases

RESPIRATORY DISEASES

DISEASES OF UPPER RESPIRATORY TRACT

Common cold, Sinusitis, Rhinitis, Pharyngitis, Acute laryngo-tracheobronchitis, Influenza, Inhalation of the foreign bodies

DISEASE OF LOWER RESPIRATORY TRACT

Acute & chronic Bronchitis, Bronchiectasis, Cystic fibrosis, Asthma, Emphysema, Pneumonias, Tuberculosis, Pulmonary fibrosis, Radiation damage, Common tumors of the lungs, Respiratory failure, Adult distress respiratory syndrome, Disorders of chest wall and pleura, Chest trauma, Deformities of rib cage, Dry pleurisy, Pleural effusion, Empyema and Pneumothorax

DERMATOLOGY

Introduction to disorders and diseases, Acne vulgaris, Psoriasis, Boils, Carbuncles, Alopecia, Mycosis fungoides, Polymorphic light eruptions, Vitiligo, Pityriasis and Hyperhidrosis

DISEASES OF BRAIN AND SPINAL CORD:

Common neurological symptoms, Neurological examination, The brain death, Stroke, types of stroke, Parkinson's disease, Epilepsy, Multiple Sclerosis, Infective and Inflammatory diseases, Intracranial tumors, Hydrocephalus, Headache, Migraine, Facial pain, Head injury, Motor neuron disease, Diseases of spinal cord, Diseases of Cranial nerves, Peripheral nerve lesions, Diseases of voluntary muscles and of neuromuscular junction, Sleep and Unconsciousness and Coma

RENAL DISEASES

Glomerulonephritis, Acute nephritic syndrome, Nephrotic syndrome, Urinary tract infection, Renal hypertension, Renal failure, Benign enlargement of prostate gland and Prostatic carcinoma

DISEASES OF THE BLOOD:

Anaemia, Brief description of types of Anaemia and Brief description of Bleeding and Coagulation, only Haemophilia and Thrombosis is described in detail

MISCELLANEOUS DISEASES:

Brief description of Diabetes Mellitus and its complications, Detailed description of Diabetic Neuropathy and Diabetic foot, Steroid induced Myopathy

B. SUPERVISED CLINICAL PRACTICE I

(To be covered in 3rd & 4th year classes. Examination in 4th year class)

HISTORY TAKING

PROFESSIONAL YEAR	SUPERVISION	FOCUS	WARDS	COMPETENCIES
4 th	Supervised by trained PT	History Taking	All wards	As listed below

COURSE DESCRIPTION:

During this supervised clinical practice, students are responsible for learning the art of history taking, the first interaction with patient. Students learn the skills under supervision of trained physical therapists. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of patients (surgical, non-surgical, pediatric, geriatric, etc.)

The emphasis is placed on general history taking skills as well as its pertinence to all systems (musculoskeletal, Integumentary, cardiovascular, pulmonary, and neurological.) Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

CLINICAL COMPETENCIES:

Review pertinent medical records and conduct an interview which collects the following data:

Past and current patient/client history, Demographics, General health status, Chief complaint, Medications, Medical/surgical history, Social history, Present and pre-morbid functional status/activity, Social/health habits, Living environment, Employment, Growth and development, Lab values, Imaging, Consultations and Documentation of the history

C. SUPERVISED CLINICAL PRACTICE II

(To be covered in 3rd & 4th year classes. Examination in 4th year class)

SYSTEM REVIEW

PROFESSIONAL YEAR	SUPERVISION	FOCUS	WARDS	COMPETENCIES
4 th	SUPERVISED BY TRAINED PT	SYSTEMS REVIEW	All wards	AS LISTED BELOW

COURSE DESCRIPTION:

During this supervised clinical practice, students are responsible for learning the skills of systems review and validate the need for physical therapy services. Students learn to objectively review each system under the supervision of trained physical therapists.

Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of patients (surgical, non-surgical, pediatric, geriatric, etc.) Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

CLINICAL COMPETENCIES:

Perform review of systems to determine the need for referral or for physical therapy services and Systems review screening includes the following:

GENERAL HEALTH CONDITION (GHC)

Fatigue, Malaise, Fever/chills/sweats, Nausea/vomiting, Dizziness/lightheadedness, Unexplained weight change, Numbness/Paresthesia, Weakness and Mentation /cognition

CARDIOVASCULAR SYSTEM (CVS)

Dyspnea, Orthopnea, Palpitations, Pain/sweats, Syncope, Peripheral edema and Cough

PULMONARY SYSTEM (PS)

Dyspnea, Onset of cough, Change in cough, Sputum, Hemoptysis, Clubbing of nails, Stridor and Wheezing

GASTROINTESTINAL SYSTEM (GIS)

Difficulty with swallowing, Heartburn, indigestion, Change in appetite and Change in bowel function

URINARY SYSTEM (US)

Frequency, Urgency and Incontinence

GENITAL REPRODUCTIVE SYSTEM (GRS)

MALE

Describe any sexual dysfunction, difficulties, or concerns

FEMALE

Describe any sexual or menstrual dysfunction, difficulties, or problems

RECOGNITION OF RED AND YELLOW FLAGS

Initiate referral when positive signs and symptoms identified in the review of systems are beyond the specific skills or expertise of the physical therapist or beyond the scope of physical therapist practice, Consult additional resources, as needed, including other physical therapists, evidence-based literature, other health care professionals, and community resources and Screen for physical, sexual, and psychological abuse.

CARDIOVASCULAR AND PULMONARY SYSTEMS

Conduct a systems review for screening of the cardiovascular and pulmonary system (heart rate and rhythm, respiratory rate, blood pressure, edema) and Read a single lead EKG.

INTEGUMENTARY SYSTEM

Conduct a systems review for screening of the integumentary system, the assessment of pliability (texture), presence of scar formation, skin color, and skin integrity.

MUSCULOSKELETAL SYSTEM

Conduct a systems review for screening of musculoskeletal system, the assessment of gross symmetry, gross range of motion, gross strength, height and weight.

NEUROLOGICAL SYSTEM

Conduct a systems review for screening of the neuromuscular system, a general assessment of gross coordinated movement (eg, balance, gait, locomotion, transfers, and transitions) and motor function (motor control and motor learning) and Documentation of all listed competencies in SOAP notes format.

RECOMMENDED TEXT BOOKS:

- *Practice of medicine* by: Davidson
- *Clinical medicine* by: Parveen j Kumar & Michael Clark
- *Short text book by medicine* by: M. Inam Danish
- *Hutchison's clinical methods* by: Michael swash. 21st edition
- *Bed side techniques*

2. CLINICAL DECISION MAKING & DIFFERENTIAL DIAGNOSIS

COURSE DESCRIPTION:

The course will cover the principles and methods of clinical screening in physical therapy practice. A basic format for musculoskeletal, neuromuscular, Integumentary, and cardiopulmonary screening in physical therapy will be presented, with a focus on differential diagnosis within the scope of physical therapy practice, and incorporation of the role of the physical therapist as it interfaces with the role of the physician. A clarification of red-flags that differentiate a systemic condition from a neuromusculoskeletal condition will be a continuing theme throughout the course.

Decision-making skills related to physical therapy will be emphasized through the use of patient case scenarios with a focus on when to treat, and when to refer. Strategies to effectively and appropriately communicate with health care colleagues and patients regarding medical diagnostic information and medical status will be introduced.

DETAILED COURSE OUTLINE

SCREENING AND INTERVIEWING, THE PT SCOPE OF PRACTICE: TO REFER OR TREAT?

INTRODUCTION TO SCREENING FOR REFERRAL IN PHYSICAL THERAPY,

Reasons to Screen, Screenings and Surveillance, Diagnosis by the Physical Therapist, Differential Diagnosis Versus Screening, Direct Access, Decision-Making Process, Case Examples and Case Studies

INTRODUCTION TO THE INTERVIEWING PROCESS

Concepts in Communication, Cultural Competence, The Screening Interview, Subjective Examination, Core Interview, Hospital Inpatient Information and Physician Referral

OVERVIEW OF THE PHYSIOLOGY OF PAIN AND SYSTEMIC CAUSES OF PAIN

Mechanisms of Referred Visceral Pain, Multisegmental Innervations, Assessment of Pain and Symptoms, Sources of Pain, Types of Pain, Comparison of Systemic Versus Musculoskeletal

Pain, Patterns, Characteristics of Viscerogenic Pain, Screening for Emotional and Psychologic Overlay, Screening for Systemic Versus Psychogenic, Symptoms and Physician Referral.

PHYSICAL ASSESSMENT AS A SCREENING TOOL

General Survey, Techniques of Physical Examination, Integumentary Screening Examination, Nail Bed Assessment, Lymph Node Palpation, Musculoskeletal Screening Examination, Neurologic Screening Examination, Regional Screening Examination, Systems Review and Physician Referral.

SCREENING FOR HEMATOLOGIC DISEASE

Signs and Symptoms of Hematologic Disorders, Classification of Blood Disorders and Physician Referral

SCREENING FOR CARDIOVASCULAR DISEASE

Signs and Symptoms of Cardiovascular Disease, Cardiac Pathophysiology, Cardiovascular Disorders and Laboratory Values

SCREENING FOR THE EFFECTS OF CARDIOVASCULAR MEDICATIONS

Physician Referral

SCREENING FOR PULMONARY DISEASE

Signs and Symptoms of Pulmonary Disorders, Inflammatory/Infectious Disease, Genetic Disease of the Lung, Occupational Lung Diseases, Pleuropulmonary Disorders, Physician Referral

SCREENING FOR GASTROINTESTINAL DISEASE

Signs and Symptoms of Gastrointestinal Disorders, Gastrointestinal Disorders, Physician Referral

SCREENING FOR HEPATIC AND BILIARY DISEASE

Hepatic and Biliary Signs and Symptoms, Hepatic and Biliary Pathophysiology, Gallbladder and Duct Diseases, Physician Referral

SCREENING FOR UROGENITAL DISEASE

Signs and Symptoms of Renal and Urological Disorders, The Urinary Tract, Renal and Urological Pain, Renal and Urinary Tract Problems and Physician Referral

SCREENING FOR ENDOCRINE AND METABOLIC DISEASE

Associated Neuromuscular and Musculoskeletal Signs and Symptoms, Endocrine Pathophysiology, Introduction to Metabolism and Physician Referral

SCREENING FOR IMMUNOLOGIC DISEASE

Using the Screening Model, Immune System Pathophysiology, Physician Referral, Screening for Cancer, Cancer Statistics, Risk Factor Assessment, Cancer Prevention, Major Types of Cancer, Metastases, Clinical Manifestations of Malignancy, Oncologic Pain, Side Effects of Cancer Treatment, Cancers of the Musculoskeletal System, Primary Central Nervous System Tumors, Cancers of the Blood and Lymph System and Physician Referral

SCREENING THE HEAD, NECK, AND BACK

Using the Screening Model to Evaluate the Head, Neck, or Back, Location of Pain and Symptoms, Sources of Pain and Symptoms, Screening for Oncologic Causes of Back Pain, Screening for Cardiac Causes of Neck and Back Pain, Screening for Peripheral Vascular Causes of Back Pain, Screening for Pulmonary Causes of Neck and Back Pain, Screening for Renal and Urologic Causes of Back Pain, Screening for Gastrointestinal Causes of Back Pain, Screening for Liver and Biliary Causes of Back Pain, Screening for Gynecologic Causes of Back Pain, Screening for Male Reproductive Causes of Back Pain, Screening for Infectious Causes of Back Pain and Physician Referral.

SCREENING THE SACRUM, SACROILIAC, AND PELVIS

The Sacrum and Sacroiliac Joint, The Coccyx, The Pelvis and Physician Referral

SCREENING THE LOWER QUADRANT: BUTTOCK, HIP, GROIN, THIGH, AND LEG

Using the Screening Model to Evaluate the Lower Quadrant, Trauma as a Cause of Hip, Groin, or Lower Quadrant Pain, Screening for Systemic Causes of Sciatica, Screening for Oncologic Causes of Lower Quadrant Pain, Screening for Urologic Causes of Buttock, Hip, Groin, or Thigh Pain. Screening for Male Reproductive Causes of Groin Pain, Screening for Infectious and Inflammatory Causes of Lower Quadrant Pain, Screening for Gastrointestinal Causes of Lower Quadrant Pain, Screening for Vascular Causes of Lower Quadrant Pain, Screening for Other Causes of Lower Quadrant Pain and Physician Referral

SCREENING THE CHEST, BREASTS, AND RIBS

Using the Screening Model to Evaluate the Chest, Breasts, or Ribs, Screening for Oncologic Causes of Chest or Rib Pain, Screening for Cardiovascular Causes of Chest, Breast, or Rib Pain, Screening for Pleuropulmonary Causes of Chest, Breast, or Rib Pain, Screening for Gastrointestinal Causes of Chest, Breast, or Rib Pain, Screening for Breast Conditions that Cause Chest or Breast Pain, Screening for Other Conditions as a Cause of Chest, Breast, or Rib Pain, Screening for Musculoskeletal Causes of Chest, Breast, or Rib Pain, Screening for Neuromuscular or Neurologic Causes of Chest, Breast, or Rib Pain and Physician Referral

SCREENING THE SHOULDER AND UPPER EXTREMITY

Using the Screening Model to Evaluate Shoulder and Upper Extremity, Screening for Pulmonary Causes of Shoulder Pain, Screening for Cardiac Causes of Shoulder Pain, Screening for Gastrointestinal Causes of Shoulder Pain, Screening for Liver and Biliary Causes of Shoulder Pain, Screening for Rheumatic Causes of Shoulder Pain, Screening for Infectious Causes of Shoulder Pain, Screening for Oncologic Causes of Shoulder Pain, Screening for Gynecologic Causes of Shoulder Pain and Physician Referral

PRACTICAL/ CLINICAL TRAINING

In the laboratory sessions, Supervised differential diagnoses/screening skills shall be taught, demonstrated and practiced. Various reflective case studies related to differential diagnoses will be assigned to the students. Practical will mainly include the following:

- Screening for hematologic disease
- Screening for cardiovascular disease
- Screening for the effects of cardiovascular medications
- Screening for pulmonary disease
- Screening for gastrointestinal disease
- Screening for hepatic and biliary disease
- Screening for urogenital disease
- Screening for endocrine and metabolic disease
- Screening for immunologic disease
- Screening the head, neck, and back
- Screening the sacrum, sacroiliac, and pelvis
- Screening the lower quadrant: buttock, hip, groin, thigh, and Leg
- Screening the chest, breasts, and ribs
- Screening the shoulder and upper extremity

Note:

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place.

It is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed.

RECOMMENDED TEXT BOOKS

- Goodman CC, Snyder TEK. *Differential Diagnostics for Physical Therapists: Screening for Referral*. Saint Louis, MO: Saunders: Elsevier; 2006. ISBN: 978-0-7216-0619-4
- APTA. *Guide to Physical Therapy Practice: Revised second edition*. Alexandria, VA: American Physical Therapy Association; 2003. ISBN: 978-1-887759-85-
- Additional readings as assigned by the instructors

3. MUSCULOSKELETAL PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICE III

COURSE DESCRIPTION:

This course includes a study of anatomy and physiology of the musculoskeletal system and pathological changes of the system and function, including diagnostic tests and measurements. Relevant tests and measures for determining impairment and differentiating the diagnosis based on the specificity and sensitivity of the assessment instruments as related to patients with musculoskeletal conditions are discussed.

The use of evidence-based physical therapy intervention for musculoskeletal conditions is emphasized. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

DETAILED COURSE OUTLINE

MEDICAL TERMINOLOGY REGARDING MUSCULOSKELETAL SYSTEM PRINCIPLES AND CONCEPTS OF MUSCULOSKELETAL EVALUATION & ASSESSMENT

- Patient history, Observation & Examination

Principles, vital signs, examination of specific joints, functional assessment, specific diagnostic test, reflexes and cutaneous distribution, joint play movements, palpation
Evaluation /Assessment of spine and peripheral joints

- Causes
- Effects of range limitation on functional activities

Principles of assessment and outcome measures

Documentation in SOAP notes format

Evidence based musculoskeletal Physical Therapy Treatment protocols

PRINCIPLES OF INTERVENTION

SOFT TISSUE INJURY, REPAIR, AND MANAGEMENT

Soft tissue lesions, Management during the acute stage, Management during the sub acute, Management during the chronic stage and Cumulative trauma–chronic recurring pain

JOINT, CONNECTIVE TISSUE, AND BONE DISORDERS AND MANAGEMENT

Arthritis–arthrosis, Fibromyalgia and myofascial pain syndrome, Osteoporosis, Fractures–post-traumatic immobilization

SURGICAL INTERVENTIONS AND POSTOPERATIVE MANAGEMENT

Indications for surgical intervention, Guidelines for preoperative and Postoperative management; considerations for preoperative management, considerations for postoperative management, potential postoperative complications and Overview of common orthopedic surgeries and postoperative management; surgical approaches–open, arthroscopic, and arthroscopically assisted procedures, use of tissue grafts, repair, reattachment, reconstruction, stabilization, or transfer of soft tissues, release, lengthening, or decompression of Soft tissues

PERIPHERAL NERVE DISORDERS AND MANAGEMENT

Review of peripheral nerve structure; nerve structure, nervous system mobility characteristics, common sites of injury to peripheral nerves, Impaired nerve function, Nerve injury and recovery. Neural tension disorders and their managements, Musculoskeletal diagnoses involving impaired, Nerve function thoracic outlet syndrome, Carpal tunnel syndrome, Compression in tunnel of Guyon and Complex regional pain syndrome: reflex sympathetic Dystrophy and causalgia.

EXERCISE INTERVENTIONS BY BODY REGION

THE SPINE AND POSTURE: STRUCTURE, FUNCTION, POSTURAL IMPAIRMENTS & MANAGEMENT GUIDELINES POSTURE AND BIOMECHANICAL INFLUENCES

Alignment and Stability

IMPAIRED POSTURE

Etiology of pain and Common faulty postures: characteristics and Impairments

MANAGEMENT OF IMPAIRED POSTURE

General management guidelines and Tension headache/cervical headache

THE SPINE: IMPAIRMENTS, DIAGNOSES, & MANAGEMENT GUIDELINES

Review of the structure and function of the spine

SPINAL PATHOLOGIES AND IMPAIRED SPINAL FUNCTION

Pathology of the intervertebral disk, Pathomechanical relationships of the intervertebral disk and facet joints, Pathology of the zygapophyseal (facet). Pathology of muscle and soft tissue injuries: strains, tears, and contusions, Pathomechanics of spinal instability

MANAGEMENT GUIDELINES BASED ON IMPAIRMENTS

Principles of management for the Spine, Management guidelines–non-weight-bearing bias, Management guidelines–extension bias, Management guidelines–flexion bias, Management guidelines–stabilization, Management guidelines–mobilization, Management guidelines–soft tissue injuries, Management Guidelines–Temporomandibular Joint Dysfunction

THE SPINE: EXERCISE INTERVENTIONS

Basic concepts of spinal management with exercise, Fundamental interventions, Patient education, General exercise guidelines, Kinesthetic awareness, Elements of kinesthetic training–fundamental techniques, Progression to active and habitual control of Posture, Mobility/flexibility, Cervical and upper thoracic, Region–stretching techniques, Mid and lower thoracic and lumbar, Regions–stretching techniques, Muscle performance: stabilization, muscle endurance, and strength training, Stabilization training–fundamental techniques and Progressions, Isometric and dynamic exercises, Cardiopulmonary endurance, Common aerobic exercises and effects on the spine, Functional activities, Early functional training–fundamental techniques, Preparation for functional activities–basic exercise Techniques, Body mechanics and environmental adaptations, Intermediate to advanced exercise techniques for Functional training and Education for prevention

THE SHOULDER AND SHOULDER GIRDLE

Examination, evaluation and assessment of shoulder joint, Referred pain and nerve injury, Management of shoulder disorders and surgeries, Joint Hypomobility: nonoperative management, Glenohumeral joint surgery and postoperative management

- Painful shoulder syndromes (rotator cuff disease, impingement syndromes, shoulder instabilities):
- Nonoperative management, Painful shoulder syndromes: surgery and postoperative management, Shoulder dislocations: nonoperative management, Shoulder instabilities: surgery and postoperative management, Exercise interventions for the shoulder, Girdle Exercise Techniques During Acute And Early Subacute Stages of tissue healing, Exercise techniques to increase flexibility and range of motion & Exercises to develop and improve muscle performance and functional control

THE ELBOW & FOREARM COMPLEX

- Examination, evaluation and assessment of elbow and forearm complex, Referred pain and nerve injury in the elbow region, Management of elbow and forearm disorders and surgeries, Joint Hypomobility: nonoperative management, Joint surgery and postoperative management, Myositis ossificans, Overuse syndromes: repetitive trauma syndromes, Exercise interventions for the elbow and Forearm, Exercise techniques to increase flexibility and range of Motion & Exercises to develop and improve muscle performance And functional

THE WRIST & HAND

- Examination, evaluation and assessment of wrist and hand, Major nerves subject to pressure and trauma at the Wrist and hand, Management of wrist and hand disorders And surgeries, Joint Hypomobility: nonoperative management, Joint surgery and postoperative management, Repetitive trauma syndromes/overuse, Traumatic lesions in the wrist and hand, Exercise interventions for the wrist and Hand, Techniques for musculotendinous mobility, Exercise techniques to increase flexibility and range Of motion & Exercises to develop and improve muscle Performance, neuromuscular control, and coordination.

THE HIP

- Examination, evaluation and assessment of hip joint, The hip and gait, Referred pain and nerve injury, Management of hip disorders and surgeries, Joint Hypomobility: nonoperative management, Joint surgery and postoperative management, Fractures of the hip–surgical and postoperative management, Painful hip syndromes/overuse syndromes: nonoperative management, Exercise interventions for the hip region, Exercise techniques to increase flexibility and range of motion & Exercises to develop and improve muscle performance and functional control

THE KNEE

- Examination, evaluation and assessment of knee joint, Referred pain and nerve injuries, Management of knee disorders and surgeries, Joint Hypomobility: nonoperative management, Joint surgery and postoperative management, Patellofemoral dysfunction: nonoperative management, Patellofemoral and extensor mechanism dysfunction: Surgical and postoperative management, Ligament injuries: nonoperative management, Ligament injuries: surgical and postoperative Management, Meniscal tears: nonoperative management, Meniscal tears: surgical and postoperative management, Exercise interventions for the knee, Exercise techniques to increase flexibility and range of motion & Exercises to develop and improve muscle performance and functional control

THE ANKLE & FOOT

- Examination, evaluation and assessment of ankle and foot joint, Referred pain and nerve injury, Management of foot and ankle disorders and surgeries, Joint Hypomobility: nonoperative management, Joint surgery and postoperative management, Overuse (repetitive trauma) syndromes: nonoperative management, Ligamentous injuries: nonoperative management, Traumatic soft tissue injuries: surgical and postoperative management, Exercise interventions for the ankle and foot, Exercise techniques to increase flexibility and range of motion & Exercises to develop and improve muscle performance and functional control

Practical Training:

- The practical training will be sought in physiotherapy treatment based settings. Keeping in view therapeutic principles, management of various pre and post operative conditions will be practiced under supervision and later independently by the students, the practical work might include:

- Therapeutic Management of conditions of spine, Therapeutic Management of conditions of extremities, Therapeutic Management of vascular disorders, Therapeutic Management of pulmonary conditions, Therapeutic Management of gynaecological conditions, Reflective clinical case studies & Supervised and independent Practical application of therapeutic techniques on patients in outdoor and indoor physiotherapy treatment settings.

Note:

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a reflective record of achievements.

The log book shall also contain a record of the procedures which student would have performed/observed.

SUPERVISED CLINICAL PRACTICE III

(To be covered in 3rd & 4th year classes. Examination in 4th year class)

MUSCULOSKELETAL

PROFESSIONAL YEAR	SUPERVISION	FOCUS	WARDS	COMPETENCIES
4 th	Supervised by trained PT	Evaluation, Examination, and Intervention	MSK (IPD/OPD; surgical & non-surgical)	Listed below

COURSE DESCRIPTION:

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to musculoskeletal disorders. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric)

Students learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

COMPETENCIES:

EXAMINATION:

- Based on best available evidence select examination tests and measures that are appropriate for the patient/client.
- Perform posture tests and measures of postural alignment and positioning.
- Perform gait, locomotion and balance tests including quantitative and qualitative measures such as:
 - Balance during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
 - Balance (dynamic and static) with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
 - Gait and locomotion during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment to include:
 - ❖ Bed mobility, Transfers (level surfaces and floor), Wheelchair management, Uneven surfaces & Safety during gait, locomotion, and balance
 - Perform gait assessment including step length, speed, characteristics of gait, and abnormal gait patterns.

- Characterize or quantify body mechanics during self-care, home management, work, community, tasks, or leisure activities.
- Characterize or quantify ergonomic performance during work (job/school/play) :
 - Dexterity and coordination during work, Safety in work environment, Specific work conditions or activities & Tools, devices, equipment, and workstations related to work actions, tasks, or activities
- Characterize or quantify environmental home and work (job/school/play) barriers:
 - Current and potential barriers, Physical space and environment & Community access
- Observe self-care and home management (including ADL and IADL)
- Measure and characterize pain to include:
 - Pain, soreness, and nociception, Specific body parts & Recognize and characterize signs and symptoms of inflammation.

PERFORM MUSCULOSKELETAL SYSTEM TESTS AND MEASURES

INCLUDING:

- Accessory movement tests, Anthropometrics & Limb length, Limb girth & Body composition
- Functional strength testing, Joint integrity, Joint mobility, Ligament laxity tests, Muscle length, Muscle strength including manual muscle testing, dynamometry, one , repetition max, Palpation & Range of motion including goniometric measurements

PERFORM ORTHOTIC TESTS AND MEASURES INCLUDING

- Components, alignment, fit, and ability to care for orthotic, protective, and supportive devices and equipment.
- Evaluate the need for orthotic, protective, and supportive devices used during functional activities.
- Remediation of impairments in body function and structure, activity limitations, and participation restrictions with use of orthotic, protective, and supportive device.
- Residual limb or adjacent segment, including edema, range of motion, skin integrity and strength.
- Safety during use of orthotic, protective, and supportive device.
- Perform prosthetic tests and measures including :
 - ❖ Alignment, fit, and ability to care for prosthetic device, Prosthetic device use during functional activities, Remediation of impairments in body function and structure, activity limitations, and participation restrictions, with use of prosthetic device & Evaluation of residual limb or adjacent segment, including edema, range of motion, skin integrity, and strength.
- Safety during use of the prosthetic device.
- Perform tests and measures for assistive and adaptive devices including :
 - ❖ Assistive or adaptive devices and equipment use during functional activities, Components, alignment, fit, and ability to care for the assistive or adaptive devices and equipment, Remediation of impairments in body function and structure, activity limitations, and participation restrictions with use of assistive or adaptive devices and equipment & Safety during use of assistive or adaptive equipment.

EVALUATION:

Clinical reasoning, Clinical decision making, Synthesize available data on a patient/client expressed in terms of the International Classification of Function, Disability and Health (ICF) model to include body functions and structures, activities, and participation, Use available evidence in interpreting the examination findings, Verbalize possible alternatives when interpreting the examination findings and Cite the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.

DIAGNOSIS:

Integrate the examination findings to classify the patient/client problem in terms of body functions and structures, and activities and participation (ie, practice patterns in the Guide) and Identify and prioritize impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

PROGNOSIS:

- Determine the predicted level of optimal functioning and the amount of time required to achieve that level.
- Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame including:
 - Age, Medication(s), Socioeconomic status, Co-morbidities, Cognitive status, Nutrition, Social Support & Environment

PLAN OF CARE:

- Goal setting, Coordination of Care, Progression of care, Discharge & Design a Plan of Care
- Write measurable functional goals (short-term and long-term) that are time referenced with expected outcomes.
- Consult patient/client and/or caregivers to develop a mutually agreed to plan of care.
- Identify patient/client goals and expectations.
- Identify indications for consultation with other professionals.
- Make referral to resources needed by the patient/client (assumes knowledge of referral sources).
- Select and prioritize the essential interventions that are safe and meet the specified functional goals and outcomes in the plan of care
I identify precautions and contraindications, provide evidence for patient-centered interventions that are identified and selected, define the specificity of the intervention (time, intensity, duration, and frequency) & Set realistic priorities that consider relative time duration in conjunction with family, caregivers, and other health care professionals.
- Establish criteria for discharge based on patient goals and current functioning and disability.
- Coordination of Care
Identify who needs to collaborate in the plan of care, Identify additional patient/client needs that are beyond the scope of physical therapist practice, level of experience and expertise, and warrant referral, Refer and discuss coordination of care with other health care professionals, Articulate a specific rationale for a referral & Advocate for patient/client access to services.
- Progression of Care
Identify outcome measures of progress relative to when to progress the patient further.
Measure patient/client response to intervention.
Monitor patient/client response to intervention.
Modify elements of the plan of care and goals in response to changing patient/client status, as needed.
Make on-going adjustments to interventions according to outcomes including environmental factors and personal factors and, medical therapeutic interventions.
Make accurate decisions regarding intensity and frequency when adjusting interventions in the plan of care.
- Discharge Plan

- Re-examine patient/client if not meeting established criteria for discharge based on the plan of care.
- Differentiate between discharge of the patient/client, discontinuation of service, and transfer of care with re-evaluation.
- Prepare needed resources for patient/client to ensure timely discharge, including follow-up care.
- Include patient/client and family/caregiver as a partner in discharge.
- Discontinue care when services are no longer indicated.
- When services are still needed, seek resources and/or consult with others to identify alternative resources that may be available.
- Determine the need for equipment and initiate requests to obtain.

INTERVENTIONS:

- Safety, Emergency Care, CPR and First Aid
- Standard Precautions, Body Mechanics, Positioning & Categories of Interventions
 - Safety, Cardiopulmonary Resuscitation Emergency Care, First Aid
 - Ensure patient safety and safe application of patient/client care, Perform first aid, Perform emergency procedures, Perform Cardiopulmonary Resuscitation (CPR) & Precautions
- Demonstrate appropriate sequencing of events related to universal precautions.
- Use Universal Precautions.
- Determine equipment to be used and assemble all sterile and non-sterile materials.
- Use transmission-based precautions, Demonstrate aseptic techniques, Apply sterile procedures & Properly discard soiled items.

BODY MECHANICS AND POSITIONING

- Apply proper body mechanics (utilize, teach, reinforce, and observe).
- Properly position, drape, and stabilize a patient/client when providing physical therapy.

INTERVENTIONS

- Coordination, communication, and documentation may include:
 - Addressing required functions:
 - ❖ Establish and maintain an ongoing collaborative process of decision-making with patients/clients, families, or caregivers prior to initiating care and throughout the provision of services, Discern the need to perform mandatory communication and reporting (eg, incident reports, patient advocacy and abuse reporting) & Follow advance directives.
 - Admission and discharge planning.
 - Case management.
 - Collaboration and coordination with agencies, including:
 - ❖ Home care agencies, Equipment suppliers, Schools, Transportation agencies & Payer groups
 - Communication across settings, including:
 - ❖ Case conferences, Documentation & Education plans
 - Cost-effective resource utilization.
 - Data collection, analysis, and reporting of:
 - ❖ Outcome data, Peer review findings & Record reviews
- Documentation across settings, following APTA's Guidelines for Physical Therapy Documentation, including:
 - Elements of examination, evaluation, diagnosis, prognosis, and Intervention, Changes in body structure and function, activities and participation, Changes in interventions & Outcomes of intervention
- Interdisciplinary teamwork:

- Patient/client family meetings, Patient care rounds, Case conferences & Referrals to other professionals or resources.
- Patient/client-related instruction may include:
 - Instruction, education, and training of patients/clients and caregivers regarding:
 - Current condition, health condition, impairments in body structure and function, and activity limitations, and participation restrictions)
 - Enhancement of performance
 - Plan of care:
 - Risk factors for health condition, impairments in body structure and function, and activity limitations, and participation restrictions.
 - Preferred interventions, alternative interventions, and alternative modes of delivery
 - Expected outcomes
 - Health, wellness, and fitness programs (management of risk factors)
 - Transitions across settings

THERAPEUTIC EXERCISE MAY INCLUDE PERFORMING:

- Body mechanics and postural stabilization:
 - Body mechanics training, Postural control training, Postural stabilization activities & Posture awareness training
- Flexibility exercises:
 - Muscle lengthening, Range of motion & Stretching
- Gait and locomotion training:
 - Developmental activities training, Gait training, Device training, Perceptual training & Basic wheelchair training
- Strength, power, and endurance training for head, neck, limb, and trunk:
 - Active assistive, active, and resistive exercises (including concentric, dynamic/isotonic, eccentric, isokinetic, isometric, and plyometric exercises)
 - Aquatic programs
 - Task-specific performance training
- Strength, power, and endurance training for pelvic floor:
 - Active (Kegel)
- Strength, power, and endurance training for ventilatory muscles:
 - Active and resistive
- Manual therapy techniques may include:
 - Passive range of motion
 - Massage:
 - ❖ Connective tissue massage & Therapeutic massage
 - Manual traction
 - Mobilization/manipulation:
 - ❖ Soft tissue (thrust and nonthrust) & Spinal and peripheral joints (thrust and nonthrust)
- Functional training in self-care and home management may include:
- Functional training in work (job/school/play), community, and leisure integration or reintegration may include:
 - Activities of daily living (ADL) training:
 - Bed mobility and transfer training
 - Age appropriate functional skills
 - Barrier accommodations or modifications
 - Device and equipment use and training:

- Assistive and adaptive device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)
- Orthotic, protective, or supportive device or equipment training during self-care and home management
- Prosthetic device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)
 - Functional training programs
 - Simulated environments and tasks
 - Task adaptation
 - Injury prevention or reduction:
 - ❖ Safety awareness training during self-care and home management
 - ❖ Injury prevention education during self-care and home management
 - ❖ Injury prevention or reduction with use of devices and equipment
- Prescription, application, and, as appropriate, fabrication of devices and equipment may include:
 - Adaptive devices
 - ❖ Hospital beds, Raised toilet seats & Seating systems – prefabricated
 - Assistive devices
 - ❖ Canes, Crutches, Long-handled reachers, Static and dynamic splints – prefabricated, Walkers & Wheelchairs
 - Orthotic devices:
 - ❖ Prefabricated braces, Prefabricated shoe inserts & Prefabricated splints
 - Prosthetic devices (lower-extremity)
 - Protective devices:
 - ❖ Braces, Cushions, Helmets & Protective taping
 - Supportive devices:
 - ❖ Prefabricated compression garments, Corsets, Elastic wraps, Neck collars, Slings, Supplemental oxygen - apply and adjust & Supportive taping
 - Electrotherapeutic modalities may include:
 - ❖ Biofeedback & Electrotherapeutic delivery of medications (eg, iontophoresis)
 - Electrical stimulation:
 - ❖ Electrical muscle stimulation (EMS), Functional electrical stimulation (FES), High voltage pulsed current (HVPC), Neuromuscular electrical stimulation (NMES) & Transcutaneous electrical nerve stimulation (TENS)
- Physical agents and mechanical modalities may include: *Physical agents:*
 - Cryotherapy:
 - ❖ Cold packs, Ice massage & Vapocoolant spray
 - Hydrotherapy:
 - ❖ Contrast bath, Pools & Whirlpool tanks
 - Sound agents:
 - ❖ Phonophoresis & Ultrasound
 - Thermotherapy
 - ❖ Dry heat, Hot packs & Paraffin baths
 - Mechanical modalities: Compression therapies (prefabricated)
 - ❖ Compression garments: Skill Category Description of Minimum Skills, Vasopneumatic compression devices, Taping & Compression bandaging (excluding lymphedema)

- Gravity-assisted compression devices:
 - ❖ Standing frame & Tilt table
- Mechanical motion devices:
 - ❖ Continuous passive motion (CPM)
- Traction devices
 - ❖ Intermittent, Positional & Sustained
- Documentation of all listed competencies in SOAP notes format

RECOMMENDED TEXT BOOKS

- *Therapeutics Exercises and Technique*, By: Carolyn Kisner & Lynn Allen Colby 4th 5th edition.
- *Therapeutics Exercises: Techniques for Intervention* By: Willim D.Banddy
- *Clinical decision making in therapeutic exercise* By: Patricia e. Sullivan & prudence d. Markos, Appleton & Lange Norwalk, Connecticut
- Hertling, D, and Kessler RM. Management of Common Musculoskeletal Disorders: Physical Therapy Principles and Methods. 3rd ed. Philadelphia, PA: WB Saunders 1995
- *Orthopaedic Physical Therapy* By: Donatelli & Michael J. Wooden 4th Edition.
- *Physiotherapy in Orthopaedics, A problem-solving approach* By: Atkinson, Coutts & Hassenkamp 2nd Edition
- *Clinical orthopaedic rehabilitation* By S. Brent. Brotzman & Kevin. E. Wilk, 2nd edition, Mosby publishers.
- *Management of Common Musculoskeletal Disorder* by: Hertling, D, and Kessler RM Physical Therapy Principles and Methods. 3rd ed. BPhiladelphia.PA: WB Sunders
- *Orthopedic Physical Assessment*. Magee, D.4th ed. Philadelphia PA: WB Sunders 1995
- *Physical Rehabilitations Assessments and Treatment*". By Susan B,O'Sullivan & Thomas J. Schmitz , 4th edition
- *Tidy's Physiotherapy* by Thomas A Skinner & Piercy

4. NEUROLOGICAL PHYSICAL THERAPY **INCLUDING SUPERVISED CLINICAL PRACTICE IV**

COURSE DESCRIPTION:

This course provides an in-depth exploration of the assessment and intervention procedures used with persons with various neurological pathologies. The focus of this course will be on neurological problems acquired in adulthood. Theories of motor control and motor learning will be studied and applied to assessment and treatment. Laboratories will be used to strengthen evaluation and intervention skills, especially the analysis of movement as well as planning, practicing, and modifying treatment.

The format of this course includes lectures, discussions, laboratory experiences, problem-based learning activities, community based experiences, and patient-centred case study learning activities. There will also be contact with persons with neurological dysfunction as part of this course. Clinical competence in the evaluation and treatment of persons with neurological impairments is to be developed. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

DETAILED COURSE OUT LINE

MEDICAL TERMINOLOGY REGARDING NEUROLOGICAL SYSTEM

ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM (BRIEF REVISION)

Brain, Spinal cord, CNS Support Structures, Neurons, PNS and Spinal Level Reflexes

NEUROLOGICAL EXAMINATION:

History, System review and Test and measures

INTERVENTIONS:

Introduction to Theories of Neurological Rehabilitation

- Remediation & facilitation approaches
 - Bobath-NDT
 - Motor relearning program(MRP)
 - Kabat, Knott, Voss (PNF)
 - Constraint induced movement therapy (CIMT)

Motor Control / Motor Learning Approach, Neural plasticity/ adoptability, Balance, Role of sensory system, Skill acquisition, Postural Control, Mobility Function, Task-Related Training Approach, Compensatory Training Approach and Normal Reach, Grasp and Manipulation

NEUROLOGICAL DYSFUNCTIONS

CVA (Stroke), Traumatic Brain Injury (TBI), Spinal Cord Injury (SCI), Degenerative Diseases (Progressive CNS disorders), Multiple Sclerosis (MS), Parkinson’s Disease (PD), Post Polio Syndrome (PPS), Cerebellar Disorders, Vestibular Disorders, Cranial Nerves Disorders and Poly Neuropathies

NEUROMUSCULAR DISORDERS

CASE HISTORIES

Principles of assessment and outcome measures, Documentation in SOAP notes format, Evidence based neurological Physical Therapy Treatment protocols

Practical/ Clinical Training:

In the laboratory sessions, neurological physiotherapy skills will be demonstrated and practiced. Various reflective case studies related to the neurological rehabilitation will be assigned to the students.

Note:

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a reflective record of achievements.

The log book shall also contain a record of the procedures which student would have performed/observed.

SUPERVISED CLINICAL PRACTICE IV

(To be covered in 3rd & 4th year classes. Examination in 4th year class)

NEUROLOGICAL

PROFESSIONAL YEAR	SUPERVISION	FOCUS	WARDS	COMPETENCIES
4 th	Supervised by trained PT	Evaluation, Examination, and Intervention	Neurological (IPD/OPD; surgical & non-surgical)	Listed below

COURSE DESCRIPTION:

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to neurological disorders. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric.) Students learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

COMPETENCIES:

EXAMINATION:

- Based on best available evidence select examination tests and measures that are appropriate for the patient/client.
- Perform posture tests and measures of postural alignment and positioning.
- Perform gait, locomotion and balance tests including quantitative and qualitative measures such as:
 - Balance during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
 - Balance (dynamic and static) with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
 - Gait and locomotion during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment to include:
 - ❖ Bed mobility, Transfers (level surfaces and floor), Wheelchair management, Uneven surfaces & Safety during gait, locomotion, and balance
 - Perform gait assessment including step length, speed, characteristics of gait, and abnormal gait patterns.
- Characterize or quantify body mechanics during self-care, home management, work, community, tasks, or leisure activities.
- Characterize or quantify ergonomic performance during work (job/school/play)
 - Dexterity and coordination during work, Safety in work environment, Specific work conditions or activities & Tools, devices, equipment, and workstations related to work actions, tasks, or activities
- Characterize or quantify environmental home and work (job/school/play) barriers:
 - Current and potential barriers, Physical space and environment & Community access
- Observe self-care and home management (including ADL and IADL)
- Measure and characterize pain to include:
 - Pain, soreness, and nociception
 - Specific body parts
- Recognize and characterize signs and symptoms of inflammation.
- Perform neurological tests and measures including:
- Perform arousal, attention and cognition tests and measures to characterize or quantify (including standardized tests and measures)
- Perform cranial and peripheral nerve integrity tests and measures
 - Motor distribution of the cranial nerves (eg, muscle tests, observations)
 - Motor distribution of the peripheral nerves (eg, dynamometry, muscle tests, observations, thoracic outlet tests)
 - Response to neural provocation (e.g. tension test, vertebral artery compression tests)
 - Response to stimuli, including auditory, gustatory, olfactory, pharyngeal, vestibular, and visual (eg, observations, provocation tests)
- Perform motor function tests and measures to include:
 - Dexterity, coordination, and agility
 - Initiation, execution, modulation and termination of movement patterns and voluntary postures
- Perform neuromotor development and sensory integration tests and measures to characterize or quantify:
 - Acquisition and evolution of motor skills, including age-appropriate development

- Sensorimotor integration, including postural responses, equilibrium, and righting reactions
- Perform tests and measures for reflex integrity including:
 - Deep reflexes (eg, myotatic reflex scale, observations, reflex tests)
 - Postural reflexes and reactions, including righting, equilibrium and protective reactions
 - Primitive reflexes and reactions, including developmental
 - Resistance to passive stretch
 - Superficial reflexes and reactions
 - Resistance to velocity dependent movement
- Perform sensory integrity tests and measures that characterize or quantify including :
 - Light touch, Sharp/dull, Temperature, Deep pressure, Localization, Vibration, Deep sensation, Stereognosis & Graphesthesia

EVALUATION:

Clinical reasoning, Clinical decision making, Synthesize available data on a patient/client expressed in terms of the International, Classification of Function, Disability and Health (ICF) model to include body functions and structures, activities, and participation, Use available evidence in interpreting the examination findings, Verbalize possible alternatives when interpreting the examination findings and Cite the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.

DIAGNOSIS:

Integrate the examination findings to classify the patient/client problem in terms of body functions and structures, and activities and participation (ie, practice patterns in the Guide) and Identify and prioritize impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

PROGNOSIS:

- Determine the predicted level of optimal functioning and the amount of time required to achieve that level.
- Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame including
 - Age, Medication(s), Socioeconomic status, Co-morbidities, Cognitive status, Nutrition, Social Support & Environment

PLAN OF CARE:

- Goal setting, Coordination of Care, Progression of care & Discharge
- Design a Plan of Care
 - Write measurable functional goals (short-term and long-term) that are time referenced with expected outcomes.
 - Consult patient/client and/or caregivers to develop a mutually agreed to plan of care.
 - Identify patient/client goals and expectations.
 - Identify indications for consultation with other professionals.
 - Make referral to resources needed by the patient/client (assumes knowledge of referral sources).
 - Select and prioritize the essential interventions that are safe and meet the specified functional goals and outcomes in the plan of care
 - ❖ identify precautions and contraindications,
 - ❖ provide evidence for patient-centered interventions that are identified and selected,
 - ❖ define the specificity of the intervention (time, intensity, duration, and frequency),

- ❖ Set realistic priorities that consider relative time duration in conjunction with family, caregivers, and other health care professionals).
 - Establish criteria for discharge based on patient goals and current functioning and disability.
- Coordination of Care
 - Identify who needs to collaborate in the plan of care.
 - Identify additional patient/client needs that are beyond the scope of physical therapist practice, level of experience and expertise, and warrant referral
 - Refer and discuss coordination of care with other health care professionals
 - Articulate a specific rationale for a referral.
 - Advocate for patient/client access to services.
- Progression of Care
 - Identify outcome measures of progress relative to when to progress the patient further.
 - Measure patient/client response to intervention.
 - Monitor patient/client response to intervention.
 - Modify elements of the plan of care and goals in response to changing patient/client status, as needed.
 - Make on-going adjustments to interventions according to outcomes including environmental factors and personal factors and, medical therapeutic interventions.
 - Make accurate decisions regarding intensity and frequency when adjusting interventions in the plan of care.
- Discharge Plan
 - Re-examine patient/client if not meeting established criteria for discharge based on the plan of care.
 - Differentiate between discharge of the patient/client, discontinuation of service, and transfer of care with re-evaluation.
 - Prepare needed resources for patient/client to ensure timely discharge, including follow-up care.
 - Include patient/client and family/caregiver as a partner in discharge.
 - Discontinue care when services are no longer indicated.
 - When services are still needed, seek resources and/or consult with others to identify alternative resources that may be available.
 - Determine the need for equipment and initiate requests to obtain.

INTERVENTIONS:

- Safety, Emergency Care, CPR and First Aid
- Standard Precautions
- Body Mechanics and
- Positioning
- Categories of Interventions
 - Safety, Cardiopulmonary Resuscitation Emergency Care, First Aid
 - ❖ Ensure patient safety and safe application of patient/client care, Perform first aid, Perform emergency procedures, Perform Cardiopulmonary Resuscitation (CPR) & Precautions
 - Demonstrate appropriate sequencing of events related to universal precautions.
 - Use Universal Precautions.
 - Determine equipment to be used and assemble all sterile and non-sterile materials.
 - Use transmission-based precautions.
 - Demonstrate aseptic techniques.
 - Apply sterile procedures.

- Properly discard soiled items.
- Body Mechanics and Positioning
 - Apply proper body mechanics (utilize, teach, reinforce, and observe)
 - Properly position, drape, and stabilize a patient/client when providing physical therapy.
- Interventions
 - Coordination, communication, and documentation may include:
 - Addressing required functions:
 - ❖ Establish and maintain an ongoing collaborative process of decision-making with patients/clients, families, or caregivers prior to initiating care and throughout the provision of services.
 - ❖ Discern the need to perform mandatory communication and reporting (eg, incident reports, patient advocacy and abuse reporting).
 - ❖ Follow advance directives.
 - Admission and discharge planning.
 - Case management.
 - Collaboration and coordination with agencies, including:
 - ❖ Home care agencies, Equipment suppliers, Schools, Transportation agencies & Payer groups
 - Communication across settings, including:
 - ❖ Case conferences, Documentation & Education plans
 - Cost-effective resource utilization.
 - Data collection, analysis, and reporting of:
 - ❖ Outcome data, Peer review findings & Record reviews
 - Documentation across settings, following APTA's Guidelines for Physical Therapy Documentation, including:
 - ❖ Elements of examination, evaluation, diagnosis, prognosis, and Intervention
 - ❖ Changes in body structure and function, activities and participation.
 - ❖ Changes in interventions
 - ❖ Outcomes of intervention
 - Interdisciplinary teamwork:
 - ❖ Patient/client family meetings, Patient care rounds & Case conferences
 - Referrals to other professionals or resources.
 - Patient/client-related instruction may include:
 - Instruction, education, and training of patients/clients and caregivers regarding:
 - Current condition, health condition, impairments in body structure and function, and activity limitations, and participation restrictions)
 - Enhancement of performance
 - Plan of care:
 - Risk factors for health condition, impairments in body structure and function, and activity limitations, and participation restrictions.
 - Preferred interventions, alternative interventions, and alternative modes of delivery
 - Expected outcome
 - Health, wellness, and fitness programs (management of risk factors)
 - Transitions across settings

THERAPEUTIC EXERCISE MAY INCLUDE PERFORMING:

Balance coordination and agility training:

Developmental activities training, Motor function (motor control and motor learning) training or retraining, Neuromuscular education or reeducation, Perceptual training, Posture

awareness training, Sensory training or retraining, Standardized, programmatic approaches and Task-specific performance training.

Neuromotor development training:

- Developmental activities training
- Motor training
- Movement pattern training
- Neuromuscular education or reeducation
 - Functional training in self-care and home management may include
 - Functional training in work (job/school/play), community, and leisure integration or reintegration may include
 - Activities of daily living (ADL) training: Bed mobility and transfer training, Age appropriate functional skills
 - Barrier accommodations or modifications
- Device and equipment use and training:
- Assistive and adaptive device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)
- Orthotic, protective, or supportive device or equipment training during self-care and home management
- Prosthetic device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)
- Functional training programs:
- Simulated environments and tasks
- Task adaptation
- Injury prevention or reduction:
- Safety awareness training during self-care and home management
- Injury prevention education during self-care and home management
- Injury prevention or reduction with use of devices and equipment
- Prescription, application, and, as appropriate, fabrication of devices and equipment may include:
- Adaptive devices:
 - Hospital beds, Raised toilet seats & Seating systems – prefabricated
- Assistive devices:
 - Canes, Crutches, Long-handled reachers, Static and dynamic splints – prefabricated, Walkers & Wheelchairs
- Orthotic devices:
 - Prefabricated braces, Prefabricated shoe inserts & Prefabricated splints
- Prosthetic devices (lower-extremity)
- Protective devices:
 - Braces, Cushions, Helmets & Protective taping
- Supportive devices
 - Prefabricated compression garments, Corsets, Elastic wraps, Neck collars, Slings, Supplemental oxygen - apply and adjust & Supportive taping
- Electrotherapeutic modalities may include:
 - Biofeedback
 - Electrotherapeutic delivery of medications (eg, iontophoresis)
 - Electrical stimulation: Electrical muscle stimulation (EMS), Functional electrical stimulation (FES) High voltage pulsed current (HVPC) Neuromuscular electrical stimulation (NMES) Transcutaneous electrical nerve stimulation (TENS)
- Physical agents and mechanical modalities may include: *Physical agents*:

- Cryotherapy:
 - Cold packs, Ice massage & Vapocoolant spray
- Hydrotherapy
 - Contrast bath, Pools & Whirlpool tanks
- Sound agents:
 - Phonophoresis & Ultrasound
- Thermotherapy:
 - Dry heat, Hot packs & Paraffin baths
- Mechanical modalities:
 - Compression therapies (prefabricated)
 - ❖ Compression garments: Skill Category Description of Minimum Skills
 - ❖ Vasopneumatic compression devices
 - ❖ Taping
 - ❖ Compression bandaging (excluding lymphedema)
 - Gravity-assisted compression devices:
 - ❖ Standing frame & Tilt table
 - Mechanical motion devices :
 - ❖ Continuous passive motion (CPM)
- Traction devices :
 - ❖ Intermittent, Positional & Sustained
- Documentation of all listed competencies in SOAP notes format

RECOMMENDED TEXT BOOKS:

- Neurological Physiotherapy Bases of evidence for practice *Treatment and management of patients described by specialist clinicians* by Cecily Partridge
- *Neurological Physiotherapy A problem-solving approach* By Susan Edwards, second edition.
- *Neurologic examination* By Robert j. Schwartzman , first edition

5. COMMUNITY MEDICINE & RESEARCH

METHODOLOGY

INTRODUCTION

History of Community Medicine, Definition, concept of Health & illness of diseases and Natural History of diseases, levels & prevention

ENVIRONMENTAL SANITATION & MEDICAL ENTOMOLOGY

Water, waste disposal and Environmental problems & pollution

GENETICS

Prevention of genetic diseases and Genetic counseling

GENERAL EPIDEMIOLOGY

DESCRIPTIVE EPIDEMIOLOGY

Time, Place and Person

ANALYTICAL EPIDEMIOLOGY

Case control and Cohort studies

**EXPERIMENTAL EPIDEMIOLOGY RANDOMIZED CONTROL TRIAL
SYSTEMIC EPIDEMIOLOGY**

Vector borne diseases, Water borne diseases, Air born diseases, Contact diseases and Diseases of major public health and its importance alongwith national health programmes wherever Applicable.

NON-COMMUNICABLE DISEASES:

Diabetes, Hypertension, Heart diseases, Blindness, Accidents, Geriatric problems

OCCUPATIONAL HEALTH PROBLEMS:

M.C.H. and family welfare Programmes, Health care delivery in the community, National Health Policy, National Health programmes including, Rehabilitation, Evaluation of Health, Programmes, Health Planning Organization,

STRUCTURE OF HEALTH CARE SYSTEM IN THE COUNTRY

P.H.C. district level, State level and central level., P.H.C. Organization and Function and Role of Non Governmental Organization

HEALTH EDUCATION

Principles of Health Promotion, Methods, approaches and media for, I.E.C (Information, Education & Communication), Medical and Health/Information system, Mental Health and Nutrition.

TEACHING METHODOLOGY

Types of health services, public, private, scientific, traditional health system, Organization of public services in health, central, provincial and local levels, Burden of disease, concept of health needs for care, Levels of health care, primary, secondary and tertiary, Planning of health services, Organization of health services, Implementation and evaluation of health services, Management of resources in health services, Financial management, Health education and social cultural concept in health, Ethics in Health Services, Theories of learning facilitations Cognitive, Psychomotor domain & effective domain and Bloom taxonomy.

RESEARCH METHODOLOGY

DETAILED COURSE OUTLINE

RESEARCH FUNDAMENTALS:

Rehabilitation Research, Theory in Rehabilitation Research, Research Ethics

RESEARCH DESIGN:

Research Problems, Questions, and Hypotheses, Research Paradigms, Design Overview and Research Validity

EXPERIMENTAL DESIGNS:

Group Designs and Single-System Design

NON EXPERIMENTAL RESEARCH:

Overview of Non experimental Research, Clinical Case Reports, Qualitative Research, Epidemiology, Outcomes Research and Survey Research.

MEASUREMENT:

Measurement Theory and Methodological Research.

DATA ANALYSIS:

Statistical Reasoning, Statistical Analysis of Differences; The basics, Statistical Analysis of Differences; Advanced and special Techniques, Statistical Analysis of Relationships; The basics and Statistical Analysis of Relationships; Advanced and special Techniques

BEING A CONSUMER

Locating the Literature, Evaluating Evidence One Article at a time and Synthesizing Bodies of Evidence

IMPLEMENTING RESEARCH:

Implementing a Research Project and Publishing and Presenting Research

RECOMMENDED TEXT BOOK:

- *Essentials of clinical research* By Stephan P. Glasser
- *Rehabilitation Research (Principles and Applications)* 3rd Edition By Elizabeth Domholdt
- *Textbooks of Community Medicine*, by Prof. H. A. Siddique (2nd Edition).
- *Parks text book of preventive & social medicine* –K Park

6. RADIOLOGY & DIAGNOSTIC IMAGING

COURSE DESCRIPTION:

This course covers the study of common diagnostic and therapeutic imaging tests. At the end of the course students will be aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management. The course will cover that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

FROM THE WATCHING OF SHADOWS:

History, A New Kind of Ray, How a Medical Image Helps, What Imaging Studies Reveal, Radiography(x-rays), Fluoroscopy, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Ultrasound, Endoscopy

RADIOGRAPHY AND MAMMOGRAPHY:

Equipment components, Procedures for Radiography & Mammography, Benefits versus Risks and Costs, Indications and contraindications

FLUOROSCOPY:

What is Fluoroscopy?, Equipment used for fluoroscopy, Indications and Contra indications, How it helps in diagnosis, The Findings in Fluoroscopy, Benefits versus Risks and Costs

COMPUTED TOMOGRAPHY (CT):

What is Computed Tomography?, Equipment used for Computed Tomography, Indications and Contra indications, How it helps in diagnosis, The Findings in Computed Tomography and Benefits versus Risks and Costs.

MAGNETIC RESONANCE IMAGING (MRI)

What is MRI?, Equipment used for MRI, Indications and Contra indications, How it helps in diagnosis, The Findings in MRI, Benefits versus Risks and Costs and Functional MRI.

ULTRASOUND:

What is Ultrasound? Equipment used for Ultrasound, Indications and Contra indications, How it helps in diagnosis, The Findings in Ultrasound and Benefits versus Risks and Costs.

ENDOSCOPY:

What is Endoscopy? Equipment used for Endoscopy, Indications and Contra indications, How it helps in diagnosis, The Findings in Endoscopy and Benefits versus Risks and Costs.

NUCLEAR MEDICINE:

What is Nuclear Medicine? Equipment used for Nuclear Medicine, Indications and Contra indications, How it helps in diagnosis and Benefits versus Risks and Costs.

INTERVENTIONAL RADIOLOGY

PRACTICAL/ CLINICAL TRAINING

In the laboratory sessions, Supervised Radiology and Diagnostic Imaging skills shall be taught, demonstrated and practiced. Various reflective case studies related to Radiology will be assigned to the students. Practical will mainly include the following:

- Radiography(x-rays)
- Fluoroscopy
- Computed Tomography (CT)
- Magnetic Resonance Imaging (MRI)
- Ultrasound
- Endoscopy
- Interventional Radiology
- Nuclear Medicine

Note:

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place.

It is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed.

Recommended Text Book:

- Looking Within (How X-ray, CT, MRI, Ultrasound and Other Medical Images Created and How They Help Physicians Save Lives) By Anthony Brinton Wolbarst
- *A-Z of Musculoskeletal and Trauma Radiology* By: James R. D. Murray
- *Essentials of Radiology* by Fred. A. Mettler, 2nd edition.
- *Imaging in rehabilitation*, By: Terry. R. Malone, Charles Hazle & Michael L. Grey. McGraw Hill Publishers.

7. PROSTHETICS & ORTHOTICS AND HUMAN DEVELOPMENT, COMMUNITY BASED REHABILITATION *

Part A. PROSTHETICS & ORTHOTICS

COURSE DESCRIPTION:

This course intends to study prosthetic and orthotic management as applied to a variety of patient populations across a life span. It also addresses the considerations of various pathologies and medical, surgical management to formulate appropriate patient examinations, evaluation, diagnosis, prognosis and intervention that are consistent with physical therapy practice guidelines.

Principles of normal biomechanics, pathomechanics, physiology and Pathophysiology will be a major focus for evaluation, intervention and education of the vascular, neuromuscular, and / or musculoskeletal compromised patient who may utilize prosthetic or orthotic devices. Basic principles of mechanical physics and material characteristics will be applied.

DETAILED COURSE OUTLINE:

ORTHOTICS

INTRODUCTION TO ORTHOTICS

Basic Terminology, Historical Background, Factors In Prescription Orthotics, Nomenclature of Orthotics, Biomechanical Principles, Materials Used in Orthotics Manufacturing and Methods of Construction

FOOT ORTHOSES

Shoe Style, Parts of Shoes, Special Purpose Shoes, Foot Examination, Orthotics Interventions, Fabrication Options, Pediatric Foot Orthoses and Guideline for Prescription Foot Orthoses

ANKLE FOOT ORTHOSES

Plastic Ankle Foot Orthoses, Lather Metal Ankle Foot Orthoses, Composite Materials, Weight Relieving Ankle Foot Orthoses, Support (Fabric , Leather, Gel And Air), Contracture Reducing Ankle Foot Orthoses and Guidelines for Prescription Ankle Foot Orthoses.

KNEE ANKLE FOOT ORTHOSES AND KNEE ORTHOSES

Plastic Metal Knee Ankle Foot Orthoses, Knee Immobilizer, Supra- Condylar Knee Ankle Foot Orthoses, Weight Relieving Orthoses, Fracture Orthoses, Lather Metal Knee Ankle Foot Orthoses, Knee Orthoses and Guidelines For Prescription Knee Ankle Foot Orthoses.

ORTHOSES FOR PARAPLEGIA AND HIP DISORDERS

Paraplegia, Standing Frames, Orthoses Designed For Ambulation, Functional Electrical Stimulation, Specific Devices for Paraplegia, Hip Orthoses, Guidelines for Prescription

EVALUATION PROCEDURES FOR LOWER LIMB ORTHOSES

Need of Evaluation, Static Evaluation, Dynamic Evaluation, Gait Disorders with Orthoses Usage

TRUNK AND CERVICAL ORTHOSES

Trunk Orthoses, Trunk Orthoses Evaluation, Scoliosis and Kyphosis Orthoses, Scoliosis and Kyphosis Orthoses Evaluation, Cervical Orthoses, Cervical Orthoses Evaluation and Guideline for Prescription.

UPPER LIMB ORTHOSES

Hand And Wrist Hand Orthoses, Forearm And Elbow Orthoses, Shoulder Orthoses, Fabrication Option, Upper limb Orthoses Evaluation (Hand, Wrist, Fingers, Shoulder and Elbow) and Guideline For Prescription

ORTHOSES FOR BURNS AND OTHER SOFT TISSUE DISORDERS

Importance of Orthoses for Burns and Other Soft Tissue Disorders, Orthoses for Burn Management and Orthoses for Patients with Soft Tissues Problem Associated With Neuromuscular Disorders.

GOAL SETTING AND TREATMENT PLAN

Long Term Goals, Short Term Goals, Treatment Planning, Criteria for Discharge and Care of Orthoses

PROSTHETICS

EARLY MANAGEMENT

Clinic Team Approach to Rehabilitation , Amputation Surgery: Osteomyoplastic Reconstructive Technique, Postoperative Management, Pain Management, Skin Disorders and Their Management and Psychological Consequences of Amputation

REHABILITATION OF ADULTS WITH LOWER-LIMB AMPUTATIONS

Partial Foot and Syme's Amputations and Prosthetic Designs, Transtibial Prosthetic Designs, Transfemoral Prosthetic Designs, Hip Disarticulations and Transpelvic Prosthetic Designs, Basic Lower-Limb Prosthetic Training

REHABILITATION OF ADULTS WITH UPPER-LIMB AMPUTATIONS

Body-Powered Upper-Limb Prosthetic Designs, Upper-Limb Externally Powered Prosthetic Designs, Training Patients with Upper-Limb Amputations

BEYOND THE BASICS

Special Considerations with Children, Rehabilitation Outcomes, Adaptive Prostheses for Recreation, Future Prosthetic Advances and Challenges and Future Surgical and Educational Advances and Challenges.

RECOMMENDED TEXT BOOKS

- Prosthetics and Patient Management: A Comprehensive Clinical Approach By: Kevin Carroll ; Joan Edelstein
- Orthotics a comprehensive clinical approach By: Joan E Eldestein& Jan Bruckner

**Part B. HUMAN DEVELOPMENT ,COMMUNITY BASED
REHABILITATION ***

COURSE DESCRIPTION:

This course intends to give the physiotherapy students basic knowledge about the human development from new life to adulthood. It deals with scientific study of processes of change in stability throughout the human life span; it focuses on the physical, psychosocial and cognitive development from conception to late adulthood

DETAILED COURSE OUT LINE

INTRODUCTION

Forming a New Life, The Study of Human Development, Theory and Research, Physical Development during the First Three Years, Cognitive Development during the First Three Years and Psychosocial Development during the First Three Years.

EARLY CHILDHOOD

Physical and Cognitive Development in Early Childhood, Psychosocial Development in Early Childhood, Physical and Cognitive Development in Middle Childhood, Psychosocial Development in Middle Childhood

ADOLESCENCE

Physical and Cognitive Development in Adolescence, Psychosocial Development in Adolescence, Physical and Cognitive Development in Young Adulthood and Psychosocial Development in Young Adulthood

MIDDLE ADULTHOOD

Physical and Cognitive Development in Middle Adulthood, Psychosocial Development in Middle Adulthood, Physical and Cognitive Development in Late Adulthood, Psychosocial Development in Late Adulthood and Dealing with Death and Bereavement

HEALTH IN THE COMMUNITY

Handicap and the community, Nutrition and mal nutrition, Breast feeding, Immunization and Oral rehydration

NORMAL BODY FUNCTION

Normal development and Growth and weight of children

CONDITIONS AND TREATMENTS

Cerebral palsy in children, Down syndrome, Mental handicap, Hydro-cephalus, Spin bifida, Poliomyelitis, Blindness, Deafness, Strokes, Spinal cord injuries, Amputation

MANAGEMENT OF PATIENTS

Assessment and recoding, Fits, Contractures, Pressure sores, Urine and bowel management, Chest infection, Feeding children with cerebral palsy, Toy making workshop and Welfare assistance.

RECOMMENDED TEXT BOOKS:

- *Introduction to Special Education* By: Allen and Beacon,(1992), A Simon & Superter Comp.Needham Heights
- *Exceptional Children*, Howard, W.I. (1988); Columbus, Merill.
- *Exceptional Children and Adults*, Patton, J.R. (1991); Boston Scott Foresmen and Co.
- *Exceptional Children in Focus* by: Patton J.R. (1991); New York, Macmillan pub. Co
- *Community based rehabilitation worker manual*, marion loveday, global health publication

FINAL YEAR DPT

1. CARDIOPULMONARY PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICE V
2. EMERGENCY PROCEDURES & PRIMARY CARE IN PHYSICAL THERAPY
3. SURGERY & INTEGUMENTARY PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICE VI
4. PAEDIATRIC PHYSICAL THERAPY AND PHYSICAL THERAPY IN GYNE & OBSTETRICS *
5. GERONTOLOGY & GERIATRIC PHYSICAL THERAPY*
6. SPORTS PHYSICAL THERAPY

REPORT WRITING (IN FINAL YEAR)

Note:

*** Question paper will be comprise of 02 parts, attempted on 02 separate answer sheets**

1. CARDIOPULMONARY PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICE V

COURSE DESCRIPTION:

This course includes a study of anatomy and physiology of the cardiovascular, pulmonary, and lymphatic systems and pathological changes of the systems and function, including diagnostic tests and measurements. This course discuss relevant testes and measures for determining impairment and differentiating the diagnosis based on the specificity and sensitivity of the assessment instruments as related to patients with cardiovascular, pulmonary, and lymphatic systems disorders.

The use of evidence-based physical therapy intervention for cardiovascular, pulmonary, and lymphatic systems disorders is emphasized Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

DETAILED COURSE OUTLINE

MEDICAL TERMINOLOGY REGARDING CARDIOPULMONARY SYSTEM

INTRODUCTION

ANATOMY AND PHYSIOLOGY

Anatomy of the Cardiovascular and Respiratory Systems and Physiology of the Cardiovascular and Respiratory Systems

PATHO-PHYSIOLOGY

Ischemic Cardiac Condition, Cardiac Muscle Dysfunction, Restrictive Lung Dysfunction, Chronic Obstructive Pulmonary Diseases and Cardiopulmonary Implications of Specific Diseases.

DIAGNOSTIC TESTS AND PROCEDURES

Cardiovascular Diagnostic Tests and procedures, Electro cardio-graphy and Pulmonary Diagnostic Tests and Procedures

SURGICAL INTERVENTIONS, MONITORING AND SUPPORT

Cardiovascular and Thoracic interventions, Thoracic Organ Transplantation; Heart, Lung, and heart-Lung and Monitoring and Life-Support Equipment

PHARMACOLOGY

Cardiovascular Medications and Pulmonary Medications

CARDIOPULMONARY ASSESSMENT AND INTERVENTION

Assessment Procedures, Treatment of Acute Cardiopulmonary Conditions, Therapeutic Interventions in Cardiac Rehabilitation and Prevention, Pulmonary Rehabilitation, Outcome Measures

THE NEEDS OF SPECIFIC PATIENTS

INTENSIVE CARE FOR THE CRITICALLY ILL ADULT

Assessment of the critically ill patient in the intensive care unit (ICU), Mechanical ventilation - implications for physiotherapy, Musculoskeletal problems, Patient groups with specific needs, Systemic inflammatory response syndrome (SIRS) and sepsis, acute respiratory distress syndrome (ARDS), Disseminated intravascular coagulation (DIC), Inhalation burns, Trauma, Neurological conditions requiring intensive care, Physiotherapy techniques, Emergency situations

PULMONARY REHABILITATION

Definition and aims of pulmonary rehabilitation, Benefits of pulmonary rehabilitation, Setting up pulmonary rehabilitation, Resources, Selection of patients, Patient assessment for pulmonary rehabilitation, Structure of pulmonary rehabilitation, Pulmonary rehabilitation team, Exercise component and Outcome measures.

CARDIAC REHABILITATION

- Introduction
- Goals of cardiac rehabilitation
- Cardiac rehabilitation team
- Role of the physiotherapist
- Rationale for cardiac rehabilitation
 - Early ambulation, Exercise training, Secondary prevention & Education
- Manifestations of ischaemic heart disease
 - Cardiac arrest, Angina pectoris & Myocardial infarction
- Cardiac surgery
- Drugs to control the cardiovascular system
- Physiotherapy
 - Assessment, Recording, Treatment, Outcome evaluation & Complications of exercise
- Other considerations
 - The older patient, Cardiac failure, Valvular heart disease, Congenital heart disease, Compliance, Cost-effectiveness & Legal aspects

CARDIOPULMONARY TRANSPLANTATION

Introduction, Assessment, The transplantation process, Donors, Operative procedures, Postoperative care, Rejection of the transplanted organs, Immunosuppression, Infections, Special considerations for the physiotherapist, Denervation of the heart/lungs, Immunosuppression, Infection/rejection, Physiotherapy management

HYPERVENTILATION

Introduction, Signs and symptoms, Causes of hyperventilation, Personality, Diagnostic tests, Breathing patterns, Treatment, The assessment, Treatment plan, Breathing education, Breathing pattern re-education, Compensatory procedures in the short term, Planned rebreathing, Speech, Home programme, Exercise and fitness programmes and Group therapy.

BRONCHIECTASIS, PRIMARY CILIARY DYSKINESIA AND CYSTIC FIBROSIS

- Bronchiectasis
 - Medical management, Physiotherapy & Evaluation of physiotherapy
- Primary ciliary dyskinesia
 - Medical management, Physiotherapy & Evaluation of physiotherapy
- Cystic fibrosis

- Medical management, Physiotherapy, Evaluation of physiotherapy & Continuity of care

CASE HISTORIES

- Principles of assessment and outcome measures
- Documentation in SOAP notes format
- Evidence based cardiopulmonary Physical Therapy Treatment protocols

SUPERVISED CLINICAL PRACTICE V (To be covered in 4th & Final Year. Examination in Final Year) **CARDIOVASCULAR AND PULMONARY**

PROFESSIONAL YEAR	SUPERVISION	FOCUS	WARDS	COMPETENCIES
5 th	Supervised by trained PT	Evaluation, Examination, and Intervention	Cardiovascular and pulmonary (IPD/OPD; surgical & non-surgical)	Listed below

COURSE DESCRIPTION:

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to cardiovascular and pulmonary disorders. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric,.) Students learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

COMPETENCIES:

EXAMINATION:

- Based on best available evidence select examination tests and measures that are appropriate for the patient/client.
- Perform posture tests and measures of postural alignment and positioning.
- Perform gait, locomotion and balance tests including quantitative and qualitative measures such as:
 - Balance during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
 - Balance (dynamic and static) with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
 - Gait and locomotion during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment to include:
 - ❖ Bed mobility, Transfers (level surfaces and floor), Wheelchair management, Uneven surfaces & Safety during gait, locomotion, and balance
 - Perform gait assessment including step length, speed, characteristics of gait, and abnormal gait patterns.
- Characterize or quantify body mechanics during self-care, home management, work, community, tasks, or leisure activities.

- Characterize or quantify ergonomic performance during work (job/school/play):
 - Dexterity and coordination during work
 - Safety in work environment
 - Specific work conditions or activities
 - Tools, devices, equipment, and workstations related to work actions, tasks, or activities
- Characterize or quantify environmental home and work (job/school/play) barriers:
 - Current and potential barriers
 - Physical space and environment
 - Community access
- Observe self-care and home management (including ADL and IADL)
- Measure and characterize pain to include:
 - Pain, soreness, and nociception
 - Specific body parts
- Recognize and characterize signs and symptoms of inflammation.
- Perform cardiovascular/pulmonary tests and measures including:
 - Heart rate
 - Respiratory rate, pattern and quality
 - Blood pressure
 - Aerobic capacity test (functional or standardized) such as the 6-minute walk test
 - Pulse Oximetry
 - Breath sounds – normal/abnormal
 - Response to exercise (RPE)
 - Signs and symptoms of hypoxia
 - Peripheral circulation (deep vein thrombosis, pulse, venous stasis, lymphedema)

EVALUATION:

Clinical reasoning, Clinical decision making, Synthesize available data on a patient/client expressed in terms of the International Classification of Function, Disability and Health (ICF) model to include body functions and structures, activities, and participation., Use available evidence in interpreting the examination findings, Verbalize possible alternatives when interpreting the examination findings and Cite the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.

DIAGNOSIS:

Integrate the examination findings to classify the patient/client problem in terms of body functions and structures, and activities and participation (ie, practice patterns in the Guide) and Identify and prioritize impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

PROGNOSIS:

- Determine the predicted level of optimal functioning and the amount of time required to achieve that level.
- Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame including
 - Age
 - Medication(s)
 - Socioeconomic status
 - Co-morbidities
 - Cognitive status
 - Nutrition
 - Social Support

- Environment

PLAN OF CARE:

- Goal setting
- Coordination of Care
- Progression of care
- Discharge
- Design a Plan of Care
 - Write measurable functional goals (short-term and long-term) that are time referenced with expected outcomes.
 - Consult patient/client and/or caregivers to develop a mutually agreed to plan of care.
 - Identify patient/client goals and expectations.
 - Identify indications for consultation with other professionals.
 - Make referral to resources needed by the patient/client (assumes knowledge of referral sources).
 - Select and prioritize the essential interventions that are safe and meet the specified functional goals and outcomes in the plan of care (ie, (a) identify precautions and contraindications, (b) provide evidence for patient-centered interventions that are identified and selected, (c) define the specificity of the intervention (time, intensity, duration, and frequency), and (d) set realistic priorities that consider relative time duration in conjunction with family, caregivers, and other health care professionals).
 - Establish criteria for discharge based on patient goals and current functioning and disability.
- Coordination of Care
- Identify who needs to collaborate in the plan of care.
- Identify additional patient/client needs that are beyond the scope of physical therapist practice, level of experience and expertise, and warrant referral.
- Refer and discuss coordination of care with other health care professionals.
- Articulate a specific rationale for a referral.
- Advocate for patient/client access to services.
- Progression of Care
- Identify outcome measures of progress relative to when to progress the patient further.
- Measure patient/client response to intervention.
- Monitor patient/client response to intervention.
- Modify elements of the plan of care and goals in response to changing patient/client status, as needed.
- Make on-going adjustments to interventions according to outcomes including environmental factors and personal factors and, medical therapeutic interventions.
- Make accurate decisions regarding intensity and frequency when adjusting interventions in the plan of care.
- Discharge Plan
- Re-examine patient/client if not meeting established criteria for discharge based on the plan of care.
- Differentiate between discharge of the patient/client, discontinuation of service, and transfer of care with re-evaluation.
- Prepare needed resources for patient/client to ensure timely discharge, including follow-up care.
- Include patient/client and family/caregiver as a partner in discharge.
- Discontinue care when services are no longer indicated.

- When services are still needed, seek resources and/or consult with others to identify alternative resources that may be available.
- Determine the need for equipment and initiate requests to obtain.

INTERVENTIONS:

- Safety, Emergency Care, CPR and First Aid
- Standard Precautions
- Body Mechanics and Positioning
- Categories of Interventions
 - Safety, Cardiopulmonary Resuscitation Emergency Care, First Aid
 - ❖ Ensure patient safety and safe application of patient/client care, Perform first aid, Perform emergency procedures & Perform Cardiopulmonary Resuscitation (CPR).
- Precautions
 - Demonstrate appropriate sequencing of events related to universal precautions.
 - Use Universal Precautions.
 - Determine equipment to be used and assemble all sterile and non-sterile materials.
 - Use transmission-based precautions.
 - Demonstrate aseptic techniques.
 - Apply sterile procedures.
 - Properly discard soiled items.
- Body Mechanics and Positioning
 - Apply proper body mechanics (utilize, teach, reinforce, and observe).
 - Properly position, drape, and stabilize a patient/client when providing physical therapy.
- Interventions
 - Coordination, communication, and documentation may include: Addressing required functions:
 - Establish and maintain an ongoing collaborative process of decision-making with patients/clients, families, or caregivers prior to initiating care and throughout the provision of services.
 - Discern the need to perform mandatory communication and reporting (eg, incident reports, patient advocacy and abuse reporting).
 - Follow advance directives
 - ❖ Admission and discharge planning & Case management.
 - Collaboration and coordination with agencies, including:
 - (1) Home care agencies
 - (2) Equipment suppliers
 - (3) Schools
 - (4) Transportation agencies
 - (5) Payer groups
 - Communication across settings, including:
 - (1) Case conferences
 - (2) Documentation
 - (3) Education plans
 - Cost-effective resource utilization.
 - Data collection, analysis, and reporting of:
 - (1) Outcome data
 - (2) Peer review findings
 - (3) Record reviews

- H. Documentation across settings, following APTA's Guidelines for Physical Therapy Documentation, including:
 - (1) Elements of examination, evaluation, diagnosis, prognosis, and Intervention
 - (2) Changes in body structure and function, activities and participation.
 - (3) Changes in interventions
 - (4) Outcomes of intervention
 - Interdisciplinary teamwork:
 - (1) Patient/client family meetings
 - (2) Patient care rounds
 - (3) Case conferences
- J. Referrals to other professionals or resources.
- K. Patient/client-related instruction may include:
 - A. Instruction, education, and training of patients/clients and caregivers regarding:
 - (1) Current condition, health condition, impairments in body structure and function, and activity limitations, and participation restrictions)
 - (2) Enhancement of performance
 - (3) Plan of care:
 - a. Risk factors for health condition, impairments in body structure and function, and activity limitations, and participation restrictions.
 - b. Preferred interventions, alternative interventions, and alternative modes of delivery
 - c. Expected outcomes
 - (4) Health, wellness, and fitness programs (management of risk factors)
 - (5) Transitions across settings

Therapeutic exercise may include performing:

- Aerobic capacity/endurance conditioning or reconditioning:
 - (1) Gait and locomotor training
 - (2) Increased workload over time (modify workload progression)
 - (3) Movement efficiency and energy conservation training
 - (4) Walking and wheelchair propulsion programs
 - (5) Cardiovascular conditioning programs
- B. Relaxation:
 - (1) Breathing strategies
 - (2) Movement strategies
 - (3) Relaxation techniques
- C. Airway clearance techniques may include:
 - A. Breathing strategies:
 - (1) Active cycle of breathing or forced expiratory techniques
 - (2) Assisted cough/huff techniques
 - (3) Paced breathing
 - (4) Pursed lip breathing
 - (5) Techniques to maximize ventilation (e.g, maximum inspiratory hold, breath stacking, manual hyperinflation)
 - B. Manual/mechanical techniques:
 - (1) Assistive devices
 - C. Positioning:
 - (1) Positioning to alter work of breathing
 - (2) Positioning to maximize ventilation and perfusion

- Functional training in self-care and home management may include:
- Functional training in work (job/school/play), community, and leisure integration or reintegration may include:
 - Activities of daily living (ADL) training:
 - (1) Bed mobility and transfer training
 - (2) Age appropriate functional skills
 - Barrier accommodations or modifications
 - Device and equipment use and training:
 - (1) Assistive and adaptive device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)
 - (2) Orthotic, protective, or supportive device or equipment training during self-care and home management
 - (3) Prosthetic device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)
- Functional training programs:
 - (1) Simulated environments and tasks
 - (2) Task adaptation
- Injury prevention or reduction:
 - (1) Safety awareness training during self-care and home management
 - (2) Injury prevention education during self-care and home management
 - (3) Injury prevention or reduction with use of devices and equipment
- Prescription, application, and, as appropriate, fabrication of devices and equipment may include:
 - Adaptive devices:
 - (1) Hospital beds
 - (2) Raised toilet seats
 - (3) Seating systems – prefabricated
 - Assistive devices:
 - (1) Canes
 - (2) Crutches
 - (3) Long-handled reachers
 - (4) Static and dynamic splints – prefabricated
 - (5) Walkers
 - (6) Wheelchairs
 - Orthotic devices:
 Prefabricated braces, Prefabricated shoe inserts & Prefabricated splints
 - Prosthetic devices (lower-extremity)
 - Protective devices:
 Braces, Cushions, Helmets & Protective taping
 - Supportive devices:
 Prefabricated compression garments, Corsets, Elastic wraps, Neck collars, Slings, Supplemental oxygen - apply and adjust & Supportive taping
- Electrotherapeutic modalities may include:
 - A. Biofeedback
 - B. Electrotherapeutic delivery of medications (eg, iontophoresis)
 - C. Electrical stimulation:
 - Electrical muscle stimulation (EMS), Functional electrical stimulation (FES), High voltage pulsed current (HVPC), Neuromuscular electrical stimulation (NMES) & Transcutaneous electrical nerve stimulation (TENS)
- Physical agents and mechanical modalities may include: *Physical agents:*

- A. Cryotherapy:
Cold packs, Ice massage & Vapocoolant spray
- B. Hydrotherapy:
Contrast bath, Pools & Whirlpool tanks
- C. Sound agents:
Phonophoresis & Ultrasound
- D. Thermotherapy:
Dry heat, Hot packs & Paraffin baths

Mechanical modalities:

- A. Compression therapies (prefabricated)
 - (1) Compression garments
 - Skill Category Description of Minimum Skills
 - (2) Vasopneumatic compression devices
 - (3) Taping & Compression bandaging (excluding lymphedema)
- B. Gravity-assisted compression devices:
Standing frame & Tilt table
- C. Mechanical motion devices:
Continuous passive motion (CPM)
- D. Traction devices:
Intermittent, Positional & Sustained
 - Documentation of all listed competencies in SOAP notes format

Recommended Text Book:

- Essentials of Cardiopulmonary Physical Therapy (2nd Edition) By Hillegass and Sadowsky
- *Physiotherapy for respiratory and cardiac problems*, By: Jennifer A. Pryor & Barbara A. Webber, 2nd edition, Churchill Livingstone.
- *Tidy's Physiotherapy* by Thomas A Skinner & Piercy
- *Therapeutics Exercises and Technique* by Carolyn Kisner & Laynn Allen Colby 4th 5th edition
- *Cash's Text book of General Medical & Surgical Condition for Physiotherapists* by Patrica A. Downie
- *Cash's Textbook of chest , heart and vascular condition for physiotherapist* by Patrica A. Downie

2. EMERGENCY PROCEDURES & PRIMARY CARE IN PHYSICAL THERAPY

COURSE DESCRIPTION:

This course provides the student with all of the skills necessary to take appropriate action in an emergency in any practice setting. Basic life support, advanced cardiac life support, and first aid and emergency preparedness are the content areas of this course. The course is designed to provide knowledge and skill in emergency techniques and in the application of appropriate action necessary to take care of the patient/client.

DETAILED COURSE OUT LINE

ORGANIZATION AND ADMINISTRATION OF EMERGENCY CARE

Develop and implement emergency action plan, Emergency team, Initial patient assessment and care, Emergency communication, Emergency equipment and supplies, Venue location, Emergency transportation, Emergency care facilities and Legal need and documentation

PHYSICAL EXAMINATION OF THE CRITICALLY INJURED PATIENT/ATHLETE

Scene assessment and safety, Body substance isolation precautions, Primary survey, Secondary survey and Vital signs

AIRWAY MANAGEMENT

Air way anatomy, Air way compromise, Oxygen therapy and Advanced airway devices

SUDDEN CARDIAC DEATH

Incidence and etiology of sudden death in general population, Sudden cardiac arrest in athletes, Screening and recognition of cardiac warning signs, Preparation for cardiac emergencies and Management of sudden cardiac arrest

HEAD INJURIES

Pathomechanics of brain injuries, Types of pathology, Classification of cerebral concussion, Cerebral contusion, Cerebral hematoma, Second impact syndrome, Initial on site assessment, Sideline assessment, Special tests for assessment of coordination, Special tests for assessment of cognition, Other tests, Medications and Wake ups and rest.

EMERGENCY CARE OF CERVICAL SPINE INJURIES

Anatomy, Mechanism of injuries, Injuries to the spinal cord, Assessment and Management

EMERGENT GENERAL MEDICAL CONDITIONS

Sudden death, Exercise induced anaphylaxis, Acute asthma, Diabetes mellitus, Mononucleosis, Sickle cell traits and Hypertension.

ENVIRONMENT-RELATED CONDITIONS

Heat related emergencies and their prevention, Cold related injuries, Lightning and Altitude related emergencies

ORTHOPEDIC INJURIES

Basic emergency medical care, Fundamentals of skeletal fractures, Splinting techniques, Fractures and dislocations of upper extremity, Fractures and dislocations of lower extremity and Fractures and dislocations of spine

ABDOMINAL INJURIES

Initial evaluation, Specific injuries: abdominal wall contusions, splenic injuries, liver injuries, renal injuries, intestinal injuries, pancreatic injuries and Non-traumatic abdominal injuries: Appendicitis, ectopic pregnancy.

THORACIC INJURIES

Assessment and Management of different Types of injuries: fractures, Pneumothorax, hemothorax, pulmonary embolism.

SPINE BOARDING IN CHALLENGING ENVIRONMENTS

The soft foam pit in gymnastics, The pole vault pit, The swimming pole and diving well and The ice hockey rink

THE PSYCHOLOGICAL AND EMOTIONAL IMPACT OF EMERGENCY SITUATIONS

Defining psychological trauma, Psychological interventions in crisis situations, Psychological trauma in athletic environment, The psychological emergency response team, Internal team members, External team members and The psychological interventions recommendations.

PRIMARY CARE

FOUNDATION

Primary care: physical therapy models, Evidence - Based examination of diagnostic information, Cultural competence: An essential of primary health care, Pharmacologic considerations for the physical therapist and The patient interview: the science behind the art

EXAMINATION/EVALUATION

Prologue, Symptoms investigation, Part I: Chief complaint by body region, Symptoms investigation, Part II: Chief complaint by symptom, Patient health history including

identifying health risk factor, Review of systems, Patient interview: the physical examination begins, Review of cardiovascular and pulmonary systems and vital signs, Upper quadrant screening examination, Lower quadrant screening examination, Diagnostic imaging and Laboratory tests and values

DISORDERS AND MANAGEMENT

Acute Care Physical Therapy Examination and Discharge Planning, Clinical Laboratory Values and Diagnostic Testing, Physiologic Monitors and Patient Support Equipment, Bed Rest, Deconditioning, and Hospital-Acquired Neuromuscular Disorders The Immune System and Infectious Diseases and Disorders, Cardiovascular Diseases and Disorders, Pulmonary Diseases and Disorders, Musculoskeletal/Orthopedic Diseases and Disorders, Neurologic and Neurosurgical Diseases and Disorders, Endocrine Diseases and Disorders, Gastrointestinal Diseases and Disorders. Genitourinary Diseases and Disorders, Oncological Diseases and Disorders, Transplantation, Integumentary Diseases and Disorders and Wound Management.

SPECIAL POPULATIONS

The Pediatric and adolescent population, The obstetric client, The geriatric population and Health and wellness perspective in primary care

RECOMMENDED TEXT BOOKS:

- *Emergency Care in Athletic Training* by: Keith M.Gorse, Robert O. Blanc, Francis Feld, Matthew Radelet, 1st edition, 2010, FA Davis Company
- *Acute care hand book for Physical Therapists* by: Jaime C paz, Michelle P West, 2nd edition, 2002, Butterworth Heinemann

3. SURGERY & INTEGUMENTARY PHYSICAL THERAPY **INCLUDING SUPERVISED CLINICAL PRACTICE VI**

COURSE DESCRIPTION:

This course intends to familiarize students with principles orthopaedic surgery along with familiarization with terminology and abbreviations for efficient and effective chart reviewing and documentation. It also explores various orthopaedic conditions needing surgical attention, focusing on epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical management.

The purpose of this course is to make physiotherapy students aware of various surgical conditions so these can be physically managed effectively both pre as well as postoperatively.

The other part of course includes a study of anatomy and physiology of the Integumentary system and pathological changes of the system and function, including diagnostic tests and measurements. The use of evidence-based physical therapy intervention for Integumentary conditions is emphasized.

Topics will focus on comparing contemporary and traditional interventions and the impact of evolving technology in this area. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

SURGERY

DETAILED COURSE OUTLINE

ORTHOPEDIC SURGERY

FRACTURES

Definition, Classification, Causes, Clinical features, Healing of fractures, Complications

Principles of general management of

- Fracture of the Upper Extremity, Fracture of the Lower Extremity and Fracture of the vertebral column, thorax and pelvis
- Basic and advanced trauma life support

DISLOCATIONS & SUBLUXATIONS

Definition, Traumatic dislocation, General description

Principles of general description and management of traumatic dislocation and subluxation of

- Shoulder joint, Acromioclavicular joint, Elbow joint, Hip joint and Knee joint

SOFT TISSUE INJURIES

- Introduction
- Anatomy & physiology general description and management of injuries of:
 - Ligaments, Tendons, Muscles, Fascia & Bursae
- Detailed description of physiotherapy management of individual tissue injuries around:
 - Shoulder region, Elbow region, Wrist and hand region, Knee region & Ankle region
- Muscles and tendons injuries of upper and lower limb
- Cervicolumbar injuries, Whiplash of the cervical spine, Crush injuries & Spinal pain
- Degenerative and Inflammatory Conditions:
 - Osteo-arthrosis/Arthritis, Spondylosis, Spondylolysis, Pyogenic arthritis, Rheumatoid arthritis, Juvenile arthritis, Tuberculosis arthritis, Gouty arthritis, Haemophilic arthritis, Neuropathic arthritis, Ankylosing spondylitis & psoriatic arthritis

GENERAL ORTHOPEDIC DISORDERS

Carpel tunnel syndrome, Compartment syndromes, Muscular dystrophies, Neuropathies, Avascular necrosis of bone in adult and children, Ischemic contracture, Gangrene, Rickets, Osteoporosis and osteomalacia, Shoulder pain, Neck pain, Knee pain, Backache, Painful conditions around elbow

- Detailed description of : Orthotics, Prosthetics, Splintage, Traction & POP

TUMORS:

Classification, Principles of general management, General description of benign and malignant tumors of musculoskeletal system

DEFORMITIES AND ANOMALIES

Definition, Causes, Classification, Congenital and acquired deformities, Physical and clinical and radiological features, Complications, Principles of medical and surgical management of the deformities, General description of following deformities:

DEFORMITIES OF THE SPINE:

Torticollis, Scoliosis, Kyphosis, Lordosis and flat back

DEFORMITIES OF THE LOWER LIMB:

CDH, coxa vera, coxa valga, anteversion, Retroversion, Genu valgum, Genu varum, Genu recurvatum, CDK, Talipes calcaneus equinus, varus & valgus, Talipes calcaneovarus, Talipes calcaneovalgus, Talipes equinovarus, Pes cavus, Pes planus. Hallux valgus & varum and Hallux rigidus and hammer toe

DEFORMITIES OF SHOULDER AND UPPER LIMB:

Sprengel's shoulder, Cubitus varum, Cubitus valgum and Dupuytren's contracture

GENERAL SURGERY

Introduction, Indications for surgery and Types of incisions, Wounds, types of wounds, factors affecting wounds healing, care of wounds, Bandages and dressing, Trauma and metabolic response to trauma, Detailed description of chest and abdominal trauma, Hemorrhage, hemostasis and blood transfusion, Classification and brief description of shock, Fluid and electrolyte balance, Classification of body fluid changes, Pre, intra and post operative fluid therapy, Surgery and diabetes, Burns and grafts, Neoplasia, Preoperative assessment & preparation, Post operative treatment, complications and their management

TYPES OF ANAESTHESIA

Local anaesthetic agents and Regional anaesthesia (spinal and epidural)

Intravenous anaesthetic agents, Muscle relaxants, Inhalational anaesthetic agents, Anaesthesia and associated diseases, Complications of anaesthesia, Perioperative management, Cardiopulmonary Resuscitation. CPR, Recovery from anaesthesia, Pain management and postoperative care, Ulcers, sinuses and fistulas, Transplantation and Brief description of operation performed on: oesophagus, stomach, intestine gall bladder, bile duct, spleen, pancreas, liver, abdominal wall, hernias, breast, kidneys, ureters, prostate, peritoneum, mesentery and retroperitoneal space

THORACIC SURGERY

PULMONARY SURGERY

Introduction, types of incision, types of operation, complications of pulmonary surgery, drains , tubes, pneumonectomy, lobectomy , thoracoplasty, Operations on pleura. Chest injuries, Brief description of indication for pulmonary surgery, Diseases of chest wall and pleura, Diseases of bronchi, Tumors of lung, Lung abscess, Hydatid disease of lung, Pulmonary embolism, Mediastinal masses and Problems related to diaphragm

CARDIAC SURGERY

Introduction, Cardiorespiratory resuscitation, Special investigation procedures in cardiac surgery, Basic techniques in cardiac surgery, Types of incision, Types of operation, Complications of cardiac surgery, Lines, drains and tubes, Brief description of indications for cardiac surgery, Congenital heart disease, Acquired heart diseases, Diseases of the pericardium, Cardiac transplantation

VASCULAR SURGERY

Introduction, Investigation in vascular disease types of operation, Indication for vascular surgery, Complication of vascular surgery, Brief description of arterial occlusion, Gangrene, Detailed description of amputation, Aneurysm, Burgers disease, Raynaud's disease and syndrome, Varicose veins, Superficial and deep venous thrombosis, Venous hemorrhage, Lymph edema, Lymph adenitis and lymphomas

NEUROSURGERY

CRANIAL SURGERY

Introduction, Special investigation in brain diseases and traumas, Types of operations, indications and complications of cranial surgery, Head injuries to the brain, Acute intracranial hematomas, Fractures of the skull, Intra cranial abscess, Intracranial tumors and Intra cranial aneurysm and hydrocephalus

SURGERY OF VERTEBRAL COLUMN SPINAL CORD AND PERIPHERAL NERVES

Dislocation and management of dislocation of vertebral column, Tumors of vertebral column, Prolapse intervertebral disc, Disc protrusion, Spondylosis and spondylolisthesis, Spinal cord injuries and their management, Tumors of spinal cord types of operations performed on nerves, Nerve injuries and their surgical management and Brief description of lesions of cranial and spinal nerves and their management.

INTEGUMENTARY PHYSICAL THERAPY

WOUND CARE CONCEPTS

Quality of Life and Ethical Issues, Regulation and wound Care, Skin, an Essential Organ, Acute and Chronic Wound Healing, Wound assessment, Wound Bioburden, Wound Debridement. Wound Treatment Options, Nutrition and wound care, Seating, Positioning and support surfaces, Pain Management and wounds

WOUND CLASSIFICATIONS AND MANAGEMENT STRATEGIES

Pressure Ulcers, Vascular Ulcers, Diabetic Foot Ulcers, Sickle Cell Ulcers, Wounds in special Populations, Complex wounds, Atypical Wounds and Wound Care; where we were, where we are, and where we are going

CASE HISTORIES

Principles of assessment and outcome measures, Documentation in SOAP notes format and Evidence based Integumentary Physical Therapy Treatment protocols

RECOMMENDED TEXT BOOKS:

- *Short practice of surgery* by Baily and Love's
- *Text Book of Surgery* by Ijaz Ahsan
- *Outline of Fractures*
- Wound Care Essentials, practice principles, By Sharon Baranoski & Elizabeth A. Ayello
- APTA. *Guide to Physical Therapy Practice: Revised second edition.* Alexandria, VA: American Physical Therapy Association; 2003. ISBN: 978-1-887759-85-

SUPERVISED CLINICAL PRACTICE VI

(To be covered in 4th & Final Year. Examination in Final Year)

SURGICAL /INTEGUMENTARY

PROFESSIONAL YEAR	SUPERVISION	FOCUS	WARDS	COMPETENCIES
4 th	Supervised by trained PT	Evaluation, Examination, and Intervention	Integumentary, gynecology & obstetrics, sports and metabolic disorders (IPD/OPD; surgical & non-surgical)	Listed below

COURSE DESCRIPTION:

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to Integumentary, gynecology and obstetrics, sports and metabolic disorders. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric, geriatric, obstetrics & gynecology, sports etc.) Students learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

COMPETENCIES:

EXAMINATION:

- Based on best available evidence select examination tests and measures that are appropriate for the patient/client.

- Perform posture tests and measures of postural alignment and positioning.
- Perform gait, locomotion and balance tests including quantitative and qualitative measures such as:
 - Balance during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
 - Balance (dynamic and static) with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
 - Gait and locomotion during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment to include:
 - ❖ Bed mobility, Transfers (level surfaces and floor), Wheelchair management, Uneven surfaces & Safety during gait, locomotion, and balance
 - Perform gait assessment including step length, speed, characteristics of gait, and abnormal gait patterns.
- Characterize or quantify body mechanics during self-care, home management, work, community, tasks, or leisure activities.
- Characterize or quantify ergonomic performance during work (job/school/play):
 - Dexterity and coordination during work
 - Safety in work environment
 - Specific work conditions or activities
 - Tools, devices, equipment, and workstations related to work actions, tasks, or activities
- Characterize or quantify environmental home and work (job/school/play) barriers:
 - Current and potential barriers
 - Physical space and environment
 - Community access
- Observe self-care and home management (including ADL and IADL)
- Measure and characterize pain to include:
 - Pain, soreness, and nociception
 - Specific body parts
- Recognize and characterize signs and symptoms of inflammation.
- Perform integumentary integrity tests and measures including:
 - A. Activities, positioning, and postures that produce or relieve trauma to the skin.
 - B. Assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment that may produce or relieve trauma to the skin.
 - C. Skin characteristics, including blistering, continuity of skin color, dermatitis, hair growth, mobility, nail growth, sensation, temperature, texture and turgor.
 - D. Activities, positioning, and postures that aggravate the wound or scar or that produce or relieve trauma.
 - E. Signs of infection.
 - F. Wound characteristics: bleeding, depth, drainage, location, odor, size, and color.
 - G. Wound scar tissue characteristics including banding, pliability, sensation, and texture.

Evaluation:

- Clinical reasoning
 - Clinical decision making
1. Synthesize available data on a patient/client expressed in terms of the International Classification of Function, Disability and Health (ICF) model to include body functions and structures, activities, and participation.
 2. Use available evidence in interpreting the examination findings.

3. Verbalize possible alternatives when interpreting the examination findings.
4. Cite the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.

Diagnosis:

1. Integrate the examination findings to classify the patient/client problem in terms of body functions and structures, and activities and participation (ie, practice patterns in the Guide)
2. Identify and prioritize impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

Prognosis:

1. Determine the predicted level of optimal functioning and the amount of time required to achieve that level.
2. Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame including:
 - A. Age, Medication(s), Socioeconomic status, Co-morbidities, Cognitive status, Nutrition, Social Support & Environment

Plan of Care:

- Goal setting, Coordination of Care, Progression of care & Discharge
 - Design a Plan of Care
 1. Write measurable functional goals (short-term and long-term) that are time referenced with expected outcomes.
 2. Consult patient/client and/or caregivers to develop a mutually agreed to plan of care.
 3. Identify patient/client goals and expectations.
 4. Identify indications for consultation with other professionals.
 5. Make referral to resources needed by the patient/client (assumes knowledge of referral sources).
 6. Select and prioritize the essential interventions that are safe and meet the specified functional goals and outcomes in the plan of care (ie, (a) identify precautions and contraindications, (b) provide evidence for patient-centered interventions that are identified and selected, (c) define the specificity of the intervention (time, intensity, duration, and frequency), and (d) set realistic priorities that consider relative time duration in conjunction with family, caregivers, and other health care professionals).
 7. Establish criteria for discharge based on patient goals and current functioning and disability.*
 - Coordination of Care
 1. Identify who needs to collaborate in the plan of care.
 2. Identify additional patient/client needs that are beyond the scope of physical therapist practice, level of experience and expertise, and warrant referral.*
 3. Refer and discuss coordination of care with other health care professionals.*
 4. Articulate a specific rationale for a referral.
 5. Advocate for patient/client access to services.
 - Progression of Care
 1. Identify outcome measures of progress relative to when to progress the patient further.
 2. Measure patient/client response to intervention.
 3. Monitor patient/client response to intervention.
 4. Modify elements of the plan of care and goals in response to changing patient/client status, as needed.
 5. Make on-going adjustments to interventions according to outcomes including environmental factors and personal factors and, medical therapeutic interventions.
 6. Make accurate decisions regarding intensity and frequency when adjusting interventions in the plan of care.

- Discharge Plan
 1. Re-examine patient/client if not meeting established criteria for discharge based on the plan of care.
 2. Differentiate between discharge of the patient/client, discontinuation of service, and transfer of care with re-evaluation.
 3. Prepare needed resources for patient/client to ensure timely discharge, including follow-up care.
 4. Include patient/client and family/caregiver as a partner in discharge.
 5. Discontinue care when services are no longer indicated.
 6. When services are still needed, seek resources and/or consult with others to identify alternative resources that may be available.
 7. Determine the need for equipment and initiate requests to obtain.

Interventions:

- Safety, Emergency Care, CPR and First Aid
 - Standard Precautions
 - Body Mechanics and
 - Positioning
 - Categories of Interventions
 - Safety, Cardiopulmonary Resuscitation Emergency Care, First Aid
 - ❖ Ensure patient safety and safe application of patient/client care, Perform first aid, Perform emergency procedures, Perform Cardiopulmonary Resuscitation (CPR) & Precautions
1. Demonstrate appropriate sequencing of events related to universal precautions.
 2. Use Universal Precautions.
 3. Determine equipment to be used and assemble all sterile and non-sterile materials.
 4. Use transmission-based precautions.
 5. Demonstrate aseptic techniques.
 6. Apply sterile procedures.
 7. Properly discard soiled items.
-
- Body Mechanics and Positioning
 1. Apply proper body mechanics (utilize, teach, reinforce, and observe).
 2. Properly position, drape, and stabilize a patient/client when providing physical therapy.
 - Interventions
 1. Coordination, communication, and documentation may include:
 - A. Addressing required functions:
 - (1) Establish and maintain an ongoing collaborative process of decision-making with patients/clients, families, or caregivers prior to initiating care and throughout the provision of services.
 - (2) Discern the need to perform mandatory communication and reporting (eg, incident reports, patient advocacy and abuse reporting).
 - (3) Follow advance directives.
 - B. Admission and discharge planning.
 - C. Case management.
 - D. Collaboration and coordination with agencies, including:
 - Home care agencies, Equipment suppliers, Schools, Transportation agencies & Payer groups
 - E. Communication across settings, including:
 - Case conferences, Documentation & Education plans
 - F. Cost-effective resource utilization.

- G. Data collection, analysis, and reporting of:
Outcome data, Peer review findings & Record reviews
- H. Documentation across settings, following APTA's Guidelines for Physical Therapy Documentation, including:
 - (1) Elements of examination, evaluation, diagnosis, prognosis, and Intervention
 - (2) Changes in body structure and function, activities and participation.
 - (3) Changes in interventions & Outcomes of intervention
- I. Interdisciplinary teamwork:
Patient/client family meetings, Patient care rounds & Case conferences
- J. Referrals to other professionals or resources.
- K. Patient/client-related instruction may include:
 - A. Instruction, education, and training of patients/clients and caregivers regarding:
 - (1) Current condition, health condition, impairments in body structure and function, and activity limitations, and participation restrictions)
 - (2) Enhancement of performance
 - (3) Plan of care:
 - a. Risk factors for health condition, impairments in body structure and function, and activity limitations, and participation restrictions.
 - b. Preferred interventions, alternative interventions, and alternative modes of delivery
 - c. Expected outcomes
 - (4) Health, wellness, and fitness programs (management of risk factors)
 - (5) Transitions across settings

Therapeutic exercise may include performing:

- Integumentary repair and protection techniques may include:
 - A. Debridement—nonselective:
Enzymatic debridement, Wet dressings, Wet-to-dry dressings & Wet-to-moist dressings
 - B. Dressings:
Hydrogels & Wound coverings
 - C. Topical agents:
Cleansers, Creams, Moisturizers, Ointments & Sealants
 - Functional training in self-care and home management may include:
 - Functional training in work (job/school/play), community, and leisure integration
- or reintegration may include:
 - Activities of daily living (ADL) training:
 - (1) Bed mobility and transfer training
 - (2) Age appropriate functional skills
 - Barrier accommodations or modifications
 - Device and equipment use and training:
 - (1) Assistive and adaptive device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)*
 - (2) Orthotic, protective, or supportive device or equipment training during self-care and home management*
 - (3) Prosthetic device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)*

- Functional training programs*:
Simulated environments and tasks & Task adaptation
- Injury prevention or reduction:
 - (1) Safety awareness training during self-care and home management
 - (2) Injury prevention education during self-care and home management
 - (3) Injury prevention or reduction with use of devices and equipment
- Prescription, application, and, as appropriate, fabrication of devices and equipment may include:
 - Adaptive devices:
Hospital beds, Raised toilet seats & Seating systems – prefabricated
 - Assistive devices:
 - (1) Canes, Crutches, Long-handled reachers, Static and dynamic splints – prefabricated, Walkers & Wheelchairs (Orthotic devices:), Prefabricated braces & Prefabricated shoe inserts
 - (2) Prefabricated splints
 - Prosthetic devices (lower-extremity) & Protective devices:
Braces, Cushions, Helmets & Protective taping
 - Supportive devices:
Prefabricated compression garments, Corsets, Elastic wraps, Neck collars, Slings, Supplemental oxygen - apply and adjust & Supportive taping
- Electrotherapeutic modalities may include:
 - A. Biofeedback
 - B. Electrotherapeutic delivery of medications (eg, iontophoresis)
 - C. Electrical stimulation:
 - (1) Electrical muscle stimulation (EMS)
 - (2) Functional electrical stimulation (FES)
 - (3) High voltage pulsed current (HVPC)
 - (4) Neuromuscular electrical stimulation (NMES)
 - (5) Transcutaneous electrical nerve stimulation (TENS)
- Physical agents and mechanical modalities may include: *Physical agents*:
 - A. Cryotherapy:
Cold packs, Ice massage & Vapocoolant spray
 - B. Hydrotherapy:
Contrast bath, Pools & Whirlpool tanks
 - C. Sound agents:
Phonophoresis & Ultrasound
 - D. Thermotherapy:
Dry heat, Hot packs & Paraffin baths

Mechanical modalities:

 - A. Compression therapies (prefabricated)
 - (1) Compression garments
 - Skill Category Description of Minimum Skills
 - (2) Vasopneumatic compression devices
 - (3) Taping, Compression bandaging (excluding lymphedema)
 - B. Gravity-assisted compression devices:
Standing frame & Tilt table
 - C. Mechanical motion devices:
 - (1) Continuous passive motion (CPM)
 - D. Traction devices:
Intermittent, Positional & Sustained
- Documentation of all listed competencies in SOAP notes format

4. PEDIATRIC PHYSICAL THERAPY AND PHYSICAL THERAPY IN GYNAE & OBSTETRICS*

PART A. PEDIATRIC PHYSICAL THERAPY

COURSE DESCRIPTION:

This course addresses both the medical and rehabilitation management of the pediatric patient. Foundation lectures on normal development and psychological issues provide the students with a model to use when learning about pediatric pathologies, assessments and interventions. This course also involves the examination and treatment of the pediatric population using an interdisciplinary approach.

The etiology and clinical features of common diseases/ disorders observed in the pediatric population will be emphasized. Lab: Methods for examination, goal setting, and intervention are emphasized. Students will participate in interdisciplinary case studies and an interdisciplinary evaluation project. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

DETAILED COURSE OUTLINE

MEDICAL TERMINOLOGY REGARDING PEDIATRICS

DETAILED COURSE OUTLINE:

History and Examination / Pediatric Examination, Assessment and outcome measurement, Theories of Development, Medical Care of Children with Disabilities, Psychological Assessment in Pediatric Rehabilitation, Approaches to working with children, Normal Developmental Milestones, Language Development in Disorders of Communication and Oral Motor Function Adaptive Sports and Recreation, Orthotic and Assistive Devices, Electrodiagnosis in Pediatrics, Motor Learning & Principles of Motor Learning, The Child Parents and Physiotherapist, Aging With Pediatric Onset Disability and Diseases, The Assessment of Human Gait, Motion, and Motor Function, Psychosocial Aspects of Pediatric Rehabilitation, Pediatric and Neonatal Intensive Therapy, Disorders of Respiratory System, Cystic Fibrosis Duchene Muscular, Hemophilia, Lower Limb Deformities, Orthopedics and Musculoskeletal Conditions, Talipes Equino Varus, Torticollis, Pediatric Limb Deficiencies, Neuromuscular Diseases, Myopathies, Traumatic Brain Injury, Cerebral Palsy, Spinal Cord Injuries, Spina Bifida and Oncology and palliative care.

CASE HISTORIES

Principles of assessment and outcome measures, Documentation in SOAP notes format and Evidence based pediatric Physical Therapy Treatment protocols

PRACTICAL/ CLINICAL TRAINING

In the laboratory sessions, Supervised Clinical Training shall be given to the students related to the Paediatric Physical Therapy. Various reflective case studies related to Paediatric Physical Therapy will be assigned to the students.

Note:

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place.

It is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed.

RECOMMENDED TEXT BOOKS:

- *Physical Therapy for Children* By, Suzann K. Campbell, Robert J. Palisano & Darl W. Vander Linden.
- *Paediatric Rehabilitation Principles and practice* (Fourth Edition) By, Michael A Alexander & Dennis j. Matthews.
- *Additional reading material as assigned.*

PART B. PHYSICAL THERAPY IN GYNAE & OBSTETRICS

COURSE DESCRIPTION:

This course intends to provide Introduction to physical therapy practice for evaluation and treatment of pelvic floor dysfunction and an Introduction to physical therapy practice for evaluation and treatment of problems related to pregnancy, osteoporosis, and other disorders specific to women.

Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

DETAILED COURSE OUT LINE

MEDICAL TERMINOLOGY REGARDING GYNECOLOGY, OBSTETRICS AND WOMEN'S HEALTH

Anatomy, Physiology of pregnancy, Physical and physiological changes of labour and the puerperium, The antenatal period, Relieving the discomforts of pregnancy, Preparation of labour, Postnatal period, The climacteric, Common gynecological conditions, Gynecological surgery, Urinary function and dysfunction, Bowel and anorectal function and dysfunction

ONCOLOGICAL ISSUE WITH WOMEN'S HEALTH

Management of breast cancer, Management of lymph odema

SPECIAL TOPIC IN WOMEN'S HEALTH

Female athletes, Exercise issues and aging, Aquatic therapy services in women health, Physical therapy management for women with long term physical disabilities

CASE HISTORIES

Principles of assessment and outcome measures, Documentation in SOAP notes format, Evidence based obstetrics and gynecological Physical Therapy Treatment protocols

PRACTICAL/ CLINICAL TRAINING

In the laboratory sessions, Supervised Clinical Training shall be given to the students related to the Physical Therapy in Gynae & Obstetrics. Various reflective case studies related to Physical Therapy in Gynae & Obstetrics will be assigned to the students.

Note:

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place.

It is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed.

RECOMMENDED TEXT BOOKS

- *Physiotherapy in Obstetrics and Gynecology* By: Jill Mantle, Jeanette Haslam, Sue Barton, 2nd edition.
- *Textbook of Physiotherapy for Obstetric and Gynecological Conditions* (Paperback) By (author) G.B. Madhur

5. GERONTOLOGY & GERIATRIC PHYSICAL THERAPY*

COURSE DESCRIPTION:

The course covers normal aging process, physiological and psychological changes and their effects on daily living activities (ADL) and instrumental daily living activities (IADL). Relevant tests and measures for determining impairment and differentiating the diagnosis based on the specificity and sensitivity of the assessment instruments as related to patients with geriatric conditions are discussed.

The use of evidence-based physical therapy intervention for geriatric conditions is emphasized. Topics will focus on comparing contemporary and traditional interventions and the impact of evolving technology in this area. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

PART A. GERONTOLOGY

Introduction to Gerontology, Demographic Trends of an Aging Society, Social Gerontology, The Physiology and Pathology of Aging, The Cognitive and Psychological Changes Associated with Aging, Functional Performance in Later Life: Basic Sensory, Perceptual, and Physical Changes Associated with Aging, Geriatric Pharmacotherapy, Sexuality and Aging, Living Options and the Continuum of Care, Legal and Financial Issues Related to Health Care for Older People, Health Care Providers Working With Older Adults, Future Concerns in an Aging Society, Health Literacy and Clear Health Communication

PART B. GERIATRIC PHYSICAL THERAPY

MEDICAL TERMINOLOGY REGARDING GERIATRICS

ATTITUDES AND AGEISM

Ageism, Myths and Facts about Older Adults, Age Bias in Healthcare, Geriatric Training and Role of Physical Therapist

NORMAL PHYSICAL CHANGES IN OLDER ADULTS

Breathing — the Respiratory System, Beating — the Cardiovascular System, Thinking and Reacting — the Nervous System, Moving — the Musculoskeletal System, Eating & Eliminating — the Gastrointestinal and Urinary Systems, Metabolizing — the Endocrine System, Responding — the Sensory System, Sleeping and Other Physical Changes

PSYCHOLOGICAL CHANGES:

The 3 Ds and Suicide in Older Adults, Delirium, Dementia and Depression

OLDER ADULT ABUSE AND NEGLECT:

Scope of Older Adult Abuse and Neglect and Clues to Abuse and Interventions

TRIAGE AND ASSESSMENT:

ABCs of Geriatric Assessment and Assessment Techniques and Atypical Presentations

PAIN

Pain in Older Adults, Pain Assessment and Challenges, Impact of Physiological Changes, Medication and Pain Management, Medication Interactions, Medication and Food

EFFECTS OF AGE:

Task Complexity, Exercise, Ambulation.

PHYSICAL THERAPY FOR GERIATRICS IN VARIOUS NEUROMUSCULAR DISORDERS:

Alzheimer's disease, Parkinsonism, Cerebrovascular accident (C.V.A) and Poly neuropathies etc.

PRE-OPERATIVE AND POST OPERATIVE PHYSICAL THERAPY FOR GERIATRICS IN VARIOUS MUSCULOSKELETAL DISORDERS:

Hip & Knee Joint replacements, Soft tissue injuries.

BALANCE AND FALL IN ELDERLY: ISSUES IN EVALUATION AND TREATMENT

Introduction, Defining the problem of falls, risk factors, aging theory concept pertinent to falls in the elderly, Multi faceted approach to the falls problem, Postural control theory, physiology of balance, Summary influence of age on postural control, relationship between postural control and falls, A model, examination and evaluation, history, biological assessment, sensory effectors, strength, ROM, endurance, central processing, functional assessment, environmental assessment, psychosocial assessment, intervention

MEDICATIONS

NUTRITIONAL DEFICIENCIES:

- Primary nutritional problems, limited fixed incomes, severely limited food choices and availability.

CASE HISTORIES

Principles of assessment and outcome measures, Documentation in SOAP notes format and Evidence based geriatric Physical Therapy Treatment protocols

Recommended Text Books:

- Geriatric Physical Therapy by Andrew A. Guccione
- Fundamentals of Geriatric Medicine
- Gerontology for health care professional by regula H robbnet/ walter
- Handbook of gerontology by James A Blackburn and Catherine N Dulmus

6. SPORTS PHYSICAL THERAPY

COURSE DESCRIPTION

The main focus of this course is related to the understanding of the role that physical therapists play in both the industrial continuum and sports physical therapy. Emphasis is placed on acute management of traumatic injuries and/or sudden illness. In addition, injury prevention with an emphasis on the advanced clinical competencies related to the practice of sports physical therapy will also be covered.

DETAILED COURSE OUT LINE

MEDICAL TERMINOLOGY RELATED TO SPORTS PHYSICAL THERAPY

INTRODUCTION TO SPORTS REHABILITATION

Introduction to sport injury management

INJURY SCREENING AND ASSESSMENT OF PERFORMANCE

Injury prevention and screening and Assessment and needs analysis

PATHOPHYSIOLOGY OF MUSCULOSKELETAL INJURIES

Pathophysiology of skeletal muscle injuries, Pathophysiology of tendon injuries, Pathophysiology of ligament injuries, Pathophysiology of skeletal injuries and Peripheral nerve injuries

EFFECTIVE CLINICAL DECISION MAKING

An introduction to periodisation, Management of acute sport injury, Musculoskeletal assessment, Progressive systematic functional rehabilitation, Strength and conditioning, Nutritional considerations for performance and rehabilitation, Psychology and sports rehabilitation and Clinical reasoning.

JOINT SPECIFIC SPORT INJURIES AND PATHOLOGIES

Shoulder injuries in Sports, Elbow, Wrist and hand injuries in sport, The groin in sport, The knee, Ankle complex injuries in sport and The foot in sport

TRAVELING WITH A TEAM

DRUGS AND THE ATHLETE

ETHICS AND SPORTS MEDICINE

CASE HISTORIES

Principles of assessment and outcome measures, Documentation in SOAP notes format and Evidence based sports Physical Therapy Treatment protocols

RECOMMENDED TEXT BOOKS:

- *Sports Rehabilitation and Injury Prevention* by: Paul Comfort & Earle Abrahamson, 1st Edition, 2010, Wiley Blackwell Publishers
- *Clinical Sports Medicine* by: Brukner & Khan, 4ed, McGraw-Hill Publishers
- *A guide to sports and injury management* by: Mike Bundy & Andy Leaver, 1st edition, 2010, Churchill Livingstone.

REPORT WRITING

Proposal Submission Guidelines

- I Report Format**
- II Report Structure**
- III Suggested Chapter Structure**

I REPORT FORMAT

General Format

- The text of the report (not including contents page, references, appendices etc) should be written in English and should not exceed 40 pages in length (Approx 25,000 words).
- The project should be typed on one side of A4 size white 80g/m² paper in Arial or Times New Roman font size 11, line spacing should be set at 1.5, the left margin should be 3.5cm (to accommodate soft binding) and all other margins to be set at 2.5cm.
- All pages should be numbered using roman numerals from the start of the project until the start of the main body (i.e. i, ii, iii, iv, etc.), the main body (including references) should be numbered numerically (i.e. 1, 2, 3, 4, etc.).
- Appendices should be named alphabetically (A, B, C etc.), and each appendix page numbered consecutively but separately from the main text and from each other (i.e. A1, A2, A3, A4, B1, B2, B3 etc.).
- All page numbering should be centered at the bottom of the page. The title page is not numbered.
- If any software/files/data are provided on CD or floppy disc then the contents of the disc should be indicated in the contents page and included as an Appendix.
- The report should be written in formal language; avoid colloquial words and phrases, technical jargon, asking rhetorical questions, and contractions.
- The report should also be written in the past tense and in the third person.
- All equations must be inserted separately to the text and produced in a recognizable format.

- For footnotes and indented quotations single spacing should be used.

II REPORT STRUCTURE

Title Page

- Your name
- Student I.D. number
- Your Program name
- Your supervisor's name
- The project title
- The name of the University

Abstract

A maximum of one page (300 words) on the work performed and your main conclusions. Abstract should be single line spacing, should not contain any figures, contain a maximum of 2 references, and written in Arial/New Times Roman font size 11. The title of the project should be on the first line (Arial/ New Times Roman size 11, bold). The name of the student and their supervisor should appear on the next line (Arial New Times Roman size 11, italic). The abstract should be then be included as a single paragraph. References (if required) should be included at the end (Arial/New Times Roman, size 9).

Points into account while writing Abstract

Explain the purpose of your study/paper. This should optimally be only one sentence long. State the primary objectives and scope of the study or the reasons why the document was written (unless these things are already clear from the title of the document or can be derived from the rest of the abstract). Also state the rationale for your research. Why did you do the research? Is the topic you are researching an ignored or newly discovered one? In terms of methodology (research methods), clearly state the techniques or approaches used in your study. If you want to introduce new methods or approaches in your abstract, keep in mind the need for clarity.

Describe your results (the findings of your experimentation), the data collected, and effects observed as informatively and concisely as possible. These results of course may be experimental or theoretical, but remember the difference between conjecture and fact and note them in your abstract. Give special priority in your abstract to new and verified events and findings that contradict previous theories. Mention any limits to the accuracy or reliability of your findings.

By stating your conclusions, you are in essence describing the implications of the results: why are the results of your study important to your field and how do they relate to the purpose of your investigation? Often conclusions are associated with recommendations, suggestions and both rejected and accepted hypotheses. You may wish to include information that is incidental to the main purpose of your paper, but is valuable to those outside your area of study. If you choose to include such information, be careful not to exaggerate its relative importance to the abstracted document

Declaration of Originality

Place on a separate page;

“I hereby declare that this project is entirely my own work other than the counsel of my supervisor and that it has not been submitted for any academic award, or part thereof, at this or any other educational establishment”

Signed: Author

Counter signed: Supervisor

Acknowledgements (Optional)

To include those individuals or groups of individuals you would like to thank in relation to the support you received.

Table of Contents

You should list all of the sections and sub-sections, together with their corresponding page numbers
List of Tables
List of Figures
List of Appendices

III SUGGESTED CHAPTER STRUCTURE

The following outlines a chapter structure suitable to a project, which involved a distinct component of data collection. The structure of the main body is flexible and you should discuss an appropriate structure with your supervisor. The content and importance of each section will depend on the type of project you are undertaking and again should be discussed with your supervisor before submission.

Chapter 1. Introduction

- i) Introduction (Very brief review of literature and indicate significance of study)
- ii) Statement of Problem (Should include clear purpose of study)
- iii) Questions/Hypothesis
- iv) Outline Methodology
- v) Definition of Terms

The introduction should 'set the scene' for the examiners and enable them to appreciate the relevance of your work in a particular research area.

Chapter 2. Literature Review

A literature review is an extended essay, which is based on source material. In simple terms, the merit of your literature review is proportional to the comprehensive nature and originality of your sources. Your writing should be confined to the questions/hypothesis being examined. A literature review is more than a listing of references. You should attempt to synthesize a new understanding of your topic, and provide a critique of what other commentators have had to say on the subject.

Chapter 3. Methodology

- i) Participant Selection (Including ethical considerations)
- ii) Experimental Design
- iii) Measurement Procedures
 - Data collection procedures
 - Rationale for selecting these procedures/questions
- iv) Analysis of Data

The methodology should describe the characteristics of the subjects, award of ethical approval, and where appropriate the apparatus, calibration procedures, reliability of the methods used, experimental protocols and the statistical treatments of the data. Diagrams and photographs may be appropriate to illustrate procedures.

Chapter 4. Analysis of Results

Your results should consist of tables of your findings, illustrated with graphs where appropriate. The results section should contain text, which takes the reader through your graphs and tables, pointing out the salient features. Tables should wherever possible summarise the data from several subjects in the form of means and standard deviations. You do not need to give tables of every piece of original data. If you feel it is essential to include these put them in an appendix.

Chapter 5. Discussion of Results

It is good practice to begin with a summary of your findings. This is your opportunity to interpret your data in the context of what is already known from existing literature. However, make every effort to explain your findings first, justifying the arguments by reference to previously published work, NOT the other way around. The discussion is the

place for explanations and opinions. Link your findings with the purpose/questions/hypothesis of your project. Include critical appraisal of your own work and that of others. Address what you would do differently with hindsight?

Chapter 6. Conclusion

- Summary of main findings
- Recommendations (Impact of findings and future research)
- Conclusion

This section should summarise your **main** findings, highlight areas where more work is needed and suggest avenues for future development of this work. An overall conclusion from the study should be included to complete the project.

References A list of references must be included at the end of the project document and appropriately referenced within the text. A recognised standard appropriate to the discipline and agreed with the Supervisor.

Appendices In this section, if required, include any raw data, interview transcript, computer program listings, and questionnaires etc., which were not in the results section, but which may need to be consulted.