Annexure- A

SYLLABUS & CURRICULUM

w.e.f. 2022-2023 onwards

FOR

DOCTOR OF PHYSICAL THERAPY (DPT)

(Five Year Degree Program)

Department of Allied Health Sciences
Sargodha Medical College Campus
University of Sargodha
Sargodha

Forwarded for info pl.
24/10/22

Vetted

Incharge
Allied Health Sciences

Physical therapy is an essential segment of modern health care system. It is a —science of healing and art of caringl. It pertains to the clinical examination, evaluation, assessment, diagnosis and treatment of musculoskeletal, Neurological, Cardio-Vascular and Respiratory systems 'functional disorders including symptoms of pain, edema, physiological, structural and psychosomatic ailments. It deals with methods of treatment based on movement, manual therapy, physical agents, and therapeutics modalities to relieve the pain and other complications.

Hence. Physical therapy covers basic parameters of healing sciences i.e., preventive, promotive, diagnostic. rehabilitative, and curative.

GOALS OF THE PROGRAMME:

The purpose of the Doctor of Physical Therapyprogram (DPT) is to prepare physical therapists who will:

1. Be primary providers of physical therapy care.
2. Serve as responsible members in the professional community and are willing and able to assume leadership roles in the communities they serve.
3. Identify researchable problems, advocate and participate in research, and incorporate research findings into clinical practice.
4. Understand and place in context the social, economic and cultural issues of practice and effectively advocate for changes in policy.
5. Correlate theory with practice and think creatively about, react to, adapt or shape new practice environments.
6. Participate in and provide education for communities, patients, peers, students and others.

OBJECTIVES OF THE PROGRAMME:

Graduates of the doctor of physical therapyprogram will:

1. Demonstrate in-depth knowledge of the basic and clinical sciences relevant to physical therapy, both in their fundamental context and in their application to the discipline of physical therapy. Understand, correlate and apply theoretical foundations of knowledge to the practice of physical therapy; evaluate and clarify new or evolving theory relevant to physical therapy.
2. Demonstrate the behaviors of the scholarly clinician by developing and utilizing the process of critical thinking and inquiry, particularly focused on the improvement of the practice of physical therapy and the delivery of health care.
3. Engage in reflective practice through sound clinical decision making, critical self-assessment and commitment to lifelong learning.
4. Demonstrate mastery of entry level professional clinical skills. Provision of these services is based on the best available evidence and includes physical therapy examination, evaluation, diagnosis, prognosis, intervention, prevention activities, wellness initiatives and appropriate health care utilization.
5. Prepared to influence the development of human health care regulations and policies that are consistent with the needs of the patient and of the society.
6. Demonstrate leadership, management, and communication skills to effectively participate in physical therapy practice and the health care team.
7. Incorporate and demonstrate positive attitudes and behaviors to all persons.

DPT CURRICULUM / SYLLABUS

1st YEAR

Sr. No.	Subject Title	Theory Marks	Practical / Clinical & G. Viva Marks	Total Marks
1	KINESIOLOGY	100	100	200
2	ANATOMY I	100	100	200
3	PHYSIOLOGY I	100	100	200
4	BIOCHEMISTRY& GENETICS I	100	100	200
5	ENGLISH	100	Not Applicable	100
6	INTRODUCTION TO COMPUTER	100	Not Applicable	100
	TOTAL	**600**	**400**	**1000**

2nd YEAR

Sr. No.	Subject Title	Theory Marks	Practical / Clinical & G. Viva Marks	Total Marks
1	BIOMECHANICS & ERGONOMICS	100	100	200
2	ANATOMY II	100	100	200
3	PHYSIOLOGY II	100	100	200
4	BIOCHEMISTRY & GENETICS II	100	100	200
5	ISLAMIC STUDIES	100	Not Applicable	100
6	PAKISTAN STUDIES	100	Not Applicable	100
	TOTAL	**600**	**400**	**1000**

3rdYEAR

Sr. No.	Subject Title	Theory Marks	Practical / Clinical & G. Viva Marks	Total Marks
1	PHYSICAL AGENTS & ELECTROTHERAPY, INCLUDING MEDICAL PHYSICS	100	100	200
2	THERAPEUTIC EXERCISES& TECHNIQUES	100	100	200
3	MANUAL THERAPY	100	100	200
4	PATHOLOGY & MICROBIOLOGY	100	100	200
5	EVIDENCE BASED PHYSICAL THERAPY& PROFESSIONAL PRACTICE	100	Not Applicable	100
6	PHARMACOLOGY & THERAPEUTICS	100	Not Applicable	100
	TOTAL	**600**	**400**	**1000**

4thYEAR

Sr. No.	Subject Title	Theory Marks	Practical / Clinical & G. Viva Marks	Total Marks
1	PHYSICAL THERAPY TREATMENT & TECHNIQUES-I (MUSCULOSKELETAL, GERONTOLOGY INCLUDING GERIATRIC, PROSTHETICS,	100	100	200

Incharge
Health Sciences
Medical College
University of Sargodha

	ORTHOTICS, SUPERVISED CLINICAL PRACTICESI			
2	EXERCISE PHYSIOLOGY; HEALTH AND WELLNESS	100	100	200
3	MEDICINE, RADIOLOGY & DIAGNOSTIC IMAGING	100	100	200
4	SCIENTIFIC INQUIRY, BIOSTATISTICS, RESEARCH METHODOLOGY	100	Not Applicable	100
5	COMMUNITY MEDICINE & REHABILITATION, SOCIOLOGY&BEHAVIORAL SCIENCES	100	Not Applicable	100
	TOTAL	**500**	**300**	**800**

FINAL YEAR

Sr. No.	Subject Title	Theory Marks	Practical / Clinical & G. Viva Marks	Total Marks
1	PHYSICAL THERAPY TREATMENT & TECHNIQUES-II *(CARDIOPULMONARY, GYNECOLOGICAL& OBSTETRICS, HUMAN DEVELOPMENT, SUPERVISED CLINICAL PRACTICES II)*	100	100	200
2	NEUROLOGICAL & PEDIATRIC PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICES III	100	100	200
3	EMERGENCY PROCEDURES, PRIMARY CARE& SPORTS PHYSICAL THERAPY	100	100	200
4	CLINICAL DECISION MAKING & DIFFERENTIAL DIAGNOSIS	100	Not Applicable	100
5	SURGERY &*INTEGUMENTARY PHYSICAL THERAPY*	100	Not Applicable	100
	TOTAL	**500**	**300**	**800**
	RESEARCH REPORT WRITING (In Final Year)	**Qualifying Mandatory**		

Note:

1. There shall be 01Question Paper in each subject having an equal contribution from all sections.
2. Supervised Clinical Practices I shall commence from 3rd year & evaluated at the end of 4th year along with relevant subject, while Supervised Clinical Practices II, and III shall commence from 4th year & evaluated at the end of the final year along with the relevant subject.
3. 10% marks are reserved for internal assessment based upon Class Tests average, Class attendance, and Overall performance.

Incharge Health Sciences Medical College University of Sargodha

CREDIT ACCUMULATION AND TRANSFER SYSTEM (CAT)

A Credit accumulation and transfer system systematically describe an educational program based upon its components. Credit hour or credit unit is the academic currency of the academic activities.

In DPT under the CAT system is defined as

Title	Recommended	Actual		
		Teaching	Clinical	Total
1. Contact hours 1500-1800 hrs/year 2. 25-30 Contact hours = 01 credit point 3. Number of credit points in a year = 55-60	1500-1800 hours/year	1400+1400+1500+1300+1400+300(R.W.) =7300	400+510+790 = 1700	9000/5=1800 hours/year

1. DIVISION OF STUDY HOURS

1st YEAR

Sr. No.	Subject Title	Total Contact Hours	Theory	Practical
1	KINESIOLOGY	300	200	100
2	ANATOMY I	300	200	100
3	PHYSIOLOGY I	300	200	100
4	BIOCHEMISTRY& GENETICS I	300	200	100
5	ENGLISH	100	100	Not Applicable
6	INTRODUCTION TO COMPUTER	100	100	Not Applicable
	TOTAL	**1400**		

2nd YEAR

Sr. No.	Subject Title	Total Contact Hours	Theory	Practical
1	BIOMECHANICS & ERGONOMICS	300	200	100
2	ANATOMY II	300	200	100
3	PHYSIOLOGY II	300	200	100
4	BIOCHEMISTRY & GENETICS II	300	200	100
5	ISLAMIC STUDIES	100	100	Not Applicable
6	PAKISTAN STUDIES	100	100	Not Applicable
	TOTAL	**1400**		

3rd YEAR

Sr. No.	Subject Title	Total Contact Hours	Theory	Practical
1	PHYSICAL AGENTS & ELECTROTHERAPY INCLUDING MEDICAL PHYSICS	300	200	100
2	THERAPEUTIC EXERCISES& TECHNIQUES	300	200	100
3	MANUAL THERAPY	300	200	100
4	PATHOLOGY & MICROBIOLOGY	300	200	100
5	EVIDENCE BASED PHYSICAL THERAPY& PROFESSIONAL PRACTICE	150	150	Not Applicable
6	PHARMACOLOGY & THERAPEUTICS	150	150	Not Applicable
	TOTAL	**1500**		

4th YEAR

Sr. No.	Subject Title	Total Contact Hours	Theory	Practical
1	PHYSICAL THERAPY TREATMENT & TECHNIQUES-I *(MUSCULOSKELETAL, GERONTOLOGY INCLUDING GERIATRIC, PROSTHETICS, ORTHOTICS, SUPERVISED CLINICAL PRACTICESI*	400	250	150
2	EXERCISE PHYSIOLOGY; HEALTH AND WELLNESS	300	200	100
3	MEDICINE, RADIOLOGY & DIAGNOSTIC IMAGING	300	200	100
4	SCIENTIFIC INQUIRY, BIOSTATISTICS, RESEARCH METHODOLOGY	100	100	Not Applicable
5	COMMUNITY MEDICINE & REHABILITATION, SOCIOLOGY&BEHAVIORAL SCIENCES	200	200	Not Applicable
	TOTAL	**1300**		

vetted

FINAL (5th) YEAR

Sr. No.	Subject Title	Total Contact Hours	Theory	Practical
1	PHYSICAL THERAPY TREATMENT & TECHNIQUES-II *(CARDIOPULMONARY, GYNECOLOGICAL& OBSTETRICS, HUMAN DEVELOPMENT, SUPERVISED CLINICAL PRACTICES II)*	400	250	150
2	NEUROLOGICAL & PEDIATRIC PHYSICAL THERAPY INCLUDING SUPERVISED CLINICAL PRACTICES III	300	200	100
3	EMERGENCY PROCEDURES, PRIMARY CARE& SPORTS PHYSICAL THERAPY	300	200	100
4	CLINICAL DECISION MAKING & DIFFERENTIAL DIAGNOSIS	200	200	Not Applicable
5	SURGERY &*INTEGUMENTARY PHYSICAL THERAPY*	200	200	Not Applicable
	TOTAL	**1400**		
	Report Writing (in final year)	300		
	G. TOTAL	**7300**		

BREAK DOWN OF HOURS OF CLINICAL PRACTICE

YEAR	WARD/CLINIC	HOURS	PERIOD
THIRD YEAR	PHYSIOTHERAPY CLINIC	400	ONE YEAR
	TOTAL	**400**	
FOURTH YEAR	PHYSIOTHERAPY CLINIC	200	THREE MONTHS
	GENERAL MEDICINE	80	TWO MONTHS
	PULMONOLOGY & CARDIOLOGY	40	ONE MONTH
	GENERAL SURGERY	70	TWO MONTHS
	GYNECOLOGY & OBSTETRICS	40	ONE MONTHS
	CHEST MEDICINE	80	TWO MONTHS
	TOTAL	**510**	
FINAL YEAR	PHYSIOTHERAPY CLINIC	200	THREE MONTHS
	PEDIATRICS	80	ONE MONTH
	BURN & PLASTIC SURGERY	50	ONE MONTH
	GENERAL SURGERY	60	TWO MONTHS

Incharge
Department of Allied Health Sciences
Sargodha Medical College
University of Sargodha

	ORTHOPEDICS SURGERY	120	TWO MONTHS
	NEUROLOGY	120	ONE MONTH
	CARDIOVASCULAR & THORACIC SURGERY	80	ONE MONTH
	ICU & CCU	80	ONE MONTH
	TOTAL	**790**	
	S. TOTAL	**1700**	
	G. TOTAL (including Theory & Clinical) =7300+1700	9000	

Note:

* 2/3rd of the clinical training shall be provided in the morning whereas 1/3rd of the clinical training shall be provided in the evening. There shall be 1-2 months of summer vacations in an academic session.

HOUSE JOB

One year House Job/internship in various sub-disciplines of Physical Therapy will be incorporated as recommended after completing the DPT Degree.

1. PAPER PATTERNS & MARKS DISTRIBUTION OF UNIVERSITY EXAMINATIONS

PAPER PATTERN

I TOTAL MARKS = 100 (having Theory Section only)
II TOTAL MARKS = 200 (having Theory + Practical & G. Viva)

I- TOTAL MARKS = 100 *(having Theory only)*

THEORY (100 marks)			
Question	**No of Questions**	**Marks for each Stem**	**Total marks**
Question 01:MCQs (20 stems with 04 possible options only 01 correct)	01	01	01x20 = 20
Question 02 to 09: SEQs (Requiring short answer of all)	08	05	08x05 = 40
Question 10 to 12: LEQs (Requiring detailed answer of any 02 Qs)	02	15	02x15 = 30
Total Marks			**90**
INTERNAL ASSESSMENT (10 MARKS)			
Internal assessment Theory part			10
Total Marks			10
Grand Total Marks			**100**

Vetted
MUS

II- TOTAL MARKS = 200 *(having both Theory and Practical & General Viva)*

WRITTEN /THEORY (100 marks)			
Question	**No of Questions**	**Marks for each Stem**	**Total marks**
Question 01:MCQs (20 stems with 04 possible options only 01 correct)	01	01	01x20 = 20
Question 02 to 09:SEQs (Requiring short answer of all)	08	05	08x05 = 40
Question 10 to 12:LEQs (Requiring detailed answer of any 02 Qs)	02	15	02x15 = 30
Total Marks			**90**
PRACTICAL (40 marks)			
Marks for Internal			20
Marks for External			20
Total Marks			**40**
G.VIVA (50 marks)			
Marks for Internal			25
Marks for External			25
Total Marks			**50**
INTERNAL ASSESSMENT (20 MARKS)			
Internal assessment Theory part			10
Internal assessment Practical part			10
Total Marks			**20**
Grand Total Marks			**200**

DETAILED COURSE OUTLINE DPT

1st YEAR

1.	Kinesiology	200 marks
2.	Anatomy-I	200 marks
3.	Physiology-I	200 marks
4.	Biochemistry& genetics-I	200 marks
5.	English	100 marks
6.	Introduction to computer	100 Marks
	Total	**1000 Marks**

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 the relative axis of motion. It also explains the inter-relationship among kinematic variables and utilizes this knowledge to describe and analyze motion. This course also covers the classification of the joints and muscles and their distinguishing characteristics; group action of muscles arthrokinematics and osteokinematics of human movement. Kinesiology addresses physiological, biomechanical, and psychological dynamic principles and mechanisms of movement. Applications of kinesiology to human health (i.e., human kinesiology) include strength and conditioning; methods of rehabilitation, such as physical and occupational therapy; and sports and exercise. Innovative techniques used in the clinical service and basic research laboratories are introduced with hands-on training to disseminate the students with the scientific basis of current procedures. The skilful and result-oriented teaching strategies and methodologies are employed to train the students.

LEARNING OBJECTIVES

- Define the mechanical principles and their application on the human body
- Describe concept of movement and how it occurs in body
- Demonstrate fundament position, their effects and uses
- Explore fundamental skills to differentiate between a good and bad posture and to use technique for re-education
- Develop critical thinking ability in students on how and why to select which technique in a specific case, suitable for its rehabilitation
- Describe muscular anatomy, its function against gravity and manual resistance

COURSE CONTENTS

INTRODUCTION TO KINESIOLOGY
Definition of kinesiology, Definition of rehabilitation

MECHANICS:
Mechanical Principles and Mechanics of Position

Vetted

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, reflex arc, stretch reflex, righting reflexes, 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.

Incharge
Department of Allied Health Sciences
Sargodha Medical College
University of Sargodha

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, positions 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.

Practical:

I. Fundamentals of muscle testing
II. Methods of muscle recording
III. Basic muscle grading system
IV. Evaluation of posture
V. Regional manual muscle testing of all the regions of the body
VI. Practical demonstrations of muscles work and its ranges
VII. Practical demonstrations of various fundamental positions and posture analysis
VIII. Practical demonstrations of the techniques of active
IX. passive movements
X. Practical demonstrations of relaxation procedures
XI. Practical demonstrations of various derived positions

RECOMMENDED TEXT BOOKS:

1. Practical exercise therapy by Margaret Hollis (Latest Edition).
2. Brunnstrom's Clinical Kinesiology (Latest Edition).
3. Clinical Kinesiology and anatomy by Lynn S Lippert(Latest Edition).
4. Joint structure and function: a comprehensive analysis by: Pamela. K. Levangie and Cynthia. C. Norkin (Latest Edition).
5. Muscle function testing by: Cunningham and Daniel (Latest Edition).
6. Human movement explained by kimjonas and karenbaker (Latest Edition).
7. The principles of exercise therapy by: M Dena Gardiner (Latest Edition).

Vetted

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 the structure and function of human movement. A comprehensive study of human anatomy with emphasis on the nervous, musculoskeletal, and circulatory systems is incorporated. Introduction to general anatomy lays the foundation of the course. Dissection and identification of structures in the cadaver supplemented with the study of charts, models, prosecuted materials and radiographs are utilized to identify anatomical landmarks and configurations of the upper limb and thoracicregion.Anatomy is inherently tied to developmentalbiology, embryology, comparativeanatomy, evolutionarybiology, as these arethe processes by which anatomy is generated over immediate (embryology) and long (evolution) timescales. Anatomy and physiology, which study (respectively) the structure and function of organisms and their parts, make a natural pair of related disciplines, and they are often studied together. Human anatomy is one of the essential basic sciences that are applied in medicine.

LEARNING OBJECTIVES

- Define basic technical terminology and language associated with anatomy
- Describe the structure, composition and functions of the organs in the human body
- Comprehend the concepts (& associated principles) for each general type of anatomical structures
- Demonstrate skills in the surface markings of clinically important structures, on normal living bodies and the correlation of structure with function
- Describe concepts of embryology and histology
- Identify histological slides of the human body
- Describe the interdependency and interactions of the structural and functional components of upper limb

COURSE CONTENTS

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, Epicongyle, 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

DEMONSTARIONS:
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:

Vetted

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 in-ferior 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:
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, musculo skeletal system.

General Histology
Microscope, Epithelium, Connective Tissue, Cartilage, Bone, Muscles, Nerves System, Skin, Respiratory System.

Practical:

I. During study of Anatomy
II. emphasis should be given on applied aspect
III. radiological anatomy
IV. histological anatomy
V. surface anatomy and cross-sectional anatomy of the region covered in the respective year.

RECOMMENDED TEXT BOOKS:

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

PHYSIOLOGY I

COURSE DESCRIPTION

Physiology is the integrative study of cellular and whole-body function and is the pivotal discipline linking other basic biomedical sciences on the one hand with the experimental and clinical medicine on the other. The course is designed to explain the physical and chemical mechanisms that are responsible for the origin, development, and progression of life. Two approaches are used to explain events that occur in the human body; one emphasizes the purpose of a body process, and the other emphasizes the underlying mechanism by which this process occurs. Physiologists, however, explain how processes occur in the body in terms of cause and- effect sequences of physical and chemical processes. The emphasis in the course will be on normal structure and function of the human body, and the approach will be to develop an understanding of the integrative nature of physiological systems to maintain the internal environment of the body within very narrow limits compatible with life.

LEARNING OBJECTIVES

- Define the terminology related to the structure and function of the human body systems
- Compare and contrast the structural and functional characteristics of the various human body cells
- Describe basic chemical concepts and principles as they apply to the structure and functioning of the blood and neuromuscular system
- Analyze the interrelationships of body organ systems, homeostasis, and the complementarity of structure and functioning of the blood and neuromuscular system
- Demonstrate advance techniques to investigate the body and interpret data to be used for diagnosis and treatment
- Define the principles behind medical instrumentation and their usage

COURSE CONTENTS

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

Vetted

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

CARDIOVASCULAR SYSTEM
Heart as a pump, Conductive system of Heart, 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

Clinical Module
Clinical significance of cardiac cycle, Cardiac failure, correlation of ECG and heart sounds to cardiac cycle. Clinical significance of cardiac cycle, interpretation of ischemia and arrhythmias. Effects of hypertension. Clinical significance of heart sounds. Effects of ischemia. 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, Regulation of respiration, 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
Clinical importance of lung function tests. Causes of abnormal ventilation and perfusion. Effects on pneumothoax, pleural effusion, and pneumonia. Respiratory failure. Artificial respiration and uses & effects of O2 therapy. 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 hemoglobin, 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 systemClinicalModuleAnemia and its different types. Blood indices in various disorders. Clotting disorders. Blood grouping and cross matching. Immunity

SKIN AND BODY TEMPERATURE REGULATION+ SPORT PHYSIOLOGY

Practical:

I. HEMATOLOGY
II. Use of the microscope.
III. Determination of haemoglobin.

IV. Determination of erythrocyte sedimentation rate.
V. Determining packed cell volume.
VI. Measuring bleeding and clotting time.
VII. RBC count. Red cell indices.
VIII. WBC count.
IX. Leukocyte count.
X. Prothrombin and thrombin time

RESPIRATORY SYSTEM
Clinical examination of chest. Pulmonary volume, their capacities and clinical interpretation. Stethography

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

RECOMMENDED TEXT BOOKS

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

BIOCHEMISTRY&GENETICS- I

COURSE DESCRIPTION

The knowledge and skills in fundamental and introductory biochemistry is provided that are essential for further studies. This course provides a basic understanding of life processes at the biochemical molecular level. It provides an understanding of the normal biochemical processes in the human body in which the function of the various organs and tissues are integrated. It covers introduction to the biomolecules i.e. amino acid, proteins carbohydrates, fats, enzymes and nucleic acids, and the nutritional biochemistry concludes the course. It also familiarizes the students with laboratory instruments / equipment used in biochemistry laboratory.

LEARNING OBJECTIVES

At the end of the course, the student should be able to demonstrate his knowledge and understanding on the subject with following learning objectives:

- Describe molecular and functional organization of a cell, and sub-cellular components in the context of chemistry and human biochemistry.
- Basic knowledge of structure, function and interrelationship of biomolecules and consequences of deviation from normal.
- Learning and understanding the properties, classification and functions of biomolecules with emphasis on amino acid, peptides, proteins, carbohydrates, lipids and nucleic acid.
- Having a clear understanding of the fundamental aspects of enzymology & its clinical applications.
- Explain importance of nutritional biochemistry with emphasis on minerals, trace elements, vitamins and balance diet.

COURSE CONTENTS

1. CELL
2. Introduction to Biochemistry, Cell: (Biochemical Aspects), Cell Membrane Structure, Membrane Proteins, Receptors & Signal Molecules
3. BODY FLUIDS
4. Structure and properties of Water, Weak Acids & Bases, Concept of pH &pK, Buffers& their mechanism of action, Body buffers
5. BIOMOLECULES
6. AMINO ACIDS, PEPTIDES & PROTEINS
7. 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, Globular proteins, Hemo-proteins and their clinical implications (such as jaundice etc)
8. ENZYMES
9. Introduction, Classification & Properties of Enzymes, Coenzymes, Isozymes & Proenzymes, Regulation & Inhibition of Enzyme activity & enzymes inhibitors, Clinical Diagnostic Enzymology
10. CARBOHYDRATES
11. Definitions, Classification, Biochemical Functions & Significance of Carbohydrates, Structure & Properties of Monosaccharides & Oligosaccharides, Structure & Properties of Polysaccharides, Bacterial cell Wall, Hetero-polysaccharides, Glycosaminoglycans(GAGs)
12. LIPIDS
13. 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
14. NUCLEIC ACIDS
15. Structure, Functions & Biochemical Role of Nucleotides. Structure & Functions of DNA, Structure & Functions of RNA
16. MINERALS
17. Sources, RDA, Biochemical Functions & Clinical Significance of Calcium & Phosphorus. Sources, RDA, Biochemical Functions & Clinical Significance of Sodium, Potassium, Chloride. Biochemical Functions & Clinical Significance of Iron, Copper, Zinc, Manganese, Magnesium, Selenium, Iodine and Fluoride
18. VITAMINS
19. Sources, RDA& Biochemical Functions & Clinical Significance of Fat-Soluble Vitamins, Sources, RDA& Biochemical Functions & Clinical Significance of Water-Soluble Vitamins
20. NUTRITION
21. Dietary Importance of Carbohydrates, Lipids & Proteins and other dietary Ingredients. Balanced Diet. Diet in specialized conditions
22. TISSUE BIOCHEMISTRY
23. Extracellular Matrix, Collagen, Elastin and Extracellular Matrix Components, Biochemistry of Proteoglycans, Bone & Teeth, Muscle & Cytoskeleton

Practical:

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

II. Molisch's Test & Iodine Test. Benedict's Test &Barfoed's Test. Selivanoff's Test &Phenylhydrazine Test. Sucrose Hydrolysis. Starch Hydrolysis.

III. Biuret Test, Heat Coagulation Test & Salt Saturation Test. Ninhydrin Test, Xanthoproteic Test &Millon-Nasse's Test. Aldehyde Test, Sakaguchi's Test. Determination of Isoelectric pH of casein Protein.

Incharge
Department of Allied Health Sciences
Sargodha Medical College
University of Sargodha

IV. Emulsification of natural fat & Solubility of soap, Test for Cholesterol, Iodine & Peroxide value calculation. Saponification value calculation

V. Sample Collection & Physical Evaluation of Urine. Analysis of Normal Urine. 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).

ENGLISH

COURSE DESCRIPTION

The course introduces the students to the underlying rules to acquire and use language in academic context. The course aims at developing grammatical competence of the learners to use grammatical structures in context in order to make the experience of learning English more meaningful enabling the students to meet their real life communication needs. The objectives of the course are to, reinforce the basics of grammar, understand the basic meaningful units of language, and introduce the functional aspects of grammatical categories and to comprehend language use by practically working on the grammatical aspects of language in academic settings. After studying the course, students would be able to use the language efficiently in academic and real life situations and integrate the basic language skills in speaking and writing. The students would be able to work in a competitive environment at higher education level to cater with the long term learners' needs.

LEARNING OBJECTIVES

Enable the students to meet their real life communication needs.

COURSE CONTENTS

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

Vetted

RECOMMENDED BOOKS

1. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN 0194313492
2. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press. 1997. ISBN 0194313506
3. Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Francoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41 45-53.
4. Reading. Upper Intermediate. Brain Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2.
5. 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).
6. Reading. Advanced. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 453403 0.
7. Reading and Study Skills by John Langan

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. Students will get basic understanding of computer software, hardware, and associated technologies. This course is aimed to introduce computer and its basic numerical methods, data bases, networking, etc. World wide web and basic terms of databases, ICT on internet will also be discussed and taught to the students. Techniques of information search, objectives include basic understanding of computer software, hardware, and associated technologies. How computers can be used in the workplace, how communications systems can help boost productivity, and how the Internet technologies can influence the workplace. The course is designed to equip and train students in basics of computers, internet resources, and several software required nowadays to complete the assignments, to design presentation. Course will also cover computer ethics and related social media norms and cyber laws.

LEARNING OBJECTIVES

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

- Understand different terms associated with computer and information technology.
- Identify various components of a computer system.
- Identify the various categories of software and their usage.
- Define the basic terms associated with communications and networking.
- Understand different terms associated with the Internet and World Wide Web.
- Use various web tools including Web Browsers, E-mail clients and search utilities.
- Use text processing, spreadsheets and presentation tools.
- The enabling/pervasive features of computer and information technology.

COURSE CONTENTS

1. Basic Definitions &Concepts
2. Hardware: Computer Systems &Components

3. Storage Devices , Number Systems
4. Software: Operating Systems, Programming and Application Software
5. Introduction to Programming, Databases and Information Systems
6. Networks
7. Data Communication
8. The Internet, Browsers and Search Engines
9. The Internet: Email, Collaborative Computing and Social Networking
10. The Internet: E-Commerce
11. IT Security and other issues
12. Project Week
13. Review Week

RECOMMENDED BOOKS

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

2nd Year

1. Biomechanics &Ergonomics	200 Marks
2. Anatomy-II	200 Marks
3. Physiology-II	200 Marks
4. Biochemistry& GENETICS-II	200 Marks
5. Islamic Studies	100 Marks
6. Pak Studies	100 Marks
Total Marks	1000 Marks

BIOMECHANICS & ERGONOMICS

COURSE DESCRIPTION

This course aspires to develop an appreciation of how mechanical principles can be applied to understand the underlying basis 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. Endow with knowledge of Mechanics, Dynamics, Statics, Kinematics, Kinetics, anthropometries, the scope of scientific inquiry addressed by biomechanics, Difference between quantitative and qualitative approach for analyzing movements. This course will also help to expand 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.

LEARNING OBJECTIVES

- Define concepts and terminology within the area of biomechanics
- Describe statics, kinematics and kinetics in human movement
- Analyze and describe the motion of a body or system using qualitative and quantitative approaches
- Demonstrate an understanding of how changes of movement patterns and techniques will influence the load on human tissues of the musculoskeletal system during movement
- Apply knowledge of the underlying musculoskeletal principles and concepts of biomechanics including the core areas of human movements in upper and lower extremity
- Understand and apply knowledge, tools and techniques used in Ergonomics

COURSE CONTENTS

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.

Kinetic 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.

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

Ergonomics
Overview And Conceptual Framework.
Ergonomics and Therapy: An Introduction, A Client-Centered Framework for Therapists in Ergonomics, Macroergonomics.
Knowledge, Tools, and Techniques.
Anthropometry, 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

Practical

- 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
- Fundamentals of 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
- Procedural Goniometry: Measurement of upper extremity, lower extremity, tempomendibular joint, cervical spine, thoracic spine and lumber joint ROM.

RECOMMENDED BOOKS

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

ANATOMY II

COURSE DESCRIPTION

The main aim of this course is to train and teach the students of the second year of Sargodha Medical College in such a way that they can practically apply the concepts of this subject which forms the firm foundation for the art of healing (medicine). The curriculum equips the students with a clear and comprehensive knowledge of the human body structural organization. The knowledge sharing is done with the students as it is the science of macro/microstructure and forms of the human body. The topics within the domain of anatomy include histology or microscopic anatomy, embryology or developmental anatomy, regional or gross anatomy and neuroanatomy which highlight the importance of the structural anatomy. Our teaching methodology involves group discussions, lectures and practical. At the end of the course study, the

student will be able to understand the basic knowledge of structure, histology and development of the abdomen, pelvis, head, neck and brain regions.

LEARNING OBJECTIVES

- Describe gross anatomy of neuro-musculoskeletal and circulatory system of lower limb, abdominal wall and pelvis.
- Demonstrate anatomical landmarks and configuration of the lower limb, abdominal wall and pelvis through dissection/identification of structures in the manicans / smart board systems supplemented with the study of charts, models, prosected materials, and radiographs.
- Describe major stages of embryological development of the lower limb with development of the neurological and vascular supplies to the lower limb.

COURSE CONTENTS

THEORY

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, description of Gut Tube, 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

SPECIAL EMBRYOLOGY:

Gastrointestinian system, cardiovascular system, CNS, Respiratory system

SPECIAL HISTOLOGY

Tongue, Oesophagus, Stomach, Small Intestine, Large Intstine, Major Salivary Glands, Liver, Kidneys, Pituitary / Adrenal, Thyroid / Parathyroid

Practical

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

RECOMMENDED BOOKS

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

PHYSIOLOGY II

COURSE DESCRIPTION

Physiology is the integrative study of cellular and whole-body function and is the pivotal discipline linking other basic biomedical sciences on the one hand with the experimental and clinical medicine on the other. The course is designed to explain the physical and chemical mechanisms that are responsible for the origin, development, and progression of life. Two approaches are used to explain events that occur in the human body; one emphasises the purpose of a body process, and the other emphasises the underlying mechanism by which this process occurs. Physiologists, however, explain how processes occur in the body in terms of cause and- effect sequences of physical and chemical processes. The emphasis in the course will be on normal structure and function of the human body, and the approach will be to develop an understanding of the integrative nature of physiological systems to maintain the internal environment of the body within very narrow limits compatible with life.

LEARNING OBJECTIVES

- Describe functions of gastrointestinal tract, endocrinology and cardiovascular system
- Describe physiology at the molecular, metabolic/cellular, tissue and systems levels
- Differentiate the physiological responses in normal function and disease stages

COURSE CONTENTS

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. Cerebral blood flow, Brain stem and its functions, cranial nerves.

Clinical Module

Vetted

Significance of dermatomes. Injuries of the spinal cord. Hemiplegia and paraplegia. Parkinsonism. Effects of cerebellar dysfunction.

REPRODUCTION

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.

Clinical Module

Male infertility. Female infertility. 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

Dysphagia. Physiological basis of acid peptic disease. Causes of vomiting. Diarrhea and constipation in clinical settings. 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

Acromegaly, gigantism and dwarfism. Effects of panhypopitutiarism. Diabetes insipidus. Thyrotoxicosis and myxoedema. Pheochromocytoma. Cushing's disease. Adrenogenital syndrome. 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

Renal function tests and their clinical importance. Fluid excess and depletion. Renal failure and dialysis. Metabolic acidosis and alkalosis. Abnormalities of micturition.

Practical

- Nervous System
- Examination of superficial and deep reflexes.

- Brief examination of the motor and sensory system.
- Examination of the cranial nerves.

RECOMMENDED BOOKS

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

BIOCHEMISTRY& GENETICS- II

The knowledge and skills in fundamental and introductory biochemistry is provided that are essential for further studies. This course provides a basic understanding of life processes at the biochemical molecular level. It provides an understanding of the normal biochemical processes in the function of the various organs and tissues with the principles of metabolic integration giving the genetic, biochemical and molecular understanding of the biochemical basis of various disease processes. It alsofamiliarizes the students with laboratory instruments / equipment used in biochemistry laboratory with modem biochemical techniques and their uses in the diagnosis of diseases especially genetic diseases.

LEARNING OBJECTIVES

At the end of the course, the student should be able to demonstrate his knowledge and understanding on the subject with following learning objectives:

- To learn basic understanding with the homeostatic mechanisms through the concepts of inter-regulation of carbohydrates, lipids and protein metabolism and its relation to hormone actions in the human body.
- To learn and understand the basic biochemical processes taking place in the body, and understanding their relation with normal and abnormal human metabolism.
- To learn how large molecules are synthesized and used, and how energy is generated, stored, and retrieved (metabolism). And to have understanding and knowledge about how diseases are related to biochemical defects.
- To learn and describe respiration at cellular and molecular level and to explain the various biochemical pathways related to metabolism of carbohydrates, protein, lipids and nucleic acid.
- Applying basic knowledge of protein synthesis, post translational modification and targeting to its cellular destination.
- To learn and understand the molecular mechanisms of gene expression, the principles of genetic engineering & their applications in medicine.
- To learn and understand the basics of Molecular Medicine, Gene therapy and Stem Cell therapy in Physical Therapeutics.
- To have the basic principles and to make use of techniques/instruments to perform biochemical analysis relevant to clinical screening & diagnosis.

COURSE CONTENTS

1. BIOENERGETICS
2. Introduction to Bioenergetics, Biological Oxidations and Electron Transport Chain and Oxidative Phosphorylation
3. METABOLISM OF CARBOHYDRATES

4. 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, Alcohol Metabolism
5. METABOLISM OF LIPIDS
6. Digestion & Absorption of Lipids, Metabolism & Clinical Significance of Lipoproteins, Fatty acid oxidation, fatty acid biosynthesis and metabolism of Triacylglycerols, Metabolism & clinical Significance of Cholesterol, Metabolism of Eicosanoids
7. METABOLISM OF PROTEINS & AMINO ACIDS
8. Digestion of Proteins & Absorption of Amino Acids, Transamination & Deamination of Amino Acids and urea cycle and Specialized products formed from Amino Acids
9. Metabolism of Nucleic Acids
10. HORMONES
11. Classification & Mechanism of Action of Hormones, Signal Transduction, Second Messengers and Receptors, Hypothalamic & Pituitary Hormones, Steroid Hormones: Glucocorticoids and Mineralocorticoids, Insulin & Glucagon and brief introduction to the Diseases related to hormones abnormalities
12. MOLECULAR BIOLOGY
13. Structural Organization of Chromosome and Genes, Replication, Transcription and Translation (Protein synthesis)in Prokaryotes & Eukaryotes, Regulation of Gene Expression, Mutations and DNA repair mechanisms,Recombinant DNA Technology, Polymerase Chain Reaction, Blotting Techniques, Nucleic acid hybridization assays
14. GENE &STEM CELL THERAPY
15. The Introduction to Molecular Medicine & Stem Cell therapy in Physical Therapy, Human Gene Therapy: Current Status and Basic Science, Gene Therapy for Neurological disorders, Gene Therapy Musculoskeletal disorders (Bone, Ligament, tendon, Cartilage), Gene Therapy Strategies in Myopathies

PRACTICAL

- Techniques of Instruments in Clinical Biochemistry with examples.
- Visible Spectrophotometry. Flame photometry. UV & IR spectrophotometry. Atomic Absorption spectrophotometry. pH Metry. Chromatography and determination of Amino Acids in Urine by paper chromatography
- Clinical quantitative analysis in Biochemistry
- Serum Glucose Estimation. Glucose tolerance Test (GTT). Serum Cholesterol estimation (Total, HDL and HDL cholesterol). Serum Bilirubin Estimation (Total, Direct and Indirect bilirubins). Serum Proteins Estimation (Total, Albumin & Globulin). Serum Total lipids Estimation. Serum calcium Estimation (total, ionized & unionized). Serum Uric acid Estimation. Serum Urea Estimation. Serum Creatinine Estimation.Enzymes Estimation in Serum: AST, ALT, ALP, Creatine Kinase (CK) and LDH.

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. Biochemistry by StryerandLubert(Latest Edition).
6. Molecular Medicine: Genomics to Personalized Healthcare, by R. Trent (Latest edition).

7. Molecular Biology of the Cell, by Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts and Peter Walter (Latest edition).

ISLAMIC STUDIES

COURSE DESCRIPTION

This course is aimed at to provide Basic information about Islamic Studies, enhance understanding of the students regarding Islamic civilization, improve student's skill to perform prayers and other worships, enhance the skill of the students for understanding of issues related to faith and religious life. Enhance the general knowledge of the students regarding the Muslim world and its current political, economic, social, and defense problems. Students will discuss different current issues being faced by the Muslim World and the importance of unity and cooperation among Muslim countries. In this regard, they will learn about different projects and cooperation among Muslim countries, the Islamic religious tradition within historical, social and cultural contexts; visual, performative and oral expressions of the heritage of Islam, including language, literature, art, and architecture; intra-Islamic differences and issues of inter-cultural diversity and integration within the Islamic world; the political systems of Muslim majority countries.

LEARNING OBJECTIVES

This course is aimed at:

1 To provide Basic information about Islamic Studies
2 To enhance understanding of the students regarding Islamic Civilization
3 To improve Students skill to perform prayers and other worships
4 To enhance the skill of the students for understanding of issues related to faith and religious life.

COURSE CONTENTS

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 Jehad
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

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

3. اسلام ایک نظر میں مولانا صدر الدین اصلاحی
4. قرآن اور تقدیم سیرت ڈاکٹر میر ولی الدین

PAKISTANSTUDIES

COURSE DESCRIPTION

The course is designed to acquaint the students of allied health sciences with the rationale of the creation of Pakistan. The students would be apprised of the emergence, growth and development of Muslim nationalism in South Asia and the struggle for freedom, which eventually led to the establishment of Pakistan. While highlighting the main objectives of social life, the course explains further the socio-economic, political and cultural aspects of Pakistan's endeavors to develop and progress in the contemporary world. For this purpose, the foreign policy objectives and Pakistan's foreign relations with neighboring and other countries are also included. This curriculum has been developed to help students analyse the socio-political problems of Pakistan while highlighting various phases of its history before and after the partition to develop a vision to become knowledgeable citizens of their homeland.

LEARNING OBJECTIVES

- Develop vision of historical perspective, government, politics, Contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

COURSE CONTENTS

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

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

3rd Year

1. Physical Agents & Electrotherapy including Medical Physics	200 Marks
2. Therapeutic Exercises and Techniques	200 Marks
3. Manual Therapy	200 Marks

4. Pathology & Microbiology 200 Marks
5. EVIDENCE BASED PHYSICAL THERAPY& PROFESSIONAL PRACTICE 100 Marks
6. Pharmacology & Therapeutics 100
Marks

Total Marks **1000 Marks**

PHYSICAL AGENTS & ELECTROTHERAPY INCLUDING MEDICAL PHYSICS

COURSE DESCRIPTION

PHYSICAL AGENTS & ELECTROTHERAPY

Electrotherapy has been a component of physical therapy practice since the early days, however its delivery has changed remarkably and continues to do so. The most popular modalities used these days are in many respects quite dissimilar to those of 60 or more years ago though of course they are based on the same principles. Modern electrotherapy practice needs to be evidence based and used appropriately. Used at the right place, at the right time for the right reason, it has a phenomenal capacity to be effective. The skill of the practitioner using electrotherapy is to make the appropriate clinical decision as to which modality to use and when, and to use the best available evidence when making that decision. Physical therapists are trained in the therapeutic application of various basic physical agents that we call modalities. These agents are thermal [heat and cold], electrical, sound, light and mechanical. Learning outcomes of this course are to explore fundamental skills in application of electro modalities 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.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.

LEARNING OBJECTIVES

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

- Discuss in detail the information about the physiological and therapeutic uses, risks, preventions and knowledge of indications and contraindications on the type of electric current to be used in different disorders
- Demonstrate fundamental skills that will be used to train in electrotherapy modalities according to the need of patient

COURSE CONTENTS

A: Electrotherapy

TYPES OF CURRENT USED

Low frequency current,
Medium frequency current

High 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 Dia-dynamic currents.

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, salycylate, albucid, copper, zinc, histamine, carbacol, renotinenovocaine, 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 & intruppted 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

HIGH FREQUENCY CURRENT:
SHORT WAVE DAITHERMY
Introduction and definition
Physiological and therapeutic effects
Methods of application
Indication and contraindications

MICROWAVE DAITHERMY
Introduction and definition
Methods of application
Indications and contraindication

PHYSICS OF HEAD 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

HELIOTHERAPY
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 car 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

B: MEDICAL PHYSICS

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, 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, 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,.

Classification of currents (overview)

Low frequency current

Sinusoidal current. Faradic current, Galvanic current (constant and interrupted), Diadynamic current TENS, Smart Bristow faradic coil.
Medium Frequency Current
Interferential current and Russian current
High Frequency Current Waves
Waves, Transistors and Long waves, medium waves short waves micro waves
Sound Waves
Heat Waves
Electromagnetic Radiation
Safety in Biomedical Instruments
Radiation Protection

Practical

The practical training will be practiced in Physical Therapy 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
- Uses of E.M.G
- Electromyography & temperature
- Feedback technique
- Practical application of TENS in physical therapy treatment ward
- Reflective clinical case studies
- Iontophorosis,
- 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:

1. Clayton's Electrotherapy and Actinotherapy, 10th edition by PM Scott

vetted

2. Electrotherapy: Evidence based Practice, 11th edition by Shelia Kitchen
3. Michelle H Cameron's Physical Agent in Rehabilitation: From research to Practice
4. Electrotherapy and Electrodiagnosis by S. Lient
5. Applications of Shortwave Diathermy by P.M. Scott
6. Practical Electrotherapy by Savage
7. Clayton's Electrotherapy and actinotherapy by: PM Scott
8. Medical physics for physical therapists by: AD Moore
9. Preliminary Electricity for Physiothrapists by B. Savage.
10. Basic Electronics by Grob.
11. Principles of Bio-instrumention by Richard A. Normann.
12. Hand book of Biomedical Instrumentation by R.S. Khanpur.
13. Basic Radiation Protection Technology by Gollnick

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.

LEARNING OBJECTIVES

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

- Defines & Explain types of physical therapy techniques and exercises
- Demonstrate best practices associated with injury and its rehabilitation
- Discuss strategist improve movement and function, relieve pain and extend mobility potential.

COURSE CONTENTS

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 IMPAIREDMUSCLE 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:

- Practical demonstration of ROM techniques,

Vetted

- 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 BOOKS:

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

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, neuro mobilization 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

LEARNING OBJECTIVES

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

- Discuss various concepts of manual therapy techniques
- Discuss principles of manual therapy
- Demonstrate skills in application of manual therapy techniques

COURSE CONTENTS

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 & Non resting positions
- Joint locking
- Bone and joint movement
- Rotations of a vertebral bone
  - Standard bone movements, Combined bone movements, Coupled movements & Non coupled 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, Translatoric Joint Play Movements, Determining the direction of restricted gliding, Glide test, Kaltenbom Convex-Concave Rule, Grades of translatoric movement, Normal grades of translatoric movement (Grades I - III)

- Palpating resistance to normal movement

Pathological grades of translatoric movement and Using translatoric 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
- Translatoric 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 trial 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
- A voiding 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 join, 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.

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. Various reflective case studies related to manual therapy of the spine and TM joint will be assigned to the students.

The details of the practical's are

PELVIS
Functional evaluation, tests and mobilizations
LUMBAR SPINE
Functional evaluation, tests and mobilizations

THORACIC SPINE AND RIBS
Functional evaluation, tests and mobilizations
CERVICAL SPINE
Functional evaluation, tests and mobilizations

UPPER CERVICAL SPINE
Functional evaluation, tests and mobilizations
JAW
Functional evaluation, 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
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 BOOKS

1. *Manual Mobilization of the Joints The Kaltenborn Method of Joint Examination and Treatment Volume I The Extremities*By: Freddy M. Kaltenbomin collaboration with OlafEvjenth, Traudi BaldaufKaltenbom,Dennis Morgan, and Eileen Vollowitz, OPTP Minneapolis, Minnesota, USA.
2. *Manual Therapy* By: Ola Grimsby, the Ola Grimsby institute San Diego.
3. *Integrative Manual therapy for the upper and lower extremities* By: Sharonweiselfish, North Atlantic books Berkeley, California.
4. *Orthopedic manual therapy an evidence-based approach* by: Chad Cook

5. *Orthopedic Manual Therapy Diagnosis Spine and Temporomandibular Joints* By: Aad van der
6. *Translatoric Spinal Manipulation* By: John R. Krauss, Olaf Evjenth, and Doug Creighton John R. Krauss A Lakeview Media L. L.C. Publication
7. *Neuromusculoskeletal Examination and Assessment A Handbook for Therapists*
8. By: Nicola J Petty, Ann P Moore &G D Maitland, Second Edition Churchill Livingstone
9. *Myofascial Manipulation Theory and Clinical Application*, Second Edition By: Robert I. Cantu, Alan J. Grodin an Aspen Publication Aspen Publishers, Inc. Gaithersburg, Maryland 2001
10. *Maitland's Vertebral Manipulation* Seventh Edition By: Geoffrey D. Maitland
11. *Musculoskeletal manual medicine, diagnosis and treatment by* Jiri Dovark, Vaclav Dovark, Werneir Schneider etc
12. *Manual therapy, NAGS, SNAGS, MWMS etc* by Brian R Mulligan fifth edition

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.

LEARNING OBJECTIVES

- Discuss concepts of general pathology and Microbiology
- Discuss recognize signs and symptoms that are considered red flag for serious disease
- Discuss and disseminate pertinent information and findings, and ascertain the appropriate steps to follow during physical therapy management

COURSE CONTENTS

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 medicine 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 Intraspinal 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 BOOKS

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

EVIDENCE BASED PHYSICAL THERAPY & 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.

LEARNING OBJECTIVES

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

- Discuss in detail the concept of evidence based practice in physical therapy.
- Demonstrate the latest skills needed for obtaining, evaluating, critiquing and applying the scientific literature pertaining to physical therapy practice.
- Discuss cultural competencies, education techniques, ethics, law & administration in Physical therapy practices
- Changes in the physical therapy profession and physical therapist responsibilities to the profession, the public and to the health care team.

COURSE CONTENTS

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 multi-professional 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

Vetted

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 BOOKS

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

PHARMACOLOGY & THERAPEUTICS

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 phonoporosis will be discussed in detail.

LEARNING OBJECTIVES

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

- Discuss prescription and/or over-the-counter medications used in the management of a variety of patient conditions encountered during physical therapy management.
- Identify a range of drugs used in medicine and discuss their mechanisms of action.
- The student will be able to explain the mechanisms of action and pathology of abuse.
- The student will be able to translate pharmacological principles into clinical decision-making.

COURSE CONTENTS

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 Ant parasitic 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

Recommended Book

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

4th Year

1.	PHYSICAL THERAPY TREATMENT & TECHNIQUES-I (MUSCULOSKELETAL, GERONTOLOGY INCLUDING GERIATRIC, PROSTHETICS, ORTHOTICS, SUPERVISED CLINICAL PRACTICES I)	200 marks
2.	EXERCISE PHYSIOLOGY; HEALTH AND WELLNESS	200 marks
3.	MEDICINE, RADIOLOGY & DIAGNOSTIC IMAGING	200 marks
4.	SCIENTIFIC INQUIRY, BIOSTATISTICS, RESEARCH METHODOLOGY	100 marks
5.	COMMUNITY MEDICINE & REHABILITATION, SOCIOLOGY & BEHAVIORAL SCIENCES	100 marks
	Total Marks	**800 Marks**

PHYSICAL THERAPY TREATMENT & TECHNIQUES-I (musculoskeletal, gerontology including geriatric, prosthetics, orthotics, supervised clinical practices I)

COURSE DESCRIPTION

The course is designed to provide the student with an understanding of the principles and concepts of musculoskeletal evaluation & assessment including relevant interventions. In the laboratory sessions, evaluation and treatment techniques will be demonstrated and practiced, including regional palpation, examination, and evidence-based interventions emphasizing patient education, manual therapy and therapeutic exercise including posture and movement retraining in a patient-centered approach across the lifespan. This course includes both the medical and rehabilitation management of the geriatric patients covering implications and physiology of age-related and lifestyle-related decline.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, patho-mechanics, physiology and Pathophysiology will be a major focus for evaluation, intervention and education of the vascular, neuromuscular, and / or musculoskeletal compromised patient to utilize prosthetic or orthotic devices. Basic principles of mechanical physics and material characteristics will be applied.

LEARNING OBJECTIVE

- Describe in detail applied anatomy and physiology of the musculoskeletal system.
- Explain physiotherapy terminologies regarding musculoskeletal system.
- Describe in detail principles and concepts of musculoskeletal physical therapy examination, evaluation, assessment, documentation and management
- Discuss common Geriatric conditions relevant to physical Therapy and get insight into the human development
- Evaluate the Geriatric problems
- Formulate effective rehabilitation plan for Geriatric patients
- Describe various types of prosthetics & Orthotics
- Discuss the prescription of orthotics and prosthetics according to the different conditions

COURSE CONTENTS

I. MUSCULOSKELETAL PHYSICAL THERAPY

Medical Terminology
Principles and Concepts of Musculoskeletal Evaluation & Assessment
Principles of Intervention
Soft tissue Injury, Repair, and Management
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

Peripheral Nerve Disorders and Management
Exercise Interventions by Body Region
The spine and posture: structure, function, postural impairments & management guidelines
Posture and biomechanical influences
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
Management Guidelines Based on Impairments
The Spine: Exercise Interventions
The Shoulder and Shoulder Girdle
The Elbow & Forearm Complex
The Wrist & Hand
The Hip
The knee
The Ankle & Foot

ii. GERONTOLOGY & GERIATRIC PHYSICAL THERAPY

Gerontology
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
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, Cerebro vascular accident (C.V.A) and Poly neuropathies
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

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

iii. PROSTHETICS & ORTHOTICS

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

SUPERVISED CLINICAL PRACTICE-I

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

A: HISTORY TAKING

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

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 thecourse.

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

SUPERVISED CLINICAL PRACTICE

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

B: STEM REVIEW

PROFESSIONAL YEAR	SUPERVISION	FOCUS	WARDS	COMPETENCIES

4th	SUPERVISED BY TRAINED PT	SYSTEMS REVIEW	All wards	AS LISTED BELOW

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.

CONTENTS

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, Strider 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 rateandrhythm,respiratoryrate,bloodpressure,edema)andReadasingleleadEKG.

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.

Practical:

I. The practical training will be sought in Physical Therapy 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:

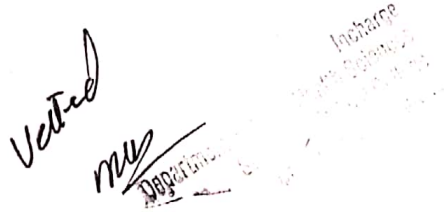
II. Therapeutic Management of conditions of spine, Therapeutic Management of conditions of extremities, Therapeutic Management of vascular disorders, Therapeutic Management of pulmonary conditions, Therapeutic Management of gynecological conditions, Reflective clinical case studies & Supervised and independent Practical application of therapeutic techniques on patients in outdoor and indoor Physical Therapy 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 BOOKS:

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



4. Hertling, D, and Kessler RM. Management of Common Musculoskeletal Disorders: Physical Therapy Principles and Methods. 3rd ed. Philadelphia, PA: WB Saunders 1995.
5. Orthopaedic Physical Therapy By: Donatelli & Michael J. Wooden 4th Edition.
6. Physiotherapy in Orthopaedics, A problem-solving approach By: Atkinson, Coutts &Hassenkamp2nd Edition.
7. Clinical orthopaedic rehabilitation By S. Brent. Brotzman & Kevin. E. Wilk, 2nd edition, Mosby publishers.
8. Management of Common Musculoskeletal Disorder by: Hertling, D, and Kessler RM Physical Therapy Principles and Methods. 3rd ed. Philadelphia.PA: WB Sunders.
9. Orthopedic Physical Assessment. Magee, D.4th ed. Philadelphia PA: WB Sunders 1995.
10. Physical Rehablitations Assessments and Treatment". By Susan B,O'Sullivan & Thomas J. Schmitz , 4th edition.
11. Tidy's Physiotherapy by Thomas A Skinner & Piercy.
12. Geriatric Physical Therapy by Andrew A. Guccione.
13. Fundamentals of Geriatric Medicine.
14. Gerontology for health care professional by regula H robbnet / walter.
15. Handbook of gerontology by James A Blackburn and Catherine N Dulmus.
16. Prosthetics and Patient Management: A Comprehensive Clinical Approach By: Kevin Carroll; Joan Edelstein.
17. Orthotics a comprehensive clinical approach By: Joan E Eldestein & Jan Bruckner

EXERCISE PHYSIOLOGY; HEALTH AND WELLNESS

COURSE DESCRIPTION

This course aims to develop a critical appreciation of exercise and applied physiology. The course will also enable the readers to understand injury prevention, rehabilitation and performance enhancement strategies. This course will facilitate discussion on the theories of health and wellness, including motivational theory, locus of control, public health initiative, psycho-social, spiritual and cultural. The course will cover health risks, screening, and assessment considering epidemiological principles. This will also cover risk reduction strategies for primary and secondary prevention, including programs for special populations

LEARNING OBJECTIVES

- Define homeostasis, types of systems involved in maintaining Human internal environment
- Discuss the responses, including hormonal, circulatory, respiratory and thermal to exercise
- Define principles of cardiopulmonary training
- Discuss the effects of exercise on VO2 max and lactic acid
- Describe training of Female athlete, children and old population
- Define Health, wellness and fitness
- Describe healthy people and role of PT in Health and wellness
- Explain the key concepts of physical and mental fitness
- Explain health and wellness issues in child, adolescence and old age
- Discuss Women health issues

Vetted

Incharge

COURSE CONTENTS

EXERCISE PHYSIOLOGY

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)
Hormonal Regulation of Metabolism 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:
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)
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, Endurance training and VO2 max, Detraining and VO2 max, 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, FIELD Tests for estimating CRF, Graded exercise testing protocols
Exercise Prescription for Health and Fitness
Prescription of exercise, General guidelines for improving fitness
Exercise for Special Populations
Diabetes, Asthma, Chronic obstructive pulmonary disease, Hypertension, Cardiac rehabilitation
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, 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

i. HEALTH AND WELLNESS

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.

Verified

Healthy People:
Definition of healthy people, Health education Resources, Physical Therapist role for a healthy community.
Health, Fitness, and Wellness Issues during Childhood and Adolescence:
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
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.

Practical:

- Measurement of work, power and energy expenditure by using
- Bench step, Ergometer, Treadmill
- Testing aerobic endurance:
- Predicting VO2 max using the Harvard step test, Astrand Treadmill Test, Balke Treadmill Test, Time limit test, Astrand Cycle Test, The effects of endurance and strength exercise on CV response, Lactate testing
- Testing anaerobic capacity:
- Wingate test, Jumping power tests, Quebec 10-second test
- Assessing muscular efficiency:
- Muscle Length Testing:
- Muscle Length Assessment techniques (Lower-Quarter Muscles, Upper-Quarter Muscles) Hypermobility
- Muscle strength, speed and power:
- Quantitative muscle strength assessment, Core Muscle Strength and Stability Test, Grip Strength Test, Wall Squat Test, 10 Stride Test, Kosmin Test, The LAS (Lactic vs. Speed) Test
- Physiological testing protocols for flexibility, Balance and Agility:
- Modified Sit & Reach Test, Static Flexibility Test, Standing Stork Test, Hexagonal Obstacle Test, Static balance, quantitative and qualitative assessment of balance, Janda's perturbation test
- Body Composition analysis:
- Body Mass index, Skin fold caliper Testing, Bioimpedance testing
- Physiological Protocols for the Assessment of Athletes in Specific Sports:
- Cricket, hockey, football, volleyball, Runners, Rugby, cyclist, Tennis
- Monitoring during Training and exercise:
- Heart rate measurement, Body weight maintenance and hydration status, Fluid loss evaluation, Evaluation of external and internal trainingload, perceptual wellbeing and physical readiness, stroop test and stretch reflex
- Heart rate measurement,
- Body weight maintenance and hydration status,
- Fluid loss evaluation,
- Evaluation of external and internal trainingload,
- perceptual wellbeing and physical readiness, stroop test and stretch reflex

Recommended Books

1. Exercise Physiology- Theory and Application to Fitness and Performance by: Scott K. Powers, Edward T. Howley.
2. Exercise physiology, A thematic Approach By: Tudor Hale, University College Chichester, UK
3. A Physical Therapist's Guide to Health, Fitness, and Wellness by Catherine R Thompson, PhD, MS, PT
4. ACSM's guidelines for exercise testing and prescription by Linda S. Pescatello
5. 101 Performance Evaluation tests by Brain McKenzie
6. Physiological Tests for Elite Athletes by Rebecca K. Tanner and Christopher J. Gore
7. Assessment and Treatment of Muscle Imbalance by Phil page, Frank, Clark and Lardner, Robert
8. Additional study material as assigned by the tutor

MEDICINE, RADIOLOGY & DIAGNOSTIC IMAGING

COURSE DESCRIPTION

This course intends to familiarize students with medical terminology and abbreviations for efficient and effective chart reviewing and documentation. It also explores systemic diseases, focusing on epidemiology, pathology, histology, etiology, as well as primary and secondary clinical characteristics and their management. Radiology and diagnostic imaging 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.

LEARNING OBJECTIVES

•Describe medical terminologies, abbreviations, epidemiology, etiology, primary and secondary clinical characteristics of Cardiovascular, Rheumatology and bone, and Respiratory diseases.

•Explain briefly an overview of medical management of listed diseases/disorders.

Cardiac Diseases.

•Describe in detail examination and understanding of radiological imaging (X-Rays) of Extremities, Spine and Chest.

•Explain briefly an overview of radiological imaging including Mammography, Fluoroscopy, Computer Tomography, Magnetic Resonance Imaging, Ultrasound, Endoscopy, Nuclear Medicine and Interventional Radiology.

•Explain briefly indications to prescribe X-Rays, Mammography, MRI and Ultrasound

COURSE CONTENTS

i. MEDICINE

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, Pharangitis, Acute laryngeo-trcheobronchitis, 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, Vitilogo, Pityriasis and Hyperhydrosis

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 Comma

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

ii. RADIOLOGY & DIAGNOSTIC IMAGING

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

- 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)

- Computed Tomography
- Equipment used for Computed Tomography
- Indications and Contra indications
- How it helps in diagnosis
- The Findings in Computed Tomography
- Benefits versus Risks and Costs

MAGNETIC RESONANCE IMAGING (MRI)

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

ULTRASOUND

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

ENDOSCOPY

- Endoscopy
- Equipment used for Endoscopy
- Indications and Contra indications
- How it helps in diagnosis

- The Findings in Endoscopy
- Benefits versus Risks and Costs.

NUCLEAR MEDICINE

- Nuclear Medicine
- Equipment used for Nuclear Medicine
- Indications and Contra indications
- How it helps in diagnosis.
- Benefits versus Risks and Costs.

Practical

The students are expected to make a record of his/her achievements in the log book. The logbook 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.

Evaluation pattern of Practical Training for Final Examination shall comprise of the following pattern:

1. OSCE: 04 static and 02 Interactive
2. Short Cases: 02
3. Long Case :01

Furthermore, from the radiology perspective the Practical training will mainly focus on the following:

I. Systemic Examination including Chest Examination and Practical Joints Examination
II. Evaluation of Orthopedic deformities
III. Observation of Various orthopedic procedures performed for correction of deformities

Recommended Books:

1. Practice of medicine by: Davidson
2. Clinical medicine by: Parveen j Kumar & Michael Clark
3. Short text book by medicine by: M. Inam Danish
4. Hutchison's clinical methodsby: Michael swash. 21st edition
5. Bed side techniques
6. Looking Within (How X-ray, CT, MRI, Ultrasound and Other Medical Images Created and How They Help Physicians Save Lives) By Anthony Brinton Wolbarst
7. A–Z of Musculoskeletal and Trauma Radiology By: James R. D. Murray
8. Essentials of Radiology by Fred. A. Mettler, 2nd edition.
9. Imaging in rehabilitation, By: Terry. R. Malone, Charles Hazle & Michael L. Grey. McGraw Hill Publishers

SCIENTIFIC INQUIRY, BIOSTATISTICS, RESEARCH METHODOLOGY

COURSE DESCRIPTION

This course includes discussion on basic quantitative methods and designs, including concepts of reliability and validity, interpretation of inferential statistics related to research designs, co relational statistic & designs,

interclass correlation coefficients, and critical appraisal of the literature. It involves selection of appropriate statistical techniques to address questions of medical relevance; select and apply appropriate statistical techniques for managing common types of medical data; use various software packages for statistical analysis and data management; interpret the results of statistical analyses and critically evaluate the use of statistics in the medical literature; communicate effectively with statisticians and the wider medical community, in writing and orally through presentation of results of statistical analyses; explore current and anticipated developments in medical statistics

LEARNING OBJECTIVE

- Identify the basic concepts of research and scientific inquiry and its methodologies
- Identify appropriate research topics
- Define appropriate research problem and parameters
- Construct a project proposal to undertake a research project.
- Discuss scientific Inquiry, its principle and application in medical research.
- Describe Search techniques for literature review
- Differentiate between different levels of evidence, appraisal and different studies with respect to their effectiveness in literature.
- Discuss necessary concepts of statistics to enable them to realize a research project in the field of Physiotherapy
- Explain Fundamentals of reading and understanding research methods, design, and statistics

i. SCIENTIFIC INQUIRY

- Describe scientific inquiry, Evidence based approach to scientific inquiry, Principles of scientific inquiry, the application of scientific inquiry to physical therapy.
- Access digital libraries and different research databases, Effective searching and reviewing literature material.
- Interpret Critical appraisal of published research in the areas of Examination and Evaluation, Diagnosis, Prognosis, Intervention
- Interpret Critical evaluation of Randomized Control Trial (RCT), Systemic review, Diagnosis and screening tests, Case reports
- Discuss how to conduct clinical research and hierarchy of evidences in clinical researches

ii. BIOSTATISTICS

- Define 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. Exercises.

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, Historigram, Ogive for Discrete Variable. Types of frequency curves. Exercises.

MEASURES OF CENTRAL TENDENCY

Vetted

Incharge

- Explain 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. Exercises.

MEASURES OF DISPERSION

- Describe 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. Exercises.

PROBABILITY AND PROBABILITY DISTRIBUTIONS

- Define Discrete And Continuous Distributions: Binomial, Poisson And Normal Distribution. Exercises.

SAMPLING AND SAMPLING DISTRIBUTIONS

- Describe 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. Exercises.

iii. Research Methodology

Research Fundamentals; Research, Theory in 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
Implementing Research; Implementing a Research Project and Publishing and Presenting Research

RECOMMENDED BOOKS:

1. Essentials of clinical research By Stephan P. Glasser.
2. Rehabilitation Research (Principles and Applications) 3rd Edition By Elizabeth Domholdt.
3. Walpole RE. Students study guide: introduction to statistics. 3rd ed. 1982.
4. Muhammad F. Statistical methods and data analysis. Faisalabad: KitabMarkaz; 2000
5. R. L Ott, Micheal T longnecker. An introduction to statistical methods and data analysis, 7th ed. Brooks/Cole, Cengage Learning 2015

COMMUNITY MEDICINE & REHABILITATION, SOCIOLOGY & BEHAVIOURAL SCIENCES

COURSE DESCRIPTION

This course is designed for the Physical Therapy students in order to develop strong background knowledge regarding the community health, wellbeing and community based rehabilitation. It also gives knowledge about the issues of community health, policies and procedures for their effective rehabilitation

management. It provide awareness about the problems faced by people in community at all levels and effective strategies to solve these issues.

The sociology & behavioural sciences course focuses at providing basic concepts and models of health sciences. The psycho-socio and cultural assessment of health seeking behavioural patterns and the role of therapeutic management group will be examined. The indigenous healing system and contemporary medical system will be studied. It makes them realize the importance of the relationship of the physical therapist and the patient.

LEARNING OBJECTIVES

- Describe impact of environmental, biological, social and behavioural risk factors on health and disease through the epidemiologic methods.
- Discuss agent, host and environmental factors determining health and disease.
- Describe complete nutritional assessment of individual using clinical, Anthropometric and diet survey tools
- Discuss the community health, diagnosis and to take remedial measure for improving community health
- Discuss various types of disabilities existing in special children
- Comprehend basic knowledge and concepts of sociology
- Describe relationship among impact of group, culture and environment on the behavior and health of patients
- Describe social aspects of health & illness and emphasize importance of the relationship of the physical therapist with patient, along critical perspectives of contemporary issues in health

I. Community Medicine & Rehabilitation

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 and 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 along with national health programs wherever Applicable.
Non-Communicable Diseases; Diabetes, Hypertension, Heart diseases, Blindness, Accidents, Geriatric problems
Occupational Health Problems; M.C.H. and family welfare Programs, Health care delivery in the community, National Health Policy, National Health programs including, Rehabilitation, Evaluation of Health, Programs, Health Planning Organization,
Community Nutrition; Foundation and status in Pakistan masses. Community nutrition programs: key features, benefits, planning, implementation, evaluation. Nutritional status assessment: Anthropometric, Dietary, Biochemical, Clinical measurements. Community Nutrition and Dietetics profession. Steps of nutritional epidemiological study, Testing and Piloting of nutritional epidemiological study, Questionnaire design. Evaluation, sources of variation in the dietary intake, Methodological studies on dietary questionnaires.
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, Levels of health care, primary, secondary and tertiary, Planning and Organization of health services, Implementation, Evaluation of health services, Management of resources in health services, Financial management, Health education and social cultural concept Ethics in Health Services, Theories of learning facilitations.

II. Sociology& Behavioral Sciences

Introduction of Sociology

Social Action and Interaction; Social processes, Co-operation, Competition, Conflict and Accommodation.

Social Groups; Primary-Secondary, In and Out Group and Reference group

Culture; Values, Beliefs, Sanctions, Cultural relativism and Ethnocentrism, Norms, Folk ways, Conflict,

Deviancy and Social control.

Socialization and Personality formation

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

Social and Cultural Change; Factors promoting and resisting social change

The Field Of Medical Sociology; Contribution of Sociology in Health. Environmental pollution and Health, Patient, Healthcare provider relationship. Role of Healthcare provider and attendants in the managements of patient.

Introduction of Behavioural Sciences; Understanding Behavior. Sensation, sense organs / special organs, Perception and factors affecting it, Attention, concentration, Memory, 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.

Personality and Intelligence; Psychological growth and development, Personality, theories and Factors affecting personality development, Assessment of personality Influence of personality in health, disease, hospitalization, stress, etc, Intelligence and its types Relevance of IQ and EQ Methods of enhancing EQ and IQ Factors affecting intelligence and their assessment

Stress Management

Doctor – Patient Relationship; Concept of boundaries and psychological reactions in doctor – patient relationship.

Pain, Sleep and Consciousness; Concept of pain, sleep and 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. A practical method of communication between the doctor and patient about disease, drugs, prognosis etc

Interviewing; Types of interview and Skills of interviewing

Health Psychology

Psychology in clinical management of patients, Psychological therapies, child's social and cognitive development, Psychological changes during adolescence, old age and their clinical management, Impact of illness on a patient's psychological wellbeing. Association between psychological stress and physical wellbeing, Role of doctor in patient reassurance.

Social And Community Perspective; Inequalities Ethnicity, culture and racism, Gender and Healthcare and Influence of health. Illness on behavior

Application of Behavioral Principles In Health and Disease; Mentally / emotionally and physically handicapped, Homebound and medically compromised.

Recommended Books:

1. Text book of Community Medicine by: Park J E. Latest Edition
2. Horton, Paul B. and Chester L. Hunt, 1984 Sociology, Singapore: Megraw Hill Book Co.

3. Moon, Graham, 1995. Society and Health; An introduction to Social Science for Processionals, London: Routledge.
4. Rehabilitation Research (Principles and Applications) 3rd Edition By Elizabeth Domholdt
5. Textbooks of Community Medicine, by Prof. H. A. Siddique (2nd Edition).
6. A Handbook of Behavioural Sciences for Medical and Dental Students By: M H Rana, S Ali and M Mustafa, , University of Health Sciences Lahore
7. Developmental Psychology for Healthcare Professions By: Katherine A Billingham

5th Year

1.	PHYSICAL THERAPY TREATMENT & TECHNIQUES-II (CARDIOPULMONARY, GYNECOLOGICAL& OBSTETRICS, HUMAN DEVELOPMENT, SUPERVISED CLINICAL PRACTICES II)	200 Marks
2.	NEUROLOGICAL & PEDIATRIC PHYSICAL THERAPY (INCLUDING SUPERVISED CLINICAL PRACTICES III)	200 Marks
3.	EMERGENCY PROCEDURES, PRIMARY CARE & SPORTS PHYSICAL THERAPY	200 Marks
4.	CLINICAL DECISION MAKING & DIFFERENTIAL DIAGNOSIS	100 Marks
5.	SURGERY &INTEGUMENTARY PHYSICAL THERAPY	100 Marks
	Total Marks	**800**

PHYSICAL THERAPY TREATMENT & TECHNIQUES-II (CARDIOPULMONARY, GYNECOLOGICAL& OBSTETRICS, HUMAN DEVELOPMENT, SUPERVISED CLINICAL PRACTICES II)

COURSE DESCRIPTION

This course includes applied anatomy, applied physiology and pathology of the cardiopulmonary system. This course discuss 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 cardiopulmonary systems disorders. The use of evidence-based physical therapy intervention for cardiopulmonary 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.

This course intends to provide Introduction to physical therapy practice for evaluation and treatment of pelvic floor dysfunction, 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.

LEARNING OBJETIVES

- Demonstrate the basic knowledge of applied anatomy, physiology & pathology.
- Demonstrate, evaluate & perform examination in cardiopulmonary conditions
- Apply evidence based physical therapy intervention.
- Discuss common gynecological conditions relevant to physical Therapy
- Evaluate the women's health problems
- Discuss rehabilitation plan for gynecological patients

i. **Cardiopulmonary Physical Therapy**

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 Restrictive Lung Dysfunction, Chronic Obstructive Pulmonary Diseases and Cardiopulmonary Implications of Specific Diseases
Diagnostic Tests and Procedures
Cardiovascular Diagnostic Tests and procedures, Pulmonary Diagnostic Tests and Procedures
Surgical Interventions, Monitoring and Support
Cardiovascular and Thoracic interventions,

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
Pulmonary Rehabilitation
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 ischemic heart disease
- Cardiac arrest, Angina pectoris & Myocardial infarction
- Cardiac surgery
- Drugs to control the cardiovascular system
- Physical Therapy
- Assessment, Recording, Treatment, Outcome evaluation & Complications of exercise
- Other considerations

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, Physical Therapy 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 program, Exercise and fitness programs and Group therapy.
Bronchiectasis, Primary Ciliary Dyskinesia and Cystic Fibrosis

- Bronchiectasis
- Medical management, Physical Therapy & Evaluation of Physical Therapy
- Primary ciliary dyskinesia
- Medical management, Physical Therapy & Evaluation of Physical Therapy
- Cystic fibrosis

Medical management, Physical Therapy, Evaluation of Physical Therapy & Continuity of care
Case Histories

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

ii. Gynecological& Obstetric Physical Therapy

Medical Terminology regarding Gynecology, Obstetrics and Women's Health

Anatomy, Physiology of pregnancy, Physical and physiological changes of labor and the puerperium, The antenatal period, Relieving the discomforts of pregnancy, Preparation of labor, 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 lymphedema

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

i. SUPERVISED CLINICAL PRACTICE II

a. CARDIOVASCULAR AND PULMONARY

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

CLINICAL COMPETENCIES:

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to cardiovascular and pulmonary disorders. 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. It will include Evaluation, Diagnosis, Plan of Care and Interventions relevant to wards mentioned above.

Practical:

1. In the laboratory sessions, Cardiopulmonary Physical Therapy 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.

Vetted

Incharge

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 Books:

1. Essentials of Cardiopulmonary Physical Therapy (2nd Edition)By Hillegass and Sadowsky
2. Physical Therapy for respiratory and cardiac problems, By: Jennifer A. Pryor & Barbara A. Webber, 2nd edition, Churchill Livingstone.
3. Tidy's Physical Therapy by Thomas A Skinner & Piercy
4. Therapeutics Exercises and Technique by Carolyn Kisner & Laynn Allen Colby 4th 5th edition
5. Cash's Text book of General Medical & Surgical Condition for Physiotherapists by Patrica A. Downie
6. Cash's Textbook of chest , heart and vascular condition for physiotherapist by Patrica A. Downie
7. Physical Therapy in Obstetrics and Gynecology By: Jill Mantle, Jeanette Haslam, Sue Barton, 2nd edition.
8. Textbook of Physical Therapy for Obstetric and Gynecological Conditions (Paperback) By (author) G.B. Madhur.

NEUROLOGICAL & PEDIATRIC PHYSICAL THERAPY (INCLUDING SUPERVISED CLINICAL PRACTICES III)

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. Clinical competence in the evaluation and treatment of persons with neurological impairments is to be developed. It will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area. This course addresses both the medical and rehabilitation management of the pediatric patients using an interdisciplinary approach. The etiology and clinical features of common diseases/ disorders observed in the pediatric population will be emphasized. Students will participate in case studies and an interdisciplinary evaluation project.

LEARNING OBJECTIVES:

- Discuss common Pediatric conditions relevant to physical Therapy
- Evaluate the pediatric problems
- Formulate effective rehabilitation plan for pediatric patients.
- Demonstrate assessment of patients with various neurological pathologies.
- Explain various intervention strategies & procedures to manage patients with various neurological pathologies.
- Describe motor control & motor learning theories and their applications with regard to contemporary management of the neurological problems.
- Describe motor control & neuro developmental approaches of interventions.
- Discuss and demonstrate to manage patients with various neurological pathologies.

COURSE CONTENTS

i. NEUROLOGICAL PHYSICAL THERAPY

COURSE CONTENTS

APPLIED ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM

- Review of Functional and applied anatomy of Brain, Spinal cord, CNS Support Structures, Neurons, Peripheral nervous system, autonomic Nervous System and Spinal Level Reflexes.

NEUROLOGICAL EXAMINATION

- Perform assessment of patients with various neurological pathologies.
- Conduct & document clinical examination (History, System review, Test and measures, used in standardized assessment procedure
- Evaluate and Analyze clinical assessment procedures to construct a problem list, long term Goals, Short term goals, Treatment plan, Progression and discharge planning..

INTERVENTIONS

- Different theories of Motor Control and Motor Learning, their limitations and clinical implications
- Neurodevelopmental (NDT) approaches and their clinical implications in the management of patients with neurological pathologies such as;

o Roods approach
o Bobath approach
o Kabat, Knott, Voss (Proprioception neuro facilitation PNF Approach).
o Burnstorm Approach.

- Contemporary approaches and their clinical implications in the management of patients with neurological pathologies such as;

o Motor Control / Motor Learning Approach
o Neural plasticity/ adoptability
o Constraint induced movement therapy (CIMT)
o Task-Related Training Approach
o Compensatory Training Approach
o Normal Reach, Grasp and Manipulation.

- Construct treatment strategies to improve, strength, Balance, coordination, locomotion and gait, skill acquisition, postural control, mobility functions.
- Role of sensory system in improving motor control and sensory rehabilitation.

NEUROLOGICAL DYSFUNCTIONS

- Assess and manage Stroke, types of stroke, problems associated with stroke
- Assess and manage traumatic Brain Injury (TBI), Types and severity of Problems associated with TBI
- Assess and manage Spinal Cord Injury (SCI), Complete and incomplete SCI, clinical Syndromes and problems associated with SCI.
- Assess and manage brain and spinal cord disorders such as;
- Multiple Sclerosis (MS)
- Cerebellar Disorders
- Parkinson's Disease (PD)
- Motor Neuron Disease (MND)
- Poly Neuropathies.
- Post polio Syndrome (PPS)
- Vestibular Disorders

Vetted

- Cranial Nerves Disorders
- Myasthenia gravis
- Spinal muscular atrophy

PERIPHERAL NERVE DISORDERS AND MANAGEMENT

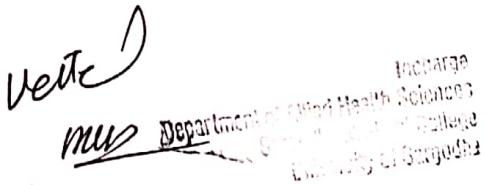
- Peripheral nerve structure; nerve structure, nervous system mobility characteristics
- Common sites of injury to peripheral nerves, impaired nerve function and recovery process
- Neural tension disorders and their managements
- Neuromuscular disorders involving impaired nerve function such as:
  - Thoracic outlet syndrome
  - Carpal tunnel syndrome
  - Complex regional pain syndrome:
  - Reflex sympathetic Dystrophy and causalgia.

ii. PEDIATRIC PHYSICAL THERAPYCREDIT HOURS

MEDICAL TERMINOLOGY REGARDING PEDIATRICS

- 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
- Electro diagnosis 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
- Torticolis
- Pediatric Limb Deficiencies
- Neuromuscular Diseases
- Myopathies
- Traumatic Brain Injury
- Cerebral Palsy
- Spinal Cord Injuries
- Spina Bifida
- Oncology and palliative care.

CASE HISTORIES



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

ii. **SUPERVISED CLINICAL PRACTICE III**

Neurological Physical Therapy and Pediatric Physical Therapy

PROFESSIONAL YEAR	SUPERVISION	FOCUS	WARDS (Neuro)	WARDS (Pediatric)
5th	Supervised by trained PT	Evaluation, Examination, and Intervention	Neurological (IPD/OPD; surgical & non-surgical)	Pediatric (IPD/OPD; surgical & non-surgical)

CLINICAL COMPETENCIES:

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to neurological disorders. 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.

Practical:

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

II. In the laboratory sessions, Supervised Clinical Training shall be given to the students related to the Physical Therapy in neurological rehabilitation and pediatric rehabilitation. Various reflective case studies related to Physical Therapy in neurological rehabilitation and pediatric 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.

RECOMMENDED BOOKS

1. "Physical Rehabilitation Assessment and Treatment". By Susan B,O'Sullivan & Thomas J. Schmitz , 6th edition.
2. Neurological Physical Therapy Bases of evidence for practice Treatment and management of patients described by specialist clinicians by Cecily Partridge
3. Neurological Physical Therapy A problem-solving approach By Susan Edwards, second edition.
4. Neurologic examination By Robert j. Schwartzman , first edition
5. Physical Therapy for Children By, Suzann K. Campbell, Robert J. Palisano & Darl W. Vander Linden.
6. Pediatric Rehabilitation Principles and practice (Fourth Edition) By, Michael A Alexander & Dennis j. Matthews.
7. Additional reading material as assigned

EMERGENCY PROCEDURES, PRIMARY CARE & SPORTS 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, first aid and emergency. The course is designed to provide knowledge and skills in emergency techniques and
inthe application of appropriate action necessary to take care of the patient/client.

LEARNING OBJECTIVE

- Provide knowledge and skill in emergency techniques
- Application of appropriate action necessary to take care of the patient/client
- Describe Basic life support
- Describe first aid and emergency preparedness

COURSE CONTENTS

i. **EMERGENCY PROCEDURES&PRIMARY CARE**

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

Primary care: physical therapy modles1, 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 and 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.

ii. SPORTS PHYSICAL THERAPY

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

Vetted

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
Joint Specific Sport Injuries and Pathologies
Traveling with a team
Drugs and the Athlete
Ethics and Sports Medicine
Case Histories

Practical:

- The practical training regarding the emergency evaluation/management of the following will be practiced in the Physical Therapy treatment ward/ available facility under the supervision of qualified physiotherapists
- Airway management
- Head injuries
- Emergent general medical conditions
- Emergency care of cervical spine injuries
- Orthopedic injuries
- Abdominal injuries
- Thoracic injuries
- Spine boarding in challenging environments

Note:
The students are expected to make a record of his/her achievements in the log book. The log book shall also contain a record of the procedures which student would have performed/observed.

RECOMMENDED BOOKS:

1. Emergency Care in Athletic Training by: Keith M.Gorse, Robert O. Blanc, Francis Feld, Matthew Radelet, 1st edition, 2010, FA Davis Company
2. Acute care hand book for Physical Therapists by: Jaime C paz, Michelle P West, 2nd edition, 2002,Butterworth Heinemann
3. Sports Rehabilitation and Injury Prevention by: Paul Comfort &Earle Abrahamson, 1st Edition, 2010, Wiley Blackwell Publishers.
4. Clinical Sports Medicine by: Brukner & Khan, 4ed, McGraw-Hill Publishers.
5. A guide to sports and injury management by: Mike Bundy & Andy Leaver, 1st edition, 2010, Churchill Livingstone

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

Incharge
Department of Allied Health Sciences

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 neuro-musculoskeletal 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.

LEARNING OBJECTIVES

- Discuss the screening and differentiate the medical conditions

- Discuss clinical decision making in physical therapy

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 Hepatic and Biliary Disease
Hepatic and Biliary Signs and Symptoms, Hepatic and Biliary Pathophysiology, Gallbladder and Duct Diseases, 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

Recommended Books

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

SURGERY &INTEGUMENTARY PHYSICAL THERAPY

COURSE DESCRIPTION

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

LEARNING OBJECTIVES

- Demonstrate the pre- and post-operative care of patients.
- Describe presentations of major surgical problems, establish correlations among clinical observation, surgical (operative) pathology, and the physiological alterations achieved through surgery.
- Differentiate the surgical health care delivery to both inpatients and outpatients in a variety of settings

- Describe the surgical management of disease.
- Recognize the entire treatment cycle of the surgical patient from diagnosis to operative management and through recovery.

i. **SURGERY**

Orthopedic surgery

Fractures

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

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:

Deformities and Anomalies

Deformities of the Spine:

Torticolis, Scoliosis, Kyphosis, Lordosis and flat back

Deformities of the Lower Limb:

CDH, coxa vera, coxa valga, anteversion, Retroversion, Genuvalgum, Genuvarum, Genurecurvatum, CDK, Talipes calcaneousequines, varus&valgus, Talipes calcaneovarus, Talipes calcaneovalgus, Talipes equinovarus, Pes cavus, Pes planus. Hallux valgus &varuma and Hallux rigidus and hammer toe

Deformities of Shoulder and Upper Limb:

Sprengels shoulder, Cubitus varum, Cubitus valgum and Deputryn'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 Anesthesia

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

i. 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

ii. 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

iii. 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

i. 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

ii. 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.

ii. <u>INTEGUMENTARY PHYSICAL THERAPY</u>

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

Incharge
Department of Allied Health Sciences
Sardar Begum Medical College
Peshawar

Recommended Books:

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

RESEARCH REPORT WRITING

In the final year, a project will be allocated to a single or group of students, depending on available facilities. The In-charge / chairperson of the concerned department/institute shall allot a supervisor. This report shall be evaluated by a panel of examiners notified by the office of the controller examination from an approved panel comprising external and internal examiners. Every student shall be evaluated keeping in view their contribution, thorough understanding of work done and comprehensive presentation. If the student cannot defend his/her work in 1st annual examination, they shall reappear in the 2nd annual/supplementary examination. The details of the report are given below

- Title page
- Names of students
- Students I.D number
- Supervisor's name
- Program name
- Name of the department
- Project title
- Abstract

Abstract

A maximum of one page (200-250 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 II. 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 states 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 and Plagiarism
Place on a separate page;
"We hereby declare that this project is entirely our own work other than the counsel of our supervisor and that it has not been submitted for any academic award, or part thereof, at this or any other Educational Institution" The research report contains % Similarity index.
Signed: Authors
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

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 summarize 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 summarize 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 according to Harvard reference style by using endnote or any other reference management tool.

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.